# DECENTRALIZATION AND THE FATE OF MINORITIES[¤]

KJETIL BJORVATN AND ALEXANDER W. CAPPELEN

December 9, 2002

## Abstract

This paper analyses the welfare e¤ects of a change from central-
ized to decentralized political authority. The potential disadvantage
with decentralization in our model is that local dominant groups with
rather "extreme" preferences may win the vote and implement poli-
cies that harm the well-being of local minorities. When the national
median voter represents a "moderate" position, centralization can be
seen as a way of protecting the interests of local minorities. Our main
result is that the centralized solution may welfare dominate decen-
tralization even in the absence of scale economics and interregional
spillovers. We also demonstrate that increased segregation, increased
mobility, and increased heterogeneity in preferences, factors that are
normally considered to be arguments in favor of decentralization, may
reduce the attractiveness of the decentralized solution from a welfare
perspective. Finally, we show that when the national median voter is
an "extreme" type, decentralization may represent a way of protecting
local minority interests.

## 1   Introduction

In a pluralistic world where individuals disagree about the ideal public pol-
icy there is always latent con‡ict. Not everyone can get his or her ideal

policy realized. Democratic institutions can be seen as ways of ensuring that compromises are reached. This will be the case if the decisive voter represents a moderate position. However, we cannot always be sure that a democratic vote results in a compromise solution. Majority interests with rather "extreme" preferences may win the vote, and implement policies that are radically at odds with the interests of minorities.

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). Madison's argument that the political influence of oppressive groups, which is the equivalent of groups with extreme preferences in our context, may be great in small jurisdictions but relatively small in large jurisdictions, comes very close to the central message of the present paper.

The distribution of political authority between central and local jurisdictions is a very topical issue in the political debate in most countries also today. The costs and benefits of central and local public finance is the central theme in the economic literature on fiscal federalism. Generally speaking, this literature is relatively sympathetic to decentralization of public provision of goods and services. The benefits of decentralization are 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. And such gains do not depend upon any mobility across jurisdictional boundaries." Mobility increases the

2

regional segregation of the population and therefore strengthens the bene-
fits of local autonomy. This is the essence of the Tiebout model (Tiebout
1956). But, as emphasized by Oates, mobility of voters is not essential to
the decentralization theorem.

The present paper demonstrates that the tailoring of public policies to
local tastes may not only be the main benefit of decentralization, it could
also be its greatest weakness. The reason why the decentralization theorem
does not necessarily hold in our setting is that we model collective choice as
the outcome of majority vote rather than welfare maximization. Decentral-
ized decision making gives power to local majorities that may have rather
"extreme" preferences relative to those of the national median voter. Im-
posing the preferences of local majorities on local minorities may have large,
negative welfare effects. When the national median voter is a "moderate",
political centralization can be viewed as a national compromise solution that
may increase aggregate welfare by protecting the interests of local minorities.

By focusing on the conflict of interests at the local level, our analysis
departs from most of the recent literature on political centralization and
decentralization, see for instance Bolton and Roland (1996), 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. Local harmony of preferences
is perhaps a natural approach when dealing with issues of international in-
tegration, for instance when analyzing the costs and benefits of membership
in the European Union. The level of conflict of interests is then likely to be
greater between people of different nationalities than between people of the
same nationality.[1] The literature on different education finance systems is
mainly concerned with the case of the United States. Again, local homogene-
ity may be a natural benchmark also in this case, since the United States is
a more segregated society than European countries, perhaps as the result of
larger local fiscal autonomy and greater mobility.

In the present paper, however, people who are close to each other geo-
graphically are not necessarily close in terms of preferences. More specifically,

---

[1] Ellingsen (1998) also analyses intra-regional conflicts. In his model, however, public
goods provision at the central level will not be more in line with the preferences of local
minorities, and hence political integration does not have the potential of protecting local
minority interests.

we assume that all types of preferences are present in each region, but that regions di¤er in the composition of majority and minority interests. The variables we focus on to analyze the trade-o¤ between local and central decision making are the distribution of preferences, the degree of geographical segregation, and the degree of mobility. Several interesting results can be derived from this framework. In addition to our main result, namely that the centralized solution can welfare dominate decentralization even in the absence of scale economies and externalities, we show that a reduction in the size of minorities and an increase in the heterogeneity in preferences are not necessarily arguments in favor of decentralization. Furthermore, increased mobility can be an argument for centralization even without tax competition or any type of externalities between jurisdictions. In the absence of side payments, majority voting at the national level over whether or not decisions should be decentralized might result in decentralization when the welfare maximizing choice would be centralization.

