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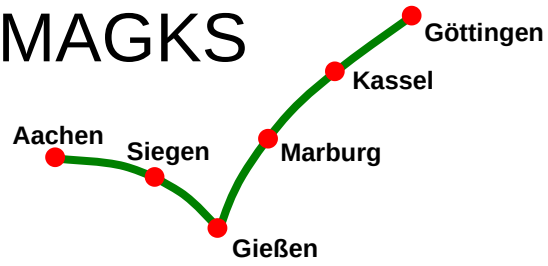

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Voting for mobile citizens

by

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Voting for mobile citizens

Abstract

This paper analyzes inter- and intraregional redistribution in a centralized state using the citizen-candidate model. It focuses on conflicting interests among regions and among citizens of varying mobility. If discrimination with respect to place of residence and degree of mobility is possible, diversity of interests is high. Under the plurality rule and with sincere voting, the largest socioeconomic group of citizens supplies the winning candidate and discriminates against all other groups. However, if discrimination with respect to the degree of mobility is constrained, mobile citizens may gain power and interregional redistribution is reduced.

Keywords: Voting, mobility, inter- and intraregional redistribution, discrimination

JEL-Classification: D7, H1, H7

1 Introduction

The aim of this paper is to analyze interregional redistribution (and its accompanying intraregional redistribution) within a simple politico-economic model. There is a large body of literature on the impact of mobility on redistribution in a federation (see, e.g., Wildasin, 1991; Hindriks, 1999), but such is not the subject of this paper. Here, a unitary state, comprised of several well-defined regions, having a centralized political system is considered. Even in a unitary state, the central government is able to redistribute between regions in several ways: varying levels of public good supply, discriminatory taxation, and via transfers to households or firms. These instruments may be considered as a substitute for intergovernmental grants. All (sufficiently large) countries in the world, irrespective of whether they are federations or unitary states, redistribute between regions (for interregional redistribution in unitary and federal states, see, e.g., Shankar and Shah, 2003).

The direction and size of interregional redistribution is subject to political decision making (for an overview, see Persson and Tabellini, 2000). The theoretical literature on distributive policy suggests that minimum winning coalitions determine the outcome in the legislature (see the seminal work by Buchanan and Tullock, 1962; Riker, 1962). An obvious conjecture is that the majority adopts policies that benefit itself at the expense of the minority. Since empirical studies report that minorities are not completely excluded from the benefits of distributive legislation, the idea of a more universalistic legislation that offers insurance against the risk of expropriation has been suggested (see Weingast, 1979; Shepsle and Weingast, 1981). However, even under a universalistic approach, a centrally determined policy need not be uniform per se (for a recent analysis of this issue, see Besley and Coate, 2003; Lockwood, 2002). Furthermore, a restriction to uniformity increases the welfare of citizens, since it reduces the opportunity for playing some voting districts off against others (Wrede, 2006).

To analyze redistribution between regions in a unitary state, this paper employs the citizen-candidate model (see Osborne and Slivinsky, 1996; Besley and Coate, 1997). The basic assumption of the citizen-candidate model is that candidates cannot commit

to particular policies (e.g., because voters are unable to coordinate themselves to a strict backward-looking voting procedure). The winning candidate adopts policies that maximize his or her utility. If policies cannot discriminate on an individual basis, policy variables are chosen so as to maximize the utility of the candidate's peers. Depending on the voting procedure, the strategic behavior of voters, and the diversity of interests, the winning candidate may be a member of a small socioeconomic group of citizens. As a consequence, a large majority of voters and regions may be subject to (negative) discrimination. Within the framework of the citizen-candidate model, it will be shown that anyone who is not a member of the political leader's socioeconomic group is subject to severe discrimination (if voting is sincere and if the plurality rule is applied). Regions may be expropriated. A somewhat universalistic legislation is indeed required to overcome this dilemma.

The citizen-candidate model is employed by Lorz and Nastassine (2007) to analyze the impact of interjurisdictional mobility on regional policy. However, they do not consider mobility *within* the jurisdiction; instead showing that an increase in mobility *across* borders can be responsible for shifting the policy outcome toward the preferred policy of the less mobile citizens in a certain region, since it reduces the incentives for candidacy.

Although this paper specifically considers individual candidates competing for the presidency, the model as a whole can be regarded as a stylized representation of competition between parties representing mobile or immobile citizens. Therefore, both presidential and parliamentary systems are covered by the paper.

The focus of this paper is on the varying interests of mobile and immobile citizens. Citizens who are completely attached to one particular region truly benefit from considerable redistribution toward their region, but mobile citizens may be negatively affected from thus implied stream of migration. The paper shows that the likelihood of the political leader being a mobile citizen increases, and interregional redistribution is therefore reduced, if legislation is more universalistic in the sense that discrimination with respect to the degree of mobility is excluded. Simply because the degree of mobili-

ty is not a verifiable property, in reality the tax legislator's ability to discriminate explicitly with respect to the degree of mobility is constrained. The analysis reveals that under a nondiscrimination rule, expropriation of regions is no longer a likely outcome of the political process, since the political leader is typically mobile and not attached to a particular region (provided that political leaders do indeed maximize the welfare of the socioeconomic group they belong to). This result seems an accurate reflection of real-world politics. There is at least some anecdotal evidence that candidates who are strongly attached to a particular region are less successful in federal elections. For example, in Germany, the partially autonomous Bavarian section of the right-wing party has never been able to supply a winning candidate for the chancellorship. Furthermore, in the United States, although during the 20th century several state governors won the presidency, very few Senate members had that success. Both governors and senators require a local majority, but the latter lack administrative experience and are more involved in pork barrel policies at the federal level. In some federations, even a state governor post, for example, the position of "Landeshauptmann" in Austria, seems not to be qualification enough for the top job at the federal level, a phenomenon that may be attributed to the regional attachment of governors.

