Multiethnic Democracy*

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Abstract

Ethnically divided jurisdictions tend to provide fewer public goods than homogenous ones. This paper presents a model of public goods provision in an economy with ethnic divisions under majority voting. I find that the level of public goods may be lower in ethnically divided economies with majority voting if ethnically based transfers are allowed. When group specific transfers are not allowed, the link between ethnic divisions and public goods is broken. Regardless of whether transfers are allowed or not, majority voting provides an efficient level of public goods. If transfers are allowed, policy favors some households over others. Fairness requires that transfers be eliminated.

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1 Introduction

As more countries attempt to make the transition to democratic rule, there has been concern about the institutions required to govern multiethnic democracies. Ethnically divided countries seem to be more difficult to govern. They tend to be poorer (Easterly and Levine (1997)), have poorer institutions (Mauro (1995), La Porta, et al. (1999)) and fight more civil wars (Elbawadi and Sambanis (2002)).

This paper examines the ability of multiethnic democracies to provide public goods. Many have argued that public goods are more difficult to provide in the presence of ethnic divisions. Alesina and La Ferarra (2004) survey the empirical literature in a number of countries and levels of government and find that there are fewer public goods in ethnically divided jurisdictions.

This paper develops a theory to explain why ethnic divisions lead to lower provision of public goods. I argue that public goods are more difficult to provide in ethnically divided economies because there is a tension between providing public goods and redistributing wealth. Other ethnic groups provide a source of resources that a group wishes to transfer to itself. Ethnic divisions reduce public goods by diverting public spending to transfers. Eliminating ethnic redistribution eliminates the relationship between ethnic divisions and public goods.

In this paper, I examine public goods provision under majority voting in ethnically divided economies. I consider a simple static endowment economy. Households are exogenously assigned to an ethnic group. They vote on tax, subsidy and public goods spending policy.

The model generates a number of results. I show that if group specific transfers are allowed, public goods may be lower in ethnically divided economies. When transfers are allowed, a group can redistribute other groups' resources to itself. In ethnically divided economies, the group that determines public spending policy is smaller than in homogenous ones. When this group is large, the cost to each member to fund a fixed level of public goods is smaller. Since the cost to a member household is lower, larger groups are willing to fund higher levels of public goods.

However, if group specific transfers are not allowed, the relationship between ethnic divisions and public goods is broken. When groups cannot use public spending for transfers, no funds are diverted to redistribution. Policy preferences are divorced from the ethnic structure of the economy. The most preferred policy of all households is the same regardless of the ethnic makeup of the economy and the level of public goods is unaffected by ethnic divisions.

Majority voting provides a Pareto optimal level of public goods provision, both when transfers are and are not allowed. Given the proper weights on households, the maximization problem that generates the winning policy is identical to the social planner's problem. However, members of different groups are not treated the same under the two mechanisms. When transfers are allowed, some households are favored over others. To ensure fair outcomes under voting, ethnic transfers must be prohibited.

2 Evidence

2.1 Theory of Ethnicity

Despite wide interest in ethnic divisions, there is no generally accepted theory or definition of ethnicity. In the literature, theories of ethnicity are often divided into two categories: primordialist and instrumentalist.

Primordialist theories argue that the distinctions between ethnic divisions come from fundamental differences between members of different groups. There may be a sense of "fellow feeling" or altruism among members of a group. Alternatively, members of different groups may simply have different preferences over goods. Within the context of public goods, different ethnic groups may like different public goods. Alesina, Baqir and Easterly (1999) cite the conflict over the Ebonics curriculum in Oakland public schools in 1996 as an example. Primordialist theories tend to emphasize kinship links among group members.

Instrumentalist theories argue that ethnic groups are coalitions of people who act together to achieve a goal such as mutual protection. Members of different groups do not have different preferences, they simply have joined different groups. Instrumentalist theorists emphasize the fact the many ethnic groups are relatively recent creations, including the Igbo in Nigeria and Manyika in Zimbabwe. (Posner (2003))

In this paper, I use a theory of ethnicity that is a synthesis of the two approaches.