The paper is organized as follows. Section 2 presents the model, with Section 2.1 presenting the case without mobility and 2.2 discussing the e¤ects of mobility. In Section 3 we discuss the case where the population structure is such that the national median voter is an "extreme" type. Section 4 concludes.

# 2   The model

People di¤er in their preferences on public policies. One source of disagreement concerns individual freedom. Some favor greater restrictions than others on people's right to gamble, to sell and consume alcohol, to dress the way they like, etc. Another source of con‡ict concerns the distribution of rights and privileges. Discrimination of groups typically follow lines of ethnicity, language, religion or sex, and include issues such as slavery, the freedom to practice one's religion, and the right of women to vote and take part in public life. Yet another source of disagreement concerns the extent of public involvement in the economy. Some people favor a minimalist state, the "night watchman", others favor a "welfare state" involving extensive public service provision and redistribution of income and wealth.

To simplify, we assume that policies can be measured on single dimension, as denoted by $g \in R$. Low levels of $g$ could mean very restrictive policies on, say, gambling and alcohol, whereas high levels of $g$ could imply very liberal

polices on these issues. Let individual $i$'s ideal policy be given by $g_i^{\pi}$, and let $i$'s utility derived from this policy be given by $U_i^{\pi}$. Since $U_i^{\pi}$ is a constant, we can without loss of generality let the optimal utility level be the same for all people in the economy, i.e. $U_i^{\pi} = U^{\pi}$. 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.[2] The utility of individual $i$ living in a region in which the decisive voter is of type $\mu$ can then be described as

$$V_i^{\mu} = U^{\pi} - f\left(|g_i^{\pi} - g_{\mu}|\right), \tag{1}$$

where $f\left(|g_i^{\pi} - g_{\mu}|\right)$ is the loss function, characterized by $f', f'' > 0$. 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.

To simplify the analysis, assume that there are three types of individuals in the economy, $\mu \in (l, m, h)$, with $g_l^{\pi} \cdot g_m^{\pi} \cdot g_h^{\pi}$. We shall sometimes refer to $g_m^{\pi}$ as a "compromise" solution. Heterogeneity in preferences, $°$, is measured as the distance between the two extreme positions, i.e. $° \equiv g_h^{\pi} - g_l^{\pi}$. Let

$$g_m^{\pi} = g_l^{\pi} + {}^{-}°, \tag{2}$$

where $^{-} \in (0, 1)$ measures the relative distance of the m-type from the l-type. For instance, if $^{-} = 0$, the m-type is identical to the l-type, if $^{-} = 1$, the preferences of the m-type and the h-type coincide. If $^{-} = 0.5$, the ideal policy of the m-type lies exactly in the middle of two extremes. In this case we shall refer to m's preferences as "average". The more "average" are the preferences of the m-voter, the more of a compromise solution does $g_m^{\pi}$ represent.

There are three relevant levels of utility loss. First, the loss associated with the distance between the preferred policies of l and m, which we shall define as $f_1$; second, the the loss associated with the distance h and m, denoted by $f_2$; and third, the loss associated with the maximum distance in

---

[2] While 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.

preferences, that between l and h, which we call $f_3$. The utility losses can be summarized as:

$$f_1 = f\left(\bar{\beta}\,\delta\right)$$
$$f_2 = f\left((1 - \bar{\beta})\,\delta\right) \tag{3}$$
$$f_3 = f\left(\delta\right)$$

Note also that $f'' > 0 \Rightarrow f_1 + f_2 \leq f_3$, with strict inequality holding for $\bar{\beta} \in \langle 0; 1 \rangle$. The relevant utility levels are summarized in the following equations:

$$V_l^l = V_m^m = V_h^h = U^*$$
$$V_l^m = V_m^l = U^* - f_1$$
$$V_h^m = V_m^h = U^* - f_2 \tag{4}$$
$$V_l^h = V_h^l = U^* - f_3$$

Policies are determined either on a national level or on a regional level. On the national level, which we shall also refer to as the centralized solution or the centralized regime, the national median voter is the decisive voter. His vote will determine the policy for the country as a whole.[3] Alternatively, policies may be de...ned on a regional level, which we shall also refer to as the decentralized solution or the decentralized regime, in which case the regional median voters determine policies in their respective regions.[4]

The main argument of this paper rests on the assumption that the national median voter is a "moderate", i.e. an m-type. In many cases this is likely to be a reasonable assumption. Consider, for instance, the case of Canada. Francophiles and anglophiles may have extremely opposing views on the importance of the french language in schools, in the media, and in cultural life. The national median voter, on the other hand, perhaps takes an intermediate position on this issue, for instance because she is a genuinely bilingual person. In the Canadian case, centralization could be a way of protecting the interests of local minorities, such as the anglophiles in Quebec

---

[3] In our model, we maintain the traditional assumption of uniform policies on the national level in the centralized political solution. Besley and Coate (1999) analyse the case where the central government can provide di¤erent levels of public goods to di¤erent regions. In their analysis, the disadvantage of centralization is based on imperfections in the democratic institutions. More speci...cally, the centralization equilibrium may be characterized by overspending on public goods as local jurisdictions strategically delegate candidates with strong preferences for public goods to the central judiciary.