The paper shows that a nondiscrimination rule strengthens mobile candidates and thus reduces interregional redistribution. From an ex-ante perspective, immobile citizens might even benefit from a ban on discrimination, although it reduces the prospects of their candidates in a national election. A result of wider application is that since citizens representing special interests have a strategic disadvantage compared to candidates representing common interests, nondiscrimination rules that prevent certain groups from pursuing their interests at the expense of others, decrease the special interest groups' electoral prospects and, in the long run, are of benefit to the society as a whole. This result could apply to various types of special interests groups—regional, sectoral, or cohort based.

The paper is organized as follows. Section 2 develops the economic framework and then the political part of the model is presented in Section 3. Sections 4 and 5 ana-

lyze equilibria of the complete game in the absence and presence of a nondiscrimination rule. Section 6 concludes and discusses some shortcomings and possible extensions of the model.

2 The basic economic model

The model is comprised of a unitary state that consists of n regions. Total population is divided into n + 1 groups: members of the first group with (strictly positive) size $\overline{N}$ are perfectly mobile across regions, all other groups are completely immobile. From mobile group's perspective, all regions are identical. In contrast, each of the immobile groups, with size L_i, is completely attached to a particular region, with $\sum_{i=1}^{n} L_i = \overline{L}$. Without loss of generality, it is assumed that $L_1 \geq L_2 \geq \cdots \geq L_n$. To rule out trivial solutions, $L_1 - \sum_{i=2}^{n} L_i < \overline{N} < \overline{L}$ is also assumed, that is, the largest single group of society members does not form a majority in the state as a whole.

In region i, a private consumption good is produced according to a linearly homogeneous production function by both mobile and immobile workers, who are treated as imperfect substitutes: $F(N_i, L_i)$, where N_i is the number of mobile workers who work and live in region i, with $N_i \geq 0$. Mobile and immobile workers are complementary: $F^i_{NL} > 0$.[1] Furthermore, $F_N(0, L) = \infty$ is assumed. By a simple linear technology, the private good can be transformed in a national public good G, $G \geq 0$. The marginal rate of transformation is normalized to one.

Private consumption is paid for out of labor income minus income taxes. Income taxes may discriminate between types of individuals and/or regions. Discriminatory income taxation could be seen as a stylized representation of both differentiated taxation of varying sources of income and tax allowances that are targeted at certain groups. Hence, the budget constraints of mobile and immobile workers are

$$(1) \qquad x_i^N = \left(1 - t_i^N\right) F_N^i \text{ and } x_i^L = \left(1 - t_i^L\right)\left(\frac{F^i - N_i F_N^i}{L_i}\right),\ i = 1, \ldots, n,$$

[1] Note that a prime indicates a derivative, a subscript denotes a partial derivative, and superscripts are indicative of particular regions.

respectively, with private consumption $x_i^N \geq 0$ and $x_i^L \geq 0$, i =1, …, n. t_i^j is the income tax levied on an individual of type j in region i. Workers derive utility from private and public goods. Preferences are quasi-linear and identical across groups. The utility function is $u = x_i^j + v(G)$, where $v' > 0$, $v'' < 0$, and $\lim_{G \to 0} v'(G) = \infty$. The government budget constraint is

$$(2) \qquad G = \sum_{i=1}^{n} \left(t_i^N F_N^i N_i + t_i^L F_L^i L_i \right).$$

Income taxes may be positive or negative, but are not allowed to exceed unity: $t_i^j \leq 1$, i = 1, …, n, j = N, L. Mobile workers choose their residence so as to maximize utility. At an interior migration equilibrium, ensured by the Inada-condition and the upper bound on tax rates, utility is equalized across regions. Hence, the migration equilibrium is characterized by equalization of private consumption:

$$(3) \qquad \left(1 - t_i^N\right) F_N\left(N_i, L_i\right) = \rho, \; i = 1, \ldots, n,$$

$$\sum_{i=1}^{n} N_i = \overline{N},$$

where ρ is the common marginal product of mobile labor net of taxes. Therefore, tax rates can be written as $t_i^N = 1 - \rho / F_N^i$.

3 Elections and government

The government decides on tax rates and, as a consequence, the public good. The outcome depends on the government's objective function and, therefore, on the nature of the decision maker. The power of voters and the properties of the election procedure influence the government's objective and opportunities. The following analysis applies the citizen-candidate model. The structure of the game is as follows: (1) each citizen decides whether or not to run for election; (2) in a common election, voters elect one candidate according to the plurality rule; (3) once elected, the winner determines tax rates and (implicitly) the public good; and (4) mobile workers choose residences, production, and engage in consumption.