While members of an ethnic group do not have different preferences than members of other groups, they do have an observable and permanent (but inessential) mark. This approach accords theory that claims ethnic groups are coalitions (as in the instrumentalist view) that use heritable marks to prevent free riding (as in the primordialist view). Examples of this type of theory include Caselli and Coleman (2001) and Fearon (1999).

2.2 Measuring Ethnic Divisions

Before discussing the affect of ethnic divisions on public goods, we must define a measure of ethnic divisions. The most common measure in the literature is Ethnolinguistic Fractionalization (ELF). ELF is calculated as follows. A country's total population N is divided into J groups, with each group's population denoted by N_i. ELF is given by

$$ELF = 1 - \sum_{j=1}^{J} \left(\frac{N_j}{N} \right)^2 .$$

This variable increases as (1) more groups are added (J increases) and (2) when the populations of groups become more equal. The theoretical experiments in this paper are constructed to correspond to changes in ELF.

2.3 Literature

Alesina and La Ferrara (2004) survey the empirical literature on ethnic heterogeneity and public goods and find that ethnically heterogenous jurisdictions generally spend less on public goods and that the spending is less effective[1].

A large part of the literature examines the effects of ethnic diversity on public spending. One strand uses data from localities. For example, Alesina, Baqir and Easterly (1999) find that ethnic diversity affects the composition of public goods provided in cities in the United States. Greater ethnic diversity is associated with lower provision of productive public goods. Poterba (1997) finds that local jurisdictions in the United States with a higher share of elderly residents decreases spending on local schools. The

[1] The discussion that follows is not comprehensive. Alesina and La Ferrara (2003) provide a more detailed survey of the literature.

effect is particularly strong if school aged children are of a different race than that of the elderly. Miguel (2001) finds that higher local ethnic diversity in Kenyan school districts leads to lower funding and worse school facilities. Another strand examines cross country data. McCarty (1993) finds that ethnically diverse countries spend less on public goods.

There is a literature looking at the effects of heterogeneity on the productivity of governments. Kuijs (2000) argues that nations with higher levels of ethnic diversity have less efficient public goods. Spending is less effective in the sense that each unit of spending on a public good brings fewer results. For example, health spending in a ethnically fractionalized community will result in worse health outcomes than in a homogenous one. LaPorta, et al. (1999) find that governments in ethnically diverse countries are perceived as being less effective.

Ethnic divisions are also associated with ethnically based transfers. There have been a number of cases where public policy has explicitly treated ethnic groups differentially. In some instances, publicly provided goods are segregated by race. Examples include the Jim Crow American South and Apartheid South Africa. In other cases, the wealth of particular ethnic groups are expropriated. Examples include Idi Amin's expropriation of South Asians in Uganda and Mobutu's "Zairianization" program in the Congo (formerly Zaire).

However, transfers are not always explicit. If ethnic groups are geographically concentrated, the government can concentrate spending in districts dominated by favored groups. For example, Barkan and Chege (1989) examine public spending in Kenya in the 1980s. Kenya is ethnically divided and the population is relatively segregated by district. There is some data on public spending by district. They compare the public expenditures by region after Daniel arap Moi, a Kalenjin, replaced Jomo Kenyatta, a Kikuyu, as President of Kenya in 1978. In the 1979/80 budget, 44 percent of road construction went to districts the authors identify as part Kenyatta's ethnic base compared to 32 percent for Moi's base. By the late 1980s, the percentages had shifted to around 20 percent and 65 percent respectively. (The populations of the two areas were equal.)

Redistribution also takes the form of patronage. Alesina, Baqir and Easterly (2000) find that racially heterogeneous localities in the United States have larger public employment than homogenous ones. They suggest that this is a transfer to ethnically defined interest groups. Changes in ethnicity of the leadership of cities in the United States provides additional evidence. Eisinger (1980) finds that cities that elect African-American mayors expand public employment of minorities faster than other cities. The portion of public contracts that went to minority owned firms also expanded rapidly. Erie (1997) shows that Irish control of city governments in the late nineteenth century led to large increases in Irish public employment.

3 Model

There is a single period. At the beginning of the period, each household is endowed with a unit of output ω. Output can be divided between two goods: a private consumption good c and a public good G.

3.1 Households

There are N households. Each household is a member of an exogenously given group. There are J groups. The name of the group household i belongs to is $j(i)$. There are N_j members in group j.