[4] In order to focus on the central mechanism of our paper, we do not include any cost advantages of central policy making, or problems of policy competition in the decentralized solution. It is, however, fairly clear that including such issues would strengthen the case for centralization.

and the francophiles in Vancouver. Another interesting example could be the issue of slavery in 19th century North America. The majority of people in the Southern states were perhaps in favor of slavery, whereas the majority in the North were against. With the Northerners outnumbering the Southerners, the slave minority would probably be better off with issues of slavery being determined on the central rather than a decentral level.

But clearly, the identity of the national median voter depends on the relative number of the different types of people. If the number of one of the "extreme" types is greater than the number of the other two types taken together, then centralization will not result in a moderate solution. We could perhaps think of this as the case of former Yugoslavia, with a national majority of Serbs whose preferences differ radically from those of ethnic minorities such as Muslims and Croats. In Section 3 we demonstrate that when the national median voter is an "extremist", protection of local minorities is an argument in favor of decentralization.

There are three regions in the economy, $J \in (L; M; H)$. With at least as many regions as there are types of people, full segregation of the population, that is, a situation with no local minorities, is a theoretical possibility. In the benchmark version of the model we assume that the national median voter is a "moderate", which in our context means an m-type. A convenient way of assuring that this is the case, is to assume that the three types are of equal size. Let the mass of each type be given by unity, $n_\mu = 1$.

We wish to have a simple measure of minority size and segregation in society. For this purpose, we introduce some symmetry assumptions on the geographical distribution of the three types. More specifically, we assume equality in size of both the dominant groups in each region and of the local minority groups. For concreteness, let the dominant groups be l-types in region L, m-types in M, and h-types in H. This means that the size of local minorities is given by $n_{lM} = n_{lH} = n_{mL} = n_{mH} = n_{hL} = n_{hM} \equiv \gamma$, where $n_{\mu J}$ is the share of individuals of type $\mu$ in region $J$. The size of the local dominant groups is given by $n_{lL} = n_{mM} = n_{hH} = 1 - 2\gamma$. Note that $\gamma$ is an inverse measure of segregation in the present model. If $\gamma = \frac{1}{3}$, then there is no dominant group in any region, and society is perfectly integrated. If $\gamma = 0$, there are no local minorities, and hence society is perfectly segregated. The relevant range of minority sizes is therefore $\gamma \in \left[0; \frac{1}{3}\right]$.

Decentralization may create regional differences in policy and thereby an incentive for migration, which in turn affects the size of minorities. In the first part of the analysis, however, we abstract from migration. This can be

interpreted as a situation with prohibitively high migration costs, or perhaps as the short-term effect of decentralization.

## 2.1 The no-mobility case

We start the analysis of the no-mobility case by noting that:

**Lemma 1** For $\lambda > \frac{1}{4}$, no group holds a simple majority in any region, and the median voter in the decentralized regime is therefore an m-type person in all three regions. Hence, $g_L = g_M = g_H = g_m^\pi$. For $\lambda \le \frac{1}{4}$, the local dominant groups have simple majorities in all regions, which under decentralization results in $g_L = g_l^\pi$; $g_M = g_m^\pi$, $g_H = g_h^\pi$.[5]

From Lemma 1 we can conclude that decentralization only affects welfare for $\lambda \le \frac{1}{4}$, and then only in regions L and H. If local minorities are sufficiently large, more precisely if $\lambda > \frac{1}{4}$, we know that the median voter is an m-type in all regions and centralization and decentralization yield the same outcome.

For $\lambda \le \frac{1}{4}$, in regions L and H, those who gain from decentralization are the local dominant groups. With simple majorities in their respective regions, we know from (4) that the dominant groups realize their optimal utility of $V_l^l = V_h^h$, whereas a centralized solution would give $V_l^m$ and $V_h^m$. The m-types in L and H realize their first best utility level $V_m^m$ under centralization, whereas decentralization results in $V_m^l$ and $V_m^h$. Finally, the l-types in H and the h-types in L in a decentralized solution have utility levels $V_l^h = V_h^l$, while centralization results in $V_l^m$ and $V_h^m$.