A main feature of the citizen-candidate model is that candidates cannot commit to particular policies. Hence, at the policy stage, the winning candidate chooses policy variables that will maximize his or her utility. In this model, it is assumed that the government is not concerned with reelection and that voters are unable to coordinate themselves to a strict backward-looking voting procedure. At the second stage, under the plurality rule, the candidate who receives the most votes wins the election. If the votes are tied, all candidates with the highest voting share win with the same probability. Deterministic and sincere voting without abstention is assumed. Each citizen votes for the one candidate whose decisions will maximize his or her utility. If a voter is indifferent between two candidates, he or she votes for a candidate of his or her own type. If this does not solve the indeterminacy, he or she tosses a coin. At the first stage, it is assumed that candidates are purely policy oriented. Candidacy costs and incumbency rents are ignored. A citizen runs for election if and only if his or her candidacy increases expected utility; otherwise he or she withdraws. If no citizen runs for election, no election takes place, and tax rates and public good provision are set equal to zero.

An equilibrium of the game is a sequence of feasible decisions made at all stages of the game where each individual is forward looking and maximizing his or her utility whenever a decision has to be made.

Since there are n + 1 types of citizens, there are n + 1 types of possible candidates. At the equilibrium, at most one citizen per type runs for election. If there were more than one candidate of the same type, the withdrawal of one of those candidates either would not affect the policy outcome or would increase the number of votes for the remaining candidates of that type and, therefore, increase the probability of winning the election. Furthermore, the winning probability of each candidate must be strictly positive; otherwise, the citizen would not run for election. Finally, since $\lim_{G\to 0} v'(G) = \infty$ is assumed, an equilibrium without any candidate cannot exist. Each citizen would benefit from running for election if there were no actual candidate.

Solutions of the game are determined by backward induction. The final stage is especially characterized by the migration equilibrium determined by condition (3). The

following analysis of the policy stage will distinguish whether the government is allowed (and able) to discriminate between mobile and immobile taxpayers.

4 Policy under (almost) perfect discrimination

To determine the equilibrium at the policy stage, the preferred policies of mobile and immobile workers need to be analyzed. The politician maximizes his or her utility subject to the government budget constraint, the labor market equilibrium condition, and non-negativity conditions by the choice of tax rates and public good supply. To simplify the derivation of optimum policies, an equivalent optimization problem is considered where the distribution of mobile workers and the common marginal product of labor net of taxes are control variables instead of mobile worker's income tax rates and public good supply. Since all mobile workers achieve one and the same utility, the policy of a mobile worker politician can be described as the solution of

$$(4) \qquad \max_{\substack{N_1,\ldots,N_n,\rho,\\ t_1^L,\ldots,t_n^L}} u^N = \rho + v(G) \text{ s.t. (2), (3), } x_k^N \geq 0, \text{ and } x_k^L \geq 0, \; k = 1, \ldots, n.$$

On the basis of the first-order conditions, the following lemma describes the resultant policy:[2]

Lemma 1: The policy choices of a mobile-citizen-led government (P_M), are characterized by

$$(5) \qquad x_k^L = 0, \; F_N^k = F_N, \; k = 1, \ldots, n, \text{ and } \overline{N}v' = 1. \qquad \#$$

Proof: After inserting for G and t_k^N, the first-order conditions of a mobile-citizen-led government are

[2] Here and in the following it is assumed that output is large enough to ensure an interior solution with respect to public good supply.

(6.a) $$\frac{\partial u^N}{\partial \rho} = 1 - v' \sum_{j=1}^{n} N_j = 0,$$

(6.b) $$\frac{\partial u^N}{\partial N_k} = \frac{\partial \left(\sum_{j=1}^{n} F_N^j N_j + F_L^j L_j - \rho \sum_{j=1}^{n} N_j \right)}{\partial N_k} v' = 0,\ k = 1, \ldots, n,$$

(6.c) $$\frac{\partial u^N}{\partial t_k^L} = F_L^k L_k v' \geq 0 \text{ and } (F_L^k L_k v') x_k^L = 0,\ k = 1, \ldots, n.$$

From (6.c) follows $t_k^L = 1$ and $x_k^L = 0$ for all k. Equation (6.a) implies $\overline{N} v' = 1$. Using $t_k^L = 1$, $N_n = \overline{N} - \sum_{j \neq n} N_j$, and the properties of linearly homogeneous functions, from (6.b) follows that the government effectively maximizes $\sum_k F(N_k, L_k)$. Hence, $F_N^k = F_N^n$, for all k. QED

A federal government controlled by a mobile worker will completely exploit immobile workers.[3] The tax base is totally inelastic, since immobile workers cannot avoid taxes. A mobile-worker-dominated federal government supplies public goods without reference to immobile workers' marginal willingness to pay for them. The sum of marginal rates of substitution of mobile workers is equalized with the marginal rate of transformation. The Samuelson condition is violated and the equilibrium is inefficient. Since the government redistributes total output to mobile workers without efficiency losses, it maximizes output by equalizing taxes rates applied to mobile workers' income and, therefore, the marginal products of mobile labor across regions. The distribution of mobile workers is efficient. At equilibrium, taxes on mobile workers may very well be negative.