3.2 Preferences

Households have preferences over its consumption of the private consumption good and the public good. These preferences are represented by:

$$U = u(c_i) + v(G) \tag{3.1}$$

Preferences satisfy a few standard assumptions. The functions u and v are strictly increasing and C^2. The function u is strictly concave and $\lim_{c \to 0} u'(c) = \infty$. The function v is concave.

3.3 Mechanism

Public goods are provided by a government using taxation. The government's tax and spending policy is determined by majority voting.

A policy is a tax schedule $\{\tau_i\}_{i=1}^{I}$ and a level of the public good G. Each household simultaneously votes for one policy. The policy with the most votes is enacted. In the case of ties for first place, a policy is chosen at random from the set of winners with equal probability of each policy winning.

I restrict attention to policies that are feasible. Taxes may not be greater than income: $\tau_i \leq 1$, for all i. In addition, the level of public goods must be feasible given the tax schedule: $\sum_{i\in I} \tau_i \omega = G$. Note that negative taxes (subsidies) are possible.

Let Π be the space of feasible policies and π be an element of that space. Majority voting is a mechanism Λ that maps policy votes into a policy. Formally, $\Lambda : \Pi^I \to \Pi$.

4 Equilibrium

4.1 Definition

The majority voting mechanism defines a game between households. A strategy for a household is a policy vote π_i and the payoff is the utility for the resulting policy. Let $\overline{\pi} = \{\overline{\tau_i}\}, \overline{G}$. Define $U_i(\overline{\pi}) = u(\omega(1 - \overline{\tau_i})) + v(\overline{G})$. I analyze Nash equilibria of this game.

Definition 4.1. *An **equilibrium** is a vector of policy votes $\{\pi_i^*\}_{I=1}^{I}$ and a policy outcome π^* such that:*

1. $\Lambda(\{\pi_i^*\}_{I=1}^{I}) = \pi^*$.
2. *For each household,* $U(\Lambda(\pi_i^*, \pi_{-i}^*)) \geq U_i(\Lambda(\pi', \pi_{-i}^*))$ *for all* $\pi' \in \Pi$.

It is possible that households may not vote their true preferences and vote for policies that are not their most preferred policy. Equilibria such that each household votes its true preferences are called truthful.

Definition 4.2. *An equilibrium is **truthful** if for each household's vote π_i^*, $EU_i(\pi_i^*) \geq EU_i(\pi')$ for all $\pi' \in \Pi$.*

4.2 Existence

I vary ethnic divisions along two margins. I analyze the case with two groups of different sizes and the case with an arbitrary number of groups of equal size. These cases capture the two major ways in which the variable ELF can be increased: Making groups more equal and adding groups. Therefore, variation in ethnic divisions in the theoretical results match the variation in the data used in most empirical work.

Formally, I will analyze the case where $J = 2$ and N_j varies and the case where $N_j = \frac{N}{J}$ holding the total population N constant. There is a potential problem with the second case in that N_j may not be an integer. While the interpretation of fractional households (and votes) may be problematic, it does not affect the mathematics of the results. Therefore, I will ignore these concerns in what follows. Further, I assume that $N_j > 1$ for all j throughout. This assumption eliminates trivial cases where a group is a single (or fraction of a) household.

I show that an equilibrium exists for these cases under certain restrictions on policy. I impose restrictions that require that similar households must be taxed at the same rate. I will consider two equal treatment restrictions: group specific and anonymous taxes.

Group specific taxes is the less restrictive equal treatment condition. It requires that all members of a group be taxed at the same rate. A *group specific tax schedule* is a vector of taxes such that $\tau_i = \tau_{i'}$ for all i, i' such that $j(i) = j(i')$.

Anonymous taxes require all households, regardless of group, to be taxed at the same rate. An *anonymous tax schedule* is a vector of taxes such that $\tau_i = \tau_{i'}$ for all i, i'.

In general, there is not a unique equilibrium. It will typically be the case that a household's vote will not affect the outcome of the mechanism. That is, that household's vote is not decisive. Formally, a voter i is *decisive* if $\Lambda(\pi_i, \pi_{-i}) \neq \Lambda(\pi_i', \pi_{-i})$ for some policy pair $\pi_i, \pi_i' \in \Pi$, where $\pi_i \neq \pi_i'$. Unless it is decisive, a household is indifferent to voting for any policy.