Recall that the size of a local dominant group is given by $(1 - 2\lambda)$ and the size of a local minority by $\lambda$. Using this information, the fact that decentralization has no effect on policies for $\lambda > \frac{1}{4}$, and the information in (4), the welfare effect of decentralization, measured as the sum of the utility changes, can be expressed as[6]

$$\Omega = \begin{cases} 0 & \text{if } \lambda > \frac{1}{4} \\ (1 - 2\lambda)(f_1 + f_2) - 2\lambda f_3 & \text{if } \lambda \le \frac{1}{4} \end{cases} ; \qquad (5)$$

---

[5] We shall assume that for $\lambda = 1/4$, in which case strictly speaking no regional median voter exists, the outcome of local elections is given by the vote of the local dominant group.

[6] The welfare effect of decentralization can be expressed as: $\Omega = (1 - 2\lambda)\left[V_l^l - V_l^m + V_h^h - V_h^m\right] + \lambda\left[V_m^l - V_m^m + V_m^h - V_m^m\right] + \lambda\left[V_l^l - V_l^m + V_h^l - V_h^m\right]$; which using the information in (4) yields (5). Note that if we introduced a concern for equality in the welfare function, this would add more weight to the utility loss of minorities and thereby strengthen the central mechanism in our paper.

The main result of our paper can now be expressed as:

**Proposition 1** Centralization may welfare dominate decentralization.

Proof. From (5) we see that $\mu = \frac{1}{4} \Rightarrow \Delta = \frac{1}{2}(f_1 + f_2 - f_3) \geq 0$, with strict inequality holding for $\theta \in \langle 0; 1 \rangle$. ∎

Proposition 1 demonstrates that when collective decisions are made by majority rule rather than by welfare maximizing governments, decentralization does not necessarily result in a welfare gain for society. This is an interesting result since it shows that Oates' decentralization theorem does not necessarily hold when policies are determined by the median voter rather than by a social planner.

The proof of Proposition 1 shows that centralization weakly welfare dominates decentralization for a given level of segregation in society, namely for $\mu = \frac{1}{4}$. It is trivial to demonstrate that in a perfectly segregated society, decentralization is the welfare superior solution; from (5) we see that $\mu = 0 \Rightarrow \Delta = f_1 + f_2 > 0$. It is also clear from (5) that for $\mu < \frac{1}{4}$, a reduction in $\mu$ leads to a linear increase in $\Delta$, the ﬁrst derivative given by $2(f_1 + f_2 + f_3) > 0$. Hence, there must exist a critical minority size for $\mu < \frac{1}{4}$ below which $\Delta > 0$ and above which $\Delta < 0$. From (5) this critical level can easily be found from the condition $\Delta = 0$ as

$$\mu = \frac{1}{2(1+a)}, \qquad a \equiv \frac{f_3}{f_1 + f_2}. \tag{6}$$

We can interpret a as the disutility of being exposed to policies that are at the maximum distance from one's ideal position relative to the loss of being exposed to policies that are "moderately" diﬀerent from one's ideal. An increase in the utility loss for those who suﬀer the most relative to those who suﬀer less in a decentralized regime will increase a and thereby reduce $\mu$, meaning that centralization will be the welfare superior solution for a larger range of minority levels. The opposite naturally holds for a reduction in a. Figure 1 illustrates the welfare eﬀect of decentralization.

Moving from right to left, we see that a decrease in the size of minorities in the interval $\mu \in \left\langle \frac{1}{4}; \frac{1}{3} \right\rangle$ has no eﬀect on welfare. At $\mu = \frac{1}{4}$, we know from the proof of Proposition 1 that decentralization has a negative impact on welfare for $\theta \in \langle 0; 1 \rangle$. A further reduction in the size of minorities leads to a linear increase in welfare, crossing the zero mark at $\mu = \mu^*$. For $\mu < \mu^*$, there is a welfare gain from decentralization. Clearly, in the extreme case
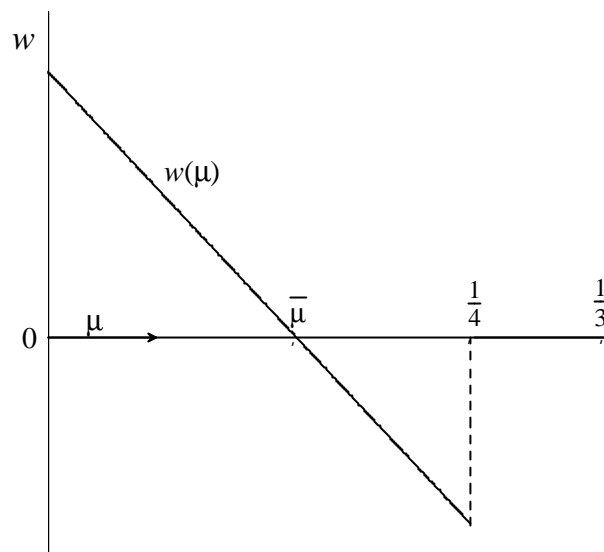
9