An immobile politician living in region i has different policy preferences. This type of politician solves

(7) $$\max_{\substack{N_1, \ldots, N_n, \rho, \\ t_1^L, \ldots, t_n^L}} u^{Li} = (1 - t_i^L) F_L^i + v(G) \text{ s.t. (2), (3), } x_k^N \geq 0,\ x_k^L \geq 0,\ k = 1, \ldots, n.$$

The following lemma gives the solution:

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[3] The results do not change qualitatively if some common upper bound on tax rates is introduced that is sufficiently close to unity: $t_i^j \leq \bar{t} < 1$, i = 1, …, n, j = L, N.

Lemma 2: The policy choices of a government led by an immobile resident of region i (P_{Ii}) are characterized by

(8) $\quad x_j^L = 0\,,\ j \neq i,\ x_k^N = 0\,,\ F_N^k = F_N\,,\ k = 1,\ldots,n\,,$ and $L_i v' = 1\,.$ #

Proof: Assuming without loss of generality $i \neq n$, using $N_n = \overline{N} - \sum_{j \neq n} N_j$, and inserting for G and t_k^N, the first-order conditions of a government under control of an immobile resident of region i can be written as

(9.a) $$\frac{\partial u^{Li}}{\partial t_i^L} = F_L^i\left(-1 + v'L_i\right) = 0\,,$$

(9.b) $$\frac{\partial u^{Li}}{\partial t_j^L} = F_L^j L_j v' \geq 0 \text{ and } (F_L^j L_j v')x_j^L = 0\,,\ j \neq i,$$

(9.c) $$\frac{\partial u^{Li}}{\partial N_i} = \left(1 - t_i^L\right)F_{LN}^i + v'\left(F_N^i + F_{NN}^i N_i + t_i^L F_{LN}^i L_i - F_N^n - F_{NN}^n N_n - t_n^L F_{LN}^n L_n\right) = 0\,,$$

(9.d) $$\frac{\partial u^{Li}}{\partial N_j} = v'\left(F_N^j + F_{NN}^j N_j + t_j^L F_{LN}^j L_j - F_N^n - F_{NN}^n N_n - t_n^L F_{LN}^n L_n\right) = 0\,,\ j \neq i,$$

(9.e) $$\frac{\partial u^{Li}}{\partial \rho} = -v'\overline{N} \leq 0 \text{ and } \left(-v'\overline{N}\right)\rho = 0\,.$$

From Equation (9.a) follows $L_i v' = 1$. Condition (9.b) leads to $t_j^L = 1$ and $x_j^L = 0$ ($j \neq i$). Inserting $t_j^L = 1$ into (9.d) yields $F_N^j = F_N^n$. From (9.e) follows $\rho = 0$ and, thus, $t_k^N = 1$, for all k. Inserting $L_i v' = 1$ in (9.c), results in $F_N^i = F_N^n$. QED

Immobile citizens from regions other than the politician's own region are completely exploited. Furthermore, the government also expropriates mobile workers. With respect to the public good, because the immobile politician of region i is not concerned with the willingness to pay of mobile workers or with that of immobile workers in other regions, the public good supply is inefficient.

To determine the equilibrium at the policy stage, citizens' policy choice preferences need to be determined. Policy choice preferences are indicated by $\succ_M$ for mobile workers and by $\succ_{Ii}$ for immobile residents of region i, $i = 1,\ldots,n$. Obviously, mobile workers and immobile residents of region i (at least weakly) will prefer the program of

the candidate who lives in their region (because it is designed to maximize their utility) above the policies of any other candidates and will therefore vote (if possible) for that candidate:[4] $P_M \succ_M P_{Ii}$ and $P_{Ii} \succ_{Ii} P_M$. Irrespective of whether a mobile citizen or an immobile resident of some region j rules the country, the private consumption of immobile citizens in region i equals zero. Hence, whether immobile citizens prefer a governor of the mobile type to a governor who will maximize the utility of immobile residents of another region depends on public good supply and, therefore, on the size of those groups of citizens: if $N > L_j$, $P_M \succ_{Ii} P_{Ij}$ ($j \neq i$); however, if $N < L_j$, $P_{Ij} \succ_{Ii} P_M$. By similar reasoning, it can be concluded that $P_{Ii} \succ_M P_{Ij}$ if $L_i > L_j$.

It was argued above that at least one candidate has to appear at the equilibrium and that at most one candidate of each of the n + 1 groups (mobile workers and immobile residents of the various regions) runs for election. The next proposition further describes the equilibria.

Proposition 1: (a) If one group of citizens is larger than each other individual group, the unique equilibrium at the policy stage is a one-candidate equilibrium where the successful candidate is a member of this group. (b) If each of m groups of equal size is larger than any other group of citizens, the unique equilibrium at the policy stage is a m-candidate equilibrium with one candidate from each of the m largest groups. #

Proof: (a) First, a one-candidate election with a candidate from the largest group of voters is an equilibrium, since no citizen can win against this candidate. Second, there can be no equilibrium without a candidate from the largest group, since otherwise a citizen of this larger group will run for election and win. Third, an equilibrium where members of the largest and other groups simultaneously run for election cannot exist, since the winning probability of the latter is zero. (b) First, no citizen can win against these candidates. Second, there can be no equilibrium without one candidate from each of the largest groups, since a citizen from the unrepresented group would run for election and win with positive probability. Third, an equilibrium with candidates from

[4] Here and in the following the strong preference symbol is used even if programs are identical, as long as the citizen would vote for the "preferred" program.

groups of different size cannot exist, since candidates of the smaller groups have no chance of winning. QED

Thus the largest groups of citizens supply the political leader, who will then discriminate against all other citizen groups.