There is a great deal of multiplicity of equilibria, since the lack of decisiveness can generate perverse self-fulfilling equilibria. In fact, any admissible policy is an outcome of majority voting. If all households vote for a policy, no household will be decisive. Therefore, no household has an incentive to deviate and the vote is an equilibrium. I will concentrate on truthful equilibria.

4.2.1 Group Specific Taxation

The following lemmas show that with the equal treatment restrictions each group has a most preferred policy.

Lemma 4.3. *If policies are restricted to group specific taxes, then there exists a most preferred policy for each group.*

Proof. A policy under the restriction is summarized by $\{\tau_1, ..., \tau_J\}$. WLOG, let $j(i) = 1$. A policy generates a level of public goods according to

$$\omega[\sum_{j=1}^{J} N_j \tau_j] = G$$

Obviously, $\tau_j = 1$ for $j \neq 1$. Therefore, the own group tax rate τ_1 is the solution to:

$$\max_{\tau_1} u((1-\tau_1)\omega) + v(G) \tag{4.1}$$
$$\text{s.t.}: \ \omega[\tau_1 N_1 + \sum_{j=2}^{J} N_j] = G$$

Under the concavity assumptions, this problem has a unique solution. □

Group specific taxation aligns the incentives of the members of each group. Without the restriction, each household would have its own preferred policy where it paid little or no tax (perhaps even received a subsidy) while other households funded public spending. Group specific taxes prevents households from voting for policies with individual subsidies.

The preferred policies are very stark, with taxpayers outside the group facing 100 percent taxation. In reality, there are number of reasons that taxes are not 100 percent, including distortions, evasion and institutional limits on taxation. However, the lemma does capture the intuition that minority taxpayers contribute more to public spending than those from the majority.

I first consider voting with two groups. The following proposition shows that a truthful equilibrium exists.

Proposition 4.4. *Let $J = 2$ and $N_1 \neq N_2$. If the policy be restricted to either group specific taxes, then a truthful equilibrium exists.*

Proof. First, I show that if all other households vote truthfully, then voting truthfully is a weakly dominant strategy. If a household is not decisive, its vote does not affect the policy selected and it is indifferent to any vote. Only majority households can be decisive. If a majority household is decisive and all other majority households are voting for the majority's most preferred policy, it is a dominant strategy to also vote for the majority's most preferred policy.

By the lemma, both groups have a most preferred policy. The larger group has a majority and the most preferred policy its members will always win under majority voting. $\square$

With two groups, one group is a majority unless the population is evenly split. Since each member of a group has the same preferred policy, the majority's favored policy will always win.

A truthful equilibrium also exists when there are more than two groups.

Proposition 4.5. *Let $N_j = \frac{N}{J}$. If policies are restricted to group specific taxes, then a truthful equilibrium exists.*

Proof. If all other households vote truthfully, then voting truthfully is a dominant strategy. Since all groups are the same size, each household is decisive. Each group is the same size, so if each household votes truthfully there is a tie between J different policies. Under the tie breaking rule, there is $\frac{1}{J}$ probability that a household's preferred policy $\tau^*_{j(i)}, G^*$ is enacted. If it does not, its its most preferred policy will not be enacted.

A household will not want to deviate from a truthful vote. Note that all households prefer the same level of public goods (G^*). If a household votes for another policy, another group's most preferred policy will be enacted. Therefore $\tau_i = 1$ and $c_i = 0$ The expected utility of a deviation is $u(0) + V(G^*)$ which is less than the expected utility of the household's most preferred policy: $\frac{1}{J}u((1-\tau^*_{j(i)})\omega) + (1-\frac{1}{J})u(0) + V(G^*)$. (Note that $\tau^*_{j(i)} < 1$ due to the Inada condition on $u(c)$.) Therefore voting truthfully is a dominant strategy for each household if other households vote truthfully and a truthful equilibrium exists. □

When groups are the same size, each group most preferred policy ties under truthful voting. The tie breaking mechanism randomizes over these policies. A household is strictly better off with a chance of its policy being enacted compared to any other vote. Therefore, truthful voting is a dominant strategy when other households vote truthfully.