Figure 1: Decentralization and welfare

of no local minorities, everyone realizes their ...rst best utility level under decentralization and welfare is maximized. From Figure 1 we can conclude that:

**Corollary 1** A reduction in the size of minorities may reduce welfare under decentralization.

This observation is interesting because, a priori, one would perhaps expect that the welfare gain from decentralization would be larger the smaller is the size of minorities, i.e. the larger is the degree of segregation in society. The intuition behind the result stated in Corollary 1 is that a reduction in the size of minorities at $\mu = \frac{1}{4}$ leads to a shift of political power from the m-voters to the local dominant groups. We know from the discussion above that when these minorities are large, more precisely in the interval $\mu 2 \left] \bar{\mu}; \frac{1}{4} \right[$, their loss dominates the utility gain for the local majorities. Let us now study in more detail the factors that determine the level of $\bar{\mu}$. We observe that:

**Proposition 2** The more "average" are the preferences of the national median voter, the larger is the interval of minority sizes for which centralization welfare dominates decentralization.

10

Proof. The smaller is $\lambda$, the larger is the interval of minority sizes for which $\Omega < 0$. Note ﬁrst that the numerator in $a$ is $f_3$, which is independent of $\bar{\mu}$. The denominator of $a$ is $f_1 + f_2 \equiv f\left(\bar{\mu}\sigma\right) + f\left((1 - \bar{\mu})\sigma\right)$, which is minimized for $\bar{\mu} = \frac{1}{2}$. Hence, $a$ reaches its maximum level, and therefore $\lambda$ its minimum level, for $\bar{\mu} = \frac{1}{2}$, i.e. when the median voter has "average" preferences. An increase in $\left|\bar{\mu} - \frac{1}{2}\right|$ increases $\lambda$. ∎

Note that for $\bar{\mu} = 0$ and $\bar{\mu} = 1$, $f_1 + f_2 = f_3 \Rightarrow \lambda = \frac{1}{4}$. Hence, when the m-type has preferences that are identical to one of the "extreme" groups, centralization never welfare dominates decentralization, i.e. $\Omega \geq 0$ for all $\lambda$. The intuition for Proposition 2 can be seen by noting that the advantage of centralized decision making relies on its ability to produce a compromise solution that protects minority interests. Centralization is therefore most attractive in welfare terms when the m-type has exactly "average" preferences, i.e. for $\bar{\mu} = \frac{1}{2}$. The closer are the preferences of the national median voter to one of the extreme groups, the less of a compromise does her vote in a national election represent, and the less advantageous is the central solution.

A change in preference heterogeneity, $\sigma$, affects $\lambda$ via its effect on $a$. An increase in $\sigma$ that increases $a$ would reduce $\lambda$, implying an increase in the range of minority sizes for which centralization is the welfare dominating solution. However, to determine what that effect of a change in $\sigma$ on $a$ is, we need more information on the loss function. For instance, with a quadratic loss function, $\lambda$ is unaffected by $\sigma$. But, generally speaking, $\lambda$ could also be an increasing or decreasing function of $\sigma$. The interesting observation here is that it is fully possible that an increase in preference heterogeneity reduces $\lambda$, i.e. increases the range of minority sizes for which centralization is the welfare dominating solution.

Even without further information on the loss function, we do, however, know that the larger is the heterogeneity in preferences, the larger is the maximal gain and the maximal loss from decentralization. The maximal loss from decentralization is given for $\lambda = \frac{1}{4}$. At this point, the utility loss for local minorities dominates the gain for local majorities, and more heterogeneity in preferences makes the situation even worse for the minority groups. The maximal gain from decentralization is achieved under perfect segregation, i.e. for $\lambda = 0$. In this case, the larger is $\sigma$, the larger is the welfare gain from tailoring policies to local preferences.

11

## 2.2 Mobility and welfare

So far we have abstracted from any e¤ect that decentralization may have on the degree of segregation in society. However, with heterogenous tastes and local di¤erences in policies, there is an incentive for local minorities to move to the regions o¤ering their preferred policies. We know that decentralization leads to local di¤erences in policy only when $^1 \cdot \frac{1}{4}$. We start with this case. Then we consider the possibility of coordinated migration when the pre-migration minority size is given by $^1 > \frac{1}{4}$.