If discrimination between districts is prohibited by the constitution, only two strategy variables remain: the income tax rate for mobile citizens and the income tax rate for immobile citizens. Since, on the one hand, the political leader still completely expropriates all citizens of a type other than his or her own and, on the other hand, the degree to which the public good is underprovided decreases as the group of supporters increases, an immobile voter will win the election as long immobile workers are in the majority. However, as this scenario is not very reflective of the real-world situation, which is characterized by substantial interregional distribution, it is of only theoretical interest. Therefore, in the following section, a different limitation of the policy space is analyzed.

5 Policy under constrained discrimination

This section investigates taxation and election when governments cannot discriminate between mobile and immobile citizens. The attitude toward mobility is either not observable or not verifiable; alternatively, a constitutional rule against discrimination could be assumed. Hence, the government budget constraint (2) can be written as

$$(10) \qquad G = \sum_{i=1}^{n} t_i F^i = \sum_{i=1}^{n} \left(1 - \frac{\rho}{F_N^i}\right) F^i \,.$$

A mobile citizen solves

$$(11) \qquad \max_{N_1,\ldots,N_n,\rho,} u^N = \rho + v(G) \text{ s.t. (2), (3), } x_k^N \geq 0 \text{, and } x_k^L \geq 0 \text{, } k = 1, \ldots, n,$$

$$\text{where } t_k^N = t_k^L = t_k, \; k = 1,\ldots,n \,.$$

The following lemma describes the solution:[5]

Lemma 3: The policy choices of a mobile-citizen-led government under a nondiscrimination rule (P_M^{ND}) are characterized by $\left(\sum_{k=1}^{n} F^k / F_N^k\right) v' = 1$.

Furthermore, $t_k = t$ and $F_N^k = F_N$, for $k = 1, \ldots, n$. #

Proof: Using $N_n = \overline{N} - \sum_{j \neq n} N_j$, the first-order conditions of a mobile-citizen-led government are

$$(12.a) \quad \frac{\partial u^N}{\partial \rho} = 1 - \left(\sum_{j=1}^{n} \frac{F^j}{F_N^j} \right) v' = 0 ,$$

$$(12.b) \quad \frac{\partial u^N}{\partial N_k} = \left(F_N^k + \rho \frac{F_{NN}^k F^k}{\left(F_N^k\right)^2} - F_N^n - \rho \frac{F_{NN}^n F^n}{\left(F_N^n\right)^2} \right) v' = 0 , \; k = 1, \ldots, n .$$

Equation (12.a) implies $\left(\sum_{k=1}^{n} F^k / F_N^k\right) v' = 1$. Equation (12.b) is fulfilled for all k if $N_k / L_k = \overline{N} / \overline{L}$ and, thus, $t_k = t$ and $F_N^k = F_N^n$. QED

A government controlled by a mobile citizen will ensure production efficiency, but it will, in general, fail to supply the public good according to the Samuelson rule. If, however, $F_N^k = F_L^k$, for all regions, public good supply would be efficient. The intuition is simple: Multiplying the public-good condition on both sides by ρ and rearranging, it becomes clear that the government taxes income as to ensure that the marginal utility v' of the public good is equal to the mobile politician's share in total net income $\rho / \left(\rho \sum_{k=1}^{n} F^k / F_N^k\right)$. Income taxation and public good supply are used as means of income redistribution. In an equal society where all citizens earn the same income before taxes, no redistribution takes place and the public good is, therefore, supplied efficiently.

Under the nondiscrimination rule, an immobile politician of region i solves

$$(13) \quad \max_{N_1, \ldots, N_n, \rho,} u^N = \rho \frac{F_L^i}{F_N^i} + v(G) \text{ s.t. (2), (3), } x_k^N \geq 0 \text{, and } x_k^L \geq 0 \text{, } k = 1, \ldots, n,$$

where $t_k^N = t_k^L = t_k$, $k = 1, \ldots, n$.

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[5] It will be assumed that second-order conditions hold. By means of simulations it could be easily shown that this is indeed the case for Cobb-Douglas production technology and log utility of public

The following lemma characterizes the solution[6]:

Lemma 4: The policy choices of a government led by an immobile resident of region i (P_{Ii}^{ND}) are characterized by $\left(\sum_{k=1}^{n} F^k/F_N^k\right)v' = F_L^i/F_N^i$.

Furthermore, $t_j = t_{-i}$, for all $j \neq i$, and $t_i < t_{-i}$.