4.2.2 Anonymous Taxation

There is a similar lemma when policy is limited to anonymous taxation.

Lemma 4.6. *Let $\tau_i = \tau_{i'}$ for all i, i'. Then there exists a most preferred policy for each group.*

Proof. A policy under the restriction can be summarized by τ. A household's most preferred policy is the solution to:

$$\begin{aligned} &\max_{\tau} u((1-\tau)\omega) + v(G) \qquad (4.2) \\ \text{s.t. :}\ &\omega\tau N = G \end{aligned}$$

Under the concavity assumptions, this equation has a unique solution. □

The intuition for this result is similar to that of the previous lemma. Under group specific taxation, households are prevented from voting for policies that benefit them individually at the expense of other households. With anonymous taxation, they are prevented from voting for policies that benefit their group at the expense of other groups. Policy can be summarized by a single tax rate.

A truthful equilibrium exists under anonymous taxation.

Lemma 4.7. *It taxes are restricted to anonymous taxation, then a truthful equilibrium exists.*

Proof. If all other households vote truthfully, then truthful voting is a weakly dominant strategy. Since all households have the same preferences, all other votes are the same. Therefore, the household is not decisive and voting truthfully is weakly preferred and a truthful equilibrium exists. □

Under anonymous taxation, the preferred policy of each group is the same. Under truthful voting, all households vote for the same policy. No household is decisive, so any vote yields the same utility. Therefore, truthful voting is an equilibrium.

5 Results

This section analyzes the relationship between ethnic divisions and public goods provision.

5.1 Group Specific Taxes

I begin by examining public goods provision when transfers are allowed. I put more structure on the model by analyzing a CES utility function. The following proposition shows that ethnic divisions are associated with a lower level of public goods with group specific taxes.

Proposition 5.1. *Let $J = 2$ and $N_1 \neq N_2$. Let $u(c) = \frac{c^{1-\sigma}}{1-\sigma}, \sigma \in (0,1)$ and $v(G) = B(G)^\theta, \theta \in (0,1]$. If taxes are restricted to group specific schedules, then $G^*(N_1') > G^*(N_1)$ if $N_1' > N_1$ and $G^*(N_1') > 0$.*

Proof. Under the concavity conditions, if a preferred policy is interior the first order conditions are necessary and sufficient. Further, the only non-interior solution possible is $G = 0$. The condition $G^*(N_1') > 0$ eliminates the trivial case of no public goods provision. If $G^*(N_1) = 0$, the result follows trivially.

The majority's policy will always win. If $G^*(N_1) > 0$, the level of public goods is determined by the majority's preferred policy problem. The first order conditions of the majority's preferred policy problem are:

$$u'(c_1) = N_1 v'(G)$$

Let $G(N_1') = \gamma_G G(N_1)$ and $N_1' = \gamma_N N_1$. The first order conditions given N_1' can be written as

$$u'(c_1') = \gamma N_1 v'(\gamma_G G(N_1))$$

Comparing the first order conditions for each N_1 yields:

$$\frac{u'(c_1')}{\gamma_N v'(\gamma_G G(N_1))} = \frac{u'(c_1)}{v'(G(N_1))}$$

Under the given functional forms and imposing the feasibility constraints, this expression yields:

$$\frac{\gamma_G^{\frac{1-\theta}{\sigma}}}{(N\omega - \gamma_G G(N_1))} = \frac{\gamma_N^{\frac{1-\sigma}{\sigma}}}{(N\omega - G(N_1))}$$

Since $\sigma \leq 1$ and $\gamma > 1$, $\gamma_N^{\frac{1-\sigma}{\sigma}} > 1$. The left hand side is strictly increasing in γ_G. For the expression to be true, $\gamma_G > 1$. Therefore, public goods provision is higher when group one is larger.

□

Group specific taxation allows for transfers of private consumption. The majority can expropriate the minority's resources and treat it as its own for a mix of private consumption and the public good.

There are two effects: a substitution effect and an income effect.

When the majority is large, the cost to each member to fund a fixed level of the public good is smaller. The contribution is spread out over a large number of households. Since the cost to a member household is lower, larger majorities are willing to fund a higher level of the public good.