Clearly, for pre-migration minority size $^1 \cdot \frac{1}{4}$, mobility increases the attractiveness of decentralization since at least some members of the dissatis...ed minorities are now able to move to the region o¤ering their ideal policies. To demonstrate this formally in the simplest possible way, assume that people are either perfectly mobile or perfectly immobile. Let ¾ denote the share of mobile people within a preference group, and let this share be identical across preference groups. The post-relocation share of a local minority group relative to the total number of people in a region can therefore be expressed as $^\wedge = {}^1(1 - \text{¾})$. Recall that policies are the same in all regions for $^1 > \frac{1}{4}$, and hence no individual incentives for relocation exist in this range of minority sizes. Modifying (5), the welfare e¤ect of decentralization after relocation can then be expressed as

$$
\text{!`} = \begin{cases} 0 & \text{if } {}^1 > \frac{1}{4} \\ (1 - 2^\wedge)(f_1 + f_2) - 2^\wedge f_3 & \text{if } {}^1 \cdot \frac{1}{4} \end{cases} ; \qquad (7)
$$

which is increasing in ¾ since $^\wedge$ decreases with ¾. Hence, it is true that:

**Proposition 3** Increased mobility increases welfare under decentralization for $^1 \cdot \frac{1}{4}$.

The proof is trivial since the only e¤ect of increased mobility is to reduce $^\wedge$, i.e. reduce the number of losers and increase the number winners from decentralization. It is also straightforward to demonstrate that:

**Corollary 2** When the population is su¢ciently mobile, decentralization always welfare dominates centralization for $^1 \cdot \frac{1}{4}$.

**Proof.** $^\wedge \,\acute{}\, {}^1(1 - \text{¾}) < {}^1 \,\acute{}\, \frac{1}{2(1+a)}$ ) ¾ $> \frac{2^1(1+a) - 1}{2^1(1+a)} \,\acute{}\, \text{¾}$ ) ! $> 0$. Similarly, if ¾ $<$ ¾; ! $< 0$. ∎

Let us now turn our attention to the case of $\iota > \frac{1}{4}$. We know that in this case policies are the same across regions even under decentralization, de...ned by the preferences of the m-type. Hence, there is no individual incentive to relocate in this case. But given that people are indi¤erent in terms of their locational choice, even relatively small shocks to the economy, such as changes in the labor market, may cause relocation of people. While such shocks are not an explicit part of our model, a reasonable assumption would be that increased mobility increases the relocation e¤ect of a given shock in the labor market. Hence, the higher is the mobility, the larger is the chance that economic ‡uctuations result in a relocation of people such that the political power is shifted away from the m-voter and in the favor of the local dominant groups in regions H and L.

An alternative explanation to why relocation of people could take place for $\iota > \frac{1}{4}$, and one that does not rely on external shocks, is the possibility of coordinated migration decisions. If those who are mobile can costlessly coordinate their relocation, there will be an incentive to move if there is a su¢cient number of mobile people. For a coordinated move to change local policies, the post-relocation degree of segregation must be such that $\wedge < \frac{1}{4}$. Note that since $\wedge \acute{} \iota(1 ¡ ¾)$, mobility and coordination implies that the critical level of (pre-migration) minority size at which the decisive voter changes from an m-type to a representative of the local dominant group is lower than $\frac{1}{4}$. How much lower depends on the degree of mobility in society. It is easy to demonstrate that $\wedge < \frac{1}{4}$ ) $¾ > \frac{4\iota ¡ 1}{4\iota} \acute{} ¾^{¤}$. Hence, if the mobile share of the population is su¢ciently great, more speci...cally larger than $¾^{¤}$, relocation will take place even when prior to relocation $\iota > \frac{1}{4}$. We can therefore state that:

**Lemma 2** There is an incentive for coordinated relocation if mobility is suf-...ciently high.

Moreover, we know from proof of Corollary 2 that decentralization leads to a welfare loss if $¾ < ¾$. We can therefore conclude that with the possibility of coordinated migration:

**Proposition 4** Increased mobility may reduce welfare under decentralization.

**Proof.** Given that $\iota > \frac{1}{4}$, and given that we allow for the possibility of coordinated migration, an increase in mobility from $¾ < ¾^{¤}$ to $¾ 2 (¾^{¤}; ¾_i$ reduces welfare under decentralization. ∎

13

The result that increased mobility may reduce welfare under decentralization is somewhat surprising. But in terms of the mechanisms we focus on in this paper, it makes perfect sense. Note that in a coordinated move, the ambition of the migrants is to gain political control in the destination region. If the mobility in society is high enough to allow them to do so, but not high enough to allow a su¢cient share of the local minorities to relocate, then mobility may lead to a welfare loss under decentralization. Formally, this takes place for mobility levels in the interval ¾ 2 (¾¤;¾i. This result is related to our …nding in the no-mobility case that a reduction in the size of minorities can reduce welfare under decentralization, as stated in Corollary 1. An increase in mobility that leads to a reduction in the size of minorities is therefore potentially welfare reducing.