Hence, $N_i/L_i > N_j/L_j = N_n/L_n$, for all $j \neq i$. #

Proof: Again using $N_n = \overline{N} - \sum_{j \neq n} N_j$, the first-order conditions of a government controlled by an immobile resident of region i can be written as

$$(14.a)\quad \frac{\partial u^{Li}}{\partial \rho} = \frac{F_L^i}{F_N^i} - \left(\sum_{j=1}^{n} \frac{F^j}{F_N^j}\right)v' = 0,$$

$$(14.b)\quad \frac{\partial u^{Li}}{\partial N_j} = \left(F_N^j + \rho \frac{F_{NN}^j F^j}{\left(F_N^j\right)^2} - F_N^n - \rho \frac{F_{NN}^n F^n}{\left(F_N^n\right)^2}\right)v' = 0,\ j \neq i,$$

$$(14.c)\quad \frac{\partial u^{Li}}{\partial N_i} = \rho \frac{F_{LN}^i F_N^i - F_{NN}^i F_L^i}{\left(F_N^i\right)^2} + \left(F_N^i + \rho \frac{F_{NN}^i F^i}{\left(F_N^i\right)^2} - F_N^n - \rho \frac{F_{NN}^n F^n}{\left(F_N^n\right)^2}\right)v' = 0.$$

Equation (14.a) leads to $\left(\sum_{k=1}^{n} F^k/F_N^k\right)v' = F_L^i/F_N^i$. Equation (14.b) is fulfilled for all $j \neq i$ if $N_j/L_j = N_n/L_n$ and, thus, $t_j = t_{-i}$ and $F_N^j = F_N^n$. Since the first term on the left-hand side of Equation (14.c) is clearly positive, the uniform tax rate t_{-i} outside region i implies together with Equation (14.c) $t_i < t_{-i}$ and, thus, $N_i/L_i > N_j/L_j = N_n/L_n$, for all $j \neq i$. QED

An immobile citizen uses "tax rate differentiation" to discriminate against immobile residents of other regions. To attract mobile workers to his or her region, the government unambiguously taxes foreign regions at a higher rate: $t_i < t_{-i}$. This tax policy will clearly result in an inefficient distribution of mobile workers. Output is no longer maximized, but within the subset of regions other than region i production efficiency is restored. The ratio of mobile to immobile workers and, therefore, immobile workers' income is higher in region i than elsewhere: $N_i/L_i > N_n/L_n$ and $F_L^i > F_L^n$.

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goods for a wide range of parameters.

[6] Without loss of generality $i \neq n$ is assumed.

Furthermore, an immobile-citizen led government and the mobile-citizen led government supply different quantities of the public good. Depending on the income distribution, the immobile resident may prefer either a larger or a smaller amount than the mobile citizen. If the immobile resident of region i is able to grab a large net income share, $\left(\rho F_L^i / F_N^i\right) / \left(\rho \sum_{k=1}^{n} F^k / F_N^k\right)$, the public good is supplied in small quantity. To further compare both regimes, the following exercise is helpful. Provided that the mobile workers' intensity is the same in all regions other than region i, the following condition holds:

$$(15) \qquad \sum_{k=1}^{n} \frac{F^k}{F_N^k} = \overline{N} + \left[\frac{f(\overline{n})}{f'(\overline{n})} - \overline{n}\right]\left(\overline{L} - L_i\right) + \left[\frac{f(n_i)}{f'(n_i)} - n_i\right] L_i ,$$

where $n_i = N_i / L_i$ and $\overline{n} = \left(\overline{N} - L_i n_i\right) / \left(\overline{L} - L_i\right)$. Differentiating leads to

$$(16) \qquad d\left(\sum_{k=1}^{n} \frac{F^k}{F_N^k}\right) \Big/ dn_1 = \left[\frac{f''(\overline{n}) f(\overline{n})}{\left(f'(\overline{n})\right)^2} - \frac{f''(n_i) f(n_i)}{\left(f'(n_i)\right)^2}\right] L_i .$$

At $n_i = \overline{n}$, this term is simply zero. Thus, a small distortion of mobile workers' choices per se does not affect the denominator of the term that determines the public good supply: $\left(F_L^i / F_N^i\right) / \left(\sum_{k=1}^{n} F^k / F_N^k\right)$. However, an immobile resident whose productivity is quite low will nevertheless fix the income tax rate at a rather high level and will provide a large amount of the public good.

When it comes to a comparison of the two political programs, mobile citizens and immobile residents of region i obviously still prefer the program of the candidate of their own type (which is designed to maximize their utility) to that of any other candidate and, therefore, vote for that candidate: $P_M^{ND} \succ_M P_{Ii}^{ND}$ and $P_{Ii}^{ND} \succ_{Ii} P_M^{ND}$. Preferences of immobile residents from other regions may go in either direction as there is a tradeoff between, on the one hand, inefficiency and distortion towards the immobile candidate's home region and, on the other hand, a possibly higher public good supply. Hence, a preference for the mobile candidate, i.e., $P_M^{ND} \succ_{Ij} P_{Ii}^{ND}$, is a possible outcome, but not the only one. Since at this level of abstraction a preference for the immobile candidate of a different region cannot be ruled out, I carried out simulations with Cobb-Douglas-

Technology and log-utility of public good (for some results, see the Appendix). These simulations strongly support an intuitively appealing preference of immobile bystanders for the mobile candidate: Horizontal tax rate discrimination not only strongly hurts the negatively affected region, but may also be accompanied by lower public good supply. In accordance with these simulations, dominant countervailing public budget effects are assumed away in the remaining part of this section:

Assumption 1: $P_M^{ND} \succ_{Ij} P_{Ii}^{ND}$, for all j, i, with $j \neq i$.