The income effect runs counter to the substitution effect. A smaller minority means that there are fewer resources for the majority to expropriate. A larger majority implies that member households are "poorer," net of available transfers. The amount that each majority household can expropriate is lower. The public good is a normal good. When members of the majority are richer they prefer more of it.

The level of public goods depends on which force dominates: the income effect or the substitution effect. The elasticity of private consumption determines which effect dominates. When demand of private consumption is inelastic ($\sigma < 1$), the size effect dominates and public goods are higher with greater ethnic homogeneity.

A similar result can be proven for an arbitrary number of groups.

Proposition 5.2. *Let* $N_j = \frac{N}{J}$. *Let* $u(c) = \frac{c^{1-\sigma}}{1-\sigma}, \sigma \in (0,1)$ *and* $v(G) = B(G)^{\theta}, \theta \in (0,1]$. *If taxes are restricted to group specific schedules, then* $G^*(J') < G^*(J)$ *if* $J' > J$ *where* $G^*(J) > 0$

Proof. Similar to $J = 2$ case. □

When groups are the same size, no group is assured of winning the vote as they are in the two group case. However, the forces at work in determining a household's most preferred policy is the same. Therefore, the intuition for this proposition is the same as in the two group case.

While the policy that is chosen depends on how ties are resolved, the relationship between ethnic divisions and public goods is more robust. All groups prefer the same level of public goods. Policies conflict only on the relative tax burden of each group. Alternative tie breaking rules, assuming that they induce truthful voting, would reproduce the result.

5.2 Anonymous Taxation

Anonymous taxes eliminate the ability of any group to expropriate other groups. If all taxpayers must be treated equally, the majority cannot use the minority as a source of funds. There is no longer a conflict between private transfers and public spending. Equal treatment breaks the link between the distribution of the population and the level of public goods. The level of public goods is the same for any arbitrary distribution of the population.

Proposition 5.3. *Let* $J(k)$ *and* $N_{j(k)}$ *define two distributions of groups where* $\sum_j N_{j(k)} = N$ *for* $k = 1, 2$. *Let* $G^*(k)$ *be the equilibrium level of public goods under anonymous taxation given distribution* $k = 1, 2$. *Then* $G^*(1) = G^*(2)$.

Proof. Given a distribution of groups, all households have the same most preferred policy. Therefore that policy will win in truthful voting. Moreover, the most preferred policy is the same regardless of the distribution of groups. □

Anonymous taxation requires that all households be taxed at the same level. Therefore, the problem that determines most preferred policy is the same for members of different groups. Under truthful voting, all households vote for the same policy.

The most preferred policy is the same regardless of the distribution of groups. Since there cannot be group specific taxes, the distribution of groups becomes irrelevant to a household's policy preferences. Redistribution is the only policy margin where ethnic divisions matter. Without group based transfers, policy preferences are divorced from the ethnic structure of the economy. The most preferred policy of all households is the same regardless of the ethnic makeup of the economy. Since all households have the same preferences, this policy wins in truthful voting and the equilibrium level of the public good is invariant to the distribution of the economy.

6 Welfare

In this section, I examine welfare and show that voting generates Pareto optimal allocations.

Pareto optimal allocations are defined by the solution to the social planner's problem. Let α_i be the weight that the social planner puts on household i's utility. The social planner solves:

$$\max \sum_{i=1}^{I} \alpha_i \left[u(c_i) + v(G) \right]$$
$$\text{s.t.}: \quad \sum_{i=1}^{I} c_i + G \leq N\omega$$

The level of the public good provided using the majority voting mechanism is Pareto efficient in all the cases considered above. This result is true despite the fact that the level of public good provided is different under group specific and anonymous taxation. While they are both Pareto efficient, the implied weights of the social planner are different. I begin by considering the group specific taxation.