# 3 An "extremist" national median voter

So far we have assumed that the national median voter represents a moderate position. What happens if one of the extremist groups, say, group h, has a simple majority in national elections? With the mass of l-types and m-types still measured by unity, let $n_h = $ ® ¸ 2. The size of the h-community in H is now given by ® ¡ 2®¹, with the size of the h-community residing in each of the other two regions, L and M, given by ®¹. Since the h-group has a simple majority in region H, decentralization does not a¤ect the political outcome for people in this region. Hence, we can concentrate on what happens in regions L and M. We now have to consider the possibility of one type, the h-type, having simple majority in all regions. It is straightforward to show that:

Lemma 3 When ®¹ = 1 ¡ 2¹ + ¹, the h-group in L and M constitutes exactly half of the population in these regions. Hence, for $\gamma > \frac{1}{1+\text{®}}$ ´ $\gamma_H$, the h-type has simple majority in all regions. In this case, centralization and decentralization yield the same outcome, namely $g_L = g_M = g_H = g_h^\alpha$. When 1 ¡ 2¹ = ¹ + ®¹, the l-group in L and the m-group in M constitute exactly half of the population in their respective regions. Hence, for $\gamma < \gamma_L$ ´ $\frac{1}{3+\text{®}}$, the l-voters have simple majority in L as do the m-voters in M. In this case, decentralization results in $g_L = g_l^\alpha$; $g_M = g_m^\alpha$, $g_H = g_h^\alpha$. For $\gamma$ 2 ($\gamma_L$; $\gamma_H$) no group has simple majority in L and M, and policies in these regions are therefore de…ned by the preferences of type m. Hence, in this interval, decentralization yields $g_L = g_M = g_m^\alpha$ and $g_H = g_h^\alpha$.

The welfare e¤ect of decentralization can in this case be expressed as:[7]

$$
\Delta = \begin{cases}
0 & \text{if } \lambda > \lambda_H \\
(1-\lambda)(f_2 + f_3 - f_1) - 2\alpha\lambda f_2 & \text{if } \lambda \in (\lambda_L; \lambda_H) \\
[1 - \lambda(1+\alpha)](f_2 + f_3) - 2\lambda f_1 & \text{if } \lambda < \lambda_L
\end{cases} : \qquad (8)
$$

From (8) we can demonstrate that:

**Proposition 5** When the national median voter is an "extremist", decentralization weakly welfare dominates centralization.

**Proof.** It is straightforward to demonstrate that $\lambda = \lambda_H \Rightarrow \Delta = (1-\lambda)(f_3 - f_1 - f_2) > 0$, and that $\lambda = \lambda_L \Rightarrow \Delta = 2\lambda(f_2 + f_3 - f_1) > 0$, and that $\Delta$ increases as $\lambda$ goes down in the intervals $\lambda \in (\lambda_L; \lambda_H)$ and $\lambda < \lambda_L$. ∎

Recall that in the benchmark version of the model, the bene...t of centralization was that it protected the interests of local minorities by o¤ering a more moderate solution than the one preferred by local dominant groups. When the national median voter himself is an extremist, centralization naturally loses its ability to generate a compromise solution. In fact, decentralization in this case represents a possible way of creating compromise solutions. This is clear from the fact that by decentralizing, political power in regions L and M is shifted from the h-type to the m-type for $\lambda \in (\lambda_L; \lambda_H)$.

Earlier, in connection with Proposition 2, we studied the case where the m-type was an "extremist", i.e. $\bar{} = 0$ or $\bar{} = 1$. This e¤ectively means a situation with two groups, both with "extreme" preferences, and one group twice as large as the other. In this two-group case, decentralization also welfare dominates centralization for all geographical distributions of the population, exactly as in the present three-group case where one of the "extreme" types has a simple majority in national elections. The reason for the welfare dominance of decentralization in the two-group case is non-existence of voters with "moderate" preferences. In the present case, "moderate" voters exist but do not have any political in‡uence in national elections. The moderate position may, however, win the vote in local elections, and hence, the need