Using this assumption, the main result of the paper, set out in the following proposition, can be derived.

Proposition 2: (a) Irrespective of the number of mobile citizens, a one-candidate equilibrium where the successful candidate is a mobile citizen exists. (b) If $N > L_1$, this equilibrium is the unique equilibrium. #

Proof: (a) If only one immobile resident of region i enters the election game at this equilibrium, the mobile worker will still win the election, since mobile citizens and immobile residents of all regions other than region i vote for the mobile citizen program. (b) Immobile citizens cannot win against a mobile citizen. There is no equilibrium without a mobile-worker candidate, since otherwise a citizen of this type will run for election and win. QED

Although it is possible that no mobile citizen runs for election, the one-candidate equilibrium with a mobile citizen becomes, in a sense, the predominant equilibrium, since it always exists. However, other equilibria may also exist, as is shown in the next proposition, which focuses on the symmetric case: $L := L_n = L_1$.

Proposition 3: If $N < L$, (a) a n-candidate equilibrium exists with one immobile-resident candidate from each region, and (b) no other equilibrium where immobile citizens run for election exists. #

Proof: (a) Because of $N < L$, a mobile citizen would not win against immobile residents without the support of other immobile individuals. However, if there is an immobile candidate from each region, the mobile candidate will not receive any support from

immobile residents. (b) There is no equilibrium where simultaneously mobile and immobile citizens run for election, since both types of citizens cannot receive the same number of votes. Furthermore, if at least one region has no immobile resident among the candidates, a mobile citizen enters and wins the election. QED

Hence, the ban on discriminatory taxation at an individual level may fundamentally change the outcome of the policy stage. If discrimination is allowed, it is simply the largest (homogeneous) group of citizens that will win the election and decide on taxes and public good supply. Anyone who is not member of this dominating group will be totally exploited. If discriminatory taxation at the individual level (but not at the regional level) is forbidden (or simply impossible), the mobile citizen group has a strong advantage over immobile citizens at the policy stage. This holds true even if there are only very few mobile voters surrounded by a large number of immobile voters. Mobile citizens are not willing to discriminate against a particular region because doing so will hurt them. Thus, from the perspective of immobile citizens with no candidate in the race, when the contest is between a mobile citizen and an immobile resident of another region, the mobile citizen is the lesser of two evils.

As a consequence, if the ban on discriminatory taxation itself is subject to majority voting, it will most likely be approved. If $L_1 < N < \sum_{k=1}^{n} L_k$, the majority of society would opt for this ban, since a mobile candidate will win the election no matter what, but immobile citizens will benefit from the ban. If $N < L_1$, the ban may still be approved, since mobile citizens and all immobile citizens except the largest group of immobile residents will benefit from the ban if the outcome of the election is a mobile-citizen-led government. However, even if an immobile citizen from the largest group wins the presidency, all other citizens might benefit from the anti-discrimination rule if the efficiency loss caused by tax-rate differences across regions is not too large and if the immobile candidate does not completely exploit the other regions.

If contrary to what has been assumed so far $P_{Ii}^{ND} \succ_{Ij} P_{M}^{ND}$, for all j, i, with $j \neq i$, holds, mobile candidate will lose and immobile residents of the largest region will gain electoral power. An equilibrium where only a mobile candidate appears cannot exist,

since some immobile rival candidate would run for office and win the election. Furthermore, in a symmetric setting, where $L := L_n = L_1$, the unique equilibrium at the policy stage is a n-candidate equilibrium with one immobile candidate from each region provided that $L > \overline{N}$. Every smaller set of candidates would attract further candidates.

6 Summary and discussion

This paper analyzed inter- and intraregional redistribution in a centralized state using the citizen-candidate model, with a focus on conflicting interests between regions and between citizens of different mobility. First, policies were analyzed under an assumption of nearly non-restricted discrimination. If there is (or can be) discrimination both with respect to the place of residence and with respect to degree of mobility, diversity of interests is high. It was shown that under the plurality rule and assuming sincere voting, the largest socioeconomic group of citizens will provide the winning candidate and then discriminate against all other groups. A second analysis was performed, this time including the condition that discrimination with respect to degree of mobility is prohibited and the results revealed that mobile citizens might gain power in this situation. In fact, it becomes much more likely that the winning candidate is a mobile citizen even if the total number of mobile citizens is small compared with the number of immobile residents of each region. This is because mobile citizens are not interested in regional asymmetric distribution of the tax burden; as a consequence, interregional redistribution is reduced.

To obtain clear-cut results, the paper made use of several simplifications. First, local public goods offer opportunities to discriminate against groups and regions, particularly if preferences for local public goods differ across socioeconomic groups. Second, the paper assumes proportional taxation. If the law permits a regressive redistribution system, immobile residents are less willing to vote for representatives of highly productive mobile citizens (since redistribution from immobile to mobile could be realized by a regressive tax system). Third, the degree of mobility is not a perfectly observable property. An immobile candidate may try to pass himself or herself off as a mobile citizen. However, given the intense media scrutiny of candidates in major elec-

tions, the truth as to a candidate's mobility (or lack thereof) is almost certain to come out during the campaign.