Proposition 6.1. *Let $J = 2$. Let $N_1 \neq N_2$. If taxes are restricted to group specific schedules, then the outcome of the voting is Pareto optimal.*

Proof. WLOG, let $N_1 > N_2$. Under majority voting, each household in a group gets the same consumption. Therefore, the social planner's weights are the same for each member of a group. Define $\alpha_{j(i)} = \alpha_i$ for $i \in j(i)$. Consider the social planner's weights $\alpha_1 = 1, \alpha_2 = 0$. Clearly, in the solution to the planner's $c_2 = 0$. This problem can be rewritten as:

$$\max_{c_1} u(c_1) + v(G) \tag{6.1}$$
$$\text{s.t.}: \ c_1 N_1 + G = N\omega$$

Redefining $c_1 = (1 - \tau_1)\omega$, the planner's problem is the same as the household's problem in the decentralized problem under group specific taxation. □

A similar result can be shown for the case with an arbitrary number of groups.

Proposition 6.2. *Let $N_j = \frac{N}{J}$. If taxes are restricted to group specific schedules, then the outcome of the voting is Pareto optimal.*

Proof. The realized policy is a random draw. Let i^* be group whose most preferred policy wins. Similar to $J = 2$ case, the social planner's problem can be rewritten to be the same as the household's problem for members of group i^*. □

With group specific taxes, the voting mechanism generates the same results as a social planner that only puts positive weight on the group whose policy wins. The other groups are expropriated and the proceeds are spent to maximize the utility of the winning group.

The outcome under anonymous taxation is also Pareto optimal.

Proposition 6.3. *If taxes are restricted to anonymous schedules, then the outcome of the voting is Pareto optimal.*

Proof. Consider the social planner's weights $\alpha_j = 1$ for all j. Under this restriction, all households will receive the same consumption. The social planner's problem is:

$$\max_c u(c) + v(G) \tag{6.2}$$
$$\text{s.t.}: \; cN + G = N\omega$$

Redefining $c = (1 - \tau)\omega$, the planner's problem is the same as the household's problem in the decentralized problem under anonymous taxation.

□

The intuition for this result is the same as the group specific taxation results. Given the proper weights on households, the problem that generates the winning policy is the same as the social planner's problem. Anonymous taxation requires equal weight on all households.

While voting under both group specific and anonymous taxation generates Pareto optimal outcomes, the allocations are different. Group specific taxation strongly favors one winning group and ignores all other groups. Anonymous taxation requires that each household be treated the same.

The theory provides a possible explanation for the use of public employment for redistribution even though it is an inefficient means of transfers. The ruling group would prefer a system that allows group specific treatment. However, there are often constraints that prevent explicit ethnic transfers. These constraints include political constraints such as the threat of armed resistance and legal constraints such as the 14th Amendment of US Constitution, which requires states to treat ethnic groups equally. Redistributive public employment may allow the ruling group to maintain the appearance of equal treatment while reintroducing group specific treatment. Overstaffing public projects with ethnic clients acts as de facto group specific treatment.

This analysis is related to Coate and Morris (1995). They present a model where politicians have an incentive to make transfers to special interests and voters have imperfect information about politicians and the effects of public spending and show that politicians may use inefficient, opaque means of transfers. While they do not emphasize ethnic special interests, their analysis may apply to ethnically divided jurisdictions.

Politicians have an incentive to make transfers to their ethnic base while voters typically have imperfect information about the most efficient level of public employment.

Since the model is an endowment economy, taxation is not distorting. The welfare results are not sensitive to this fact. The results obtain for a case with endogenous labor supply. Under the restrictions given in the model, voting acts as a social planner with different weights on individuals depending on the particular restrictions. This artificial social planner's (second best) solution will be the same as the actual social planner's even with the addition of endogenous labor.

7 Conclusion

This paper develops theory to explain why public goods provision is lower in ethnically divided countries. Ethnic coalitions may divert public resources away from public goods to ethnically based transfers. Those transfers make the outcomes of democratic voting unfair despite each person having a vote. Requiring equal protection eliminates the effect of ethnic divisions on public goods. In addition, it ensures that the outcome of the democratic process is fair.

Liberal democracy is typically conceived of as requiring more than giving each person a vote. Government policy should treat each citizen equally. Majority voting alone is insufficient for the political process to be fair when there are ethnic divisions. Policy must be constrained to prevent ethnic transfers to ensure fair outcomes.

The theory provides guidance for creating institutions in multiethnic democracies. While there are tensions between ethnic groups that do not exist in homogenous democracies, the effect of these tensions on policy outcomes can be eliminated by enforcing equal protection.

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