---

[7]For $\lambda \in (\lambda_L; \lambda_H)$:
$\Delta = (1 - 2\lambda)\left(V_m^m - V_m^h + V_l^m - V_l^h\right) + \lambda\left(V_m^m - V_m^h + V_l^m - V_l^h\right) + 2\alpha\lambda\left(V_h^m - V_h^h\right):$
For $\lambda < \lambda_L$:
$\Delta = (1 - 2\lambda)\left(V_m^m - V_m^h + V_l^l - V_l^h\right) + \lambda\left(V_m^l - V_m^h + V_l^m - V_l^h\right)$
$+ \alpha\lambda\left(V_h^m - V_h^h + V_h^l - V_h^h\right):$

15

to protect minorities could be an argument in favor of decentralization in the present case.

# 4   Conclusion

The idea underlying this paper is that decentralization has one advantage and one disadvantage. The advantage lies in the possibility of adjusting local policies to local tastes. The disadvantage is related to the fate of minorities. If the national median voter represents a "moderate" position, decentralization may result in more "extreme" solutions that reduce the well-being of local minorities. The size of this loss depends on the distribution of preferences and the size of minorities. The advantage with the centralized solution is thus that it provides some protection to minorities by avoiding "extreme" solutions.

The main results in the paper are as follows. First, centralization may welfare dominate decentralization even in the absence of scale economies and interregional externalities. Second, increased segregation, in the form of a reduction in the size of minorities, is not necessarily an argument for decentralization. On the contrary, if the initial level of segregation is relatively low, then a reduction in the size of minorities could make it more important to centralize political authority. Third, the more the national median voter represents an average position relative to the preferences of the two extreme views, the more attractive is the centralized solution from a welfare perspective. The fourth result concerns the relationship between heterogeneity and decentralization. An increase in heterogeneity is not necessarily an argument for decentralization. Increased heterogeneity increases the disutility of minorities and may thus increase the importance of a centralized decision structure in order to maximize total welfare. Increased mobility can be an argument for centralization when coordinated relocation is possible. Finally, the paper demonstrates that when the national median voter is an "extreme" type, the need to protect local minorities can be an argument in favor of decentralization.

In the analysis we have compared welfare levels under the regimes, central and decentralized provision of public services. If the national median voter could choose between the two regimes, which one would be preferred? Consider the benchmark case of equal population size and no mobility. We then know that in the absence of side-payments, and for $^1 \cdot \frac{1}{4}$, the majority of the

population in regions L and H would support decentralization. The people in M would be indi¤erent and the minorities in L and H would be against. If those who are indi¤erent do not take part in the election, or split their votes equally for and against decentralization, we know that decentralization in this case will get a majority of the votes.[8] Thus, majority voting at the national level may result in decentralization where the welfare maximizing choice is the centralized solution.

Mobility increases the support for decentralization, since once decentralized public ...nance is established, the mobile minorities will take advantage of the increased variety in public policies and relocate to the region o¤ering their preferred policy.

# References

[1] Alesina, A., and E. Spolaore, "On the number and size of nations," Quarterly Journal of Economics, 112 (1997), 1027-1056.

[2] Besley, T. and S. Coate, "Centralized versus Decentralized Provision of Local Public Goods: A political economy analysis," NBER Working Paper No. 7084, 1999.

[3] Bolton, P., and G. Roland, "Distributional con‡icts, factor mobility, and political integration," American Economic Review Papers and Proceedings, 86 (1996), 99-104

[4] Ellingsen, T., "Externalities vs. internalities: a model of political integration", Journal of Public Economics, 69 (1998), 251-268.

[5] Fernández, R., and R. Rogerson, "Income distribution, communities, and the quality of public education," Quarterly Journal of Economics, 111 (1996), 135-164.

[6] Fernández, R., and R. Rogerson, "Equity and resources: An analysis of education ...nance systems," NBER Working Paper 7111, 1999.

---

[8] If voters attach a positive weight to aggregate welfare, those who would otherwise be indi¤erent would vote for the welfare maximizing outcome. In that case, centralization would result as long as this is the welfare maximizing regime.

[7] Hoxby, C. M., "Are e¢ciency and equity in school …nance substitutes or complements?," Journal of Economic Perspectives, 10 (1996), 51-72.

[8] Madison, J., "The Union as a Safeguard Against Domestic Faction and Insurrection," The Federalist No. 10 (1787), available at http://lcweb2.loc.gov/const/fed/fed_10.html.

[9] Oates, W. E., Fiscal Federalism (London: Harcourt Brace Jovanovich, 1972).

[10] Tiebout, C., "A pure theory of local expenditures," Journal of Political Economy 65, (1956), 416-242.