Finally, although this paper's perspective is a theoretical one, several of its propositions are empirically testable. Governors of states with a majority of immobile residents, and candidates from parties having a strong local attachment not present in other regions, should be comparatively unsuccessful in a presidential election, since they can be classified as "immobile" candidates. As far as identifying an "immobile" region goes, the following characteristics should prove helpful: labor force employment in agriculture, fishery, and mining, an only locally spoken language, and ethnic concentration.

References

Besley, T. and S. Coate (1997). An economic model of representative democracy. *Quarterly Journal of Economics* 112. 85–114.

Besley, T. and S. Coate (2003). Centralized versus decentralized provision of local public goods: A political economy approach. *Journal of Public Economics* 87. 2611–2637.

Buchanan J. and G. Tullock (1962). *The calculus of consent*. University of Michigan Press. Ann Arbor.

Hindriks, J. (1999). The consequences of labor mobility for redistribution: Tax versus transfer competition. *Journal of Public Economics* 74. 215–234.

Lockwood, B. (2002). Distributive politics and the benefits of decentralization. *Review of Economic Studies* 69. 313–337.

Lorz, O. and S. Nastassine (2007). Citizen candidate mobility and endogenous local policy. *Public Choice* 132. 27–47.

Osborne, M. J. and A. Slivinsky (1996). A model of political competition with citizen-candidates. *Quarterly Journal of Economics* 111. 65–96.

Persson, T. and Tabellini, G. (2000). *Political economics: explaining economic policy*. MIT Press. Cambridge, MA.

Riker, W. (1962). *The theory of political coalitions*. Yale University Press. New Haven.

Shankar, R. and A. Shah (2003). Bridging the economic divide within countries: A scorecard on the performance of regional policies in reducing regional income disparities. *World Development* 31. 1421–1441.

Shepsle, K. A. and B. R. Weingast (1981). Political preferences for the pork barrel: A generalization. *American Journal of Political Science* 25. 96–111.

Weingast, B. R. (1979). A rational choice perspective on congressional norms. *American Journal of Political Science* 23. 245–262.

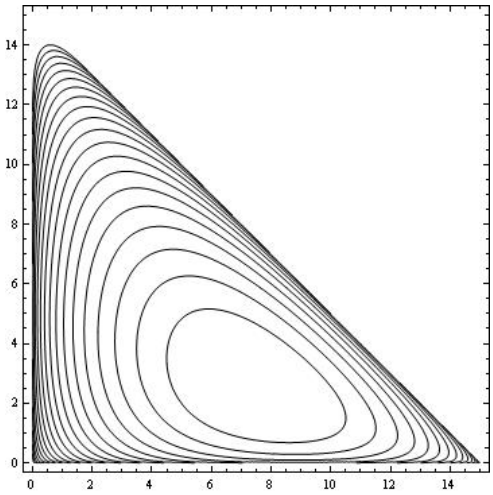
Wildasin, D. E. (1991). Income redistribution in a common labor market. *American Economic Review* 81. 757–774.

Wrede, M. (2006). Uniformity requirement and political accountability. *Journal of Economics* 89. 95–113.

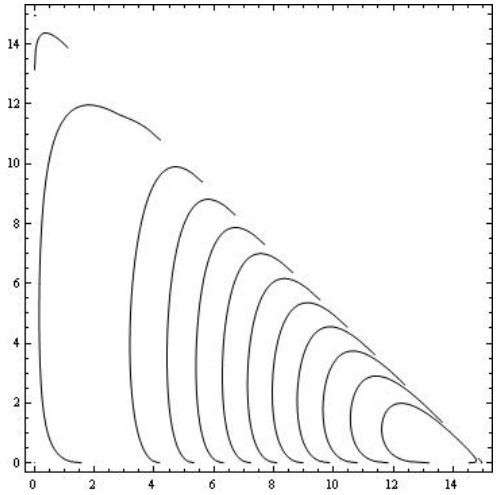
Appendix

To simulate the policy choices under a ban on discrimination, Cobb-Douglas technology, $F(N,L) = N^{\alpha}L^{1-\alpha}$, and log-utility of the public good, $v(G) = \beta \ln G$, is assumed. The benchmark parameters are $\alpha = 0.5$, $\beta = 0.1$, $\overline{N} = 15$. Here, an asymmetric setting is analyzed: $L_1 = 15$, $L_2 = 5$, and $L_3 = 10$. Results are shown for a mobile-citizen led government and a government led by an immobile resident of region 1. In figure 1 the indifference curves of the leaders are depicted (assuming that ρ is optimally chosen), where N_1 is on the horizontal axis and N_2 on the vertical axis. Table 1 summarizes the crucial variables.

Figure 1: Indifference curves



Mobile politician



Immobile politician from region 1

Table 1: Policy choices

	Mobile politician	Immobile politician from region 1
ρ	0.61	0.52
G	3.00	3.30
N_1	7.50	13.64
N_2	2.50	0.45
u^N	0.72	0.64
u^{I1}	0.41	0.59
u^{I2}	0.41	0.17
u^{I3}	0.41	0.17