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Institutions and Group Identity

PRELIMINARY DRAFT

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Abstract

In this paper I model the effect of institutional design on ethnic identification in a setting in which ethnicity is a strategic choice. I first provide an existence result for pure and mixed strategy equilibria of a general form of the game. I then apply the model to a setting where individuals face a trade-off between ethnic and nationalistic identification. Predictions are made about the types of groups that should be institutionally favored when the institutional goal is to minimize the likelihood of ethnic identification and maximize the likelihood of identification with the state.

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1 Introduction

Empirically, the formation of political attitudes has been strongly linked to the concept of group identification. Classifications such as race, gender, religion and ethnicity have been shown to be sharp predictors of many aspects of political life including who turns out to vote, how people vote, and the issues that are important to people. Furthermore, many topics that are of interest to political scientists, such as leadership, majority-minority relationships, and coalition formation, are fundamentally group phenomena.

This paper explores the relationship between political institutions and group identification and conflict. It is an important relationship because individual perceptions of institutional features such as procedural justice and distributive equity have been shown capable of heightening or easing levels of intergroup conflict in certain circumstances. I begin with the observation that every individual simultaneously belongs to a large collection of groups, and yet we all choose to associate with some groups more than others. If these choices are partly dependent on political context then the questions of why we make associative choices and how these choices affect our political attitudes and preferences have important consequences for institutional design.

Grofman and Stockwell write “Those who hold out hope for democracy in plural societies are virtually unanimous in their belief that institutional design is the key to avoiding disaster...”[8] The drafters of the United States Constitution wrote of the need to design institutions that would mitigate the problem of “factions.” Madison conceived of factions as:

... a number of citizens, whether amounting to a majority or minority of the whole,

who are united and actuated by some common impulse of passion, or of interest, adverse to the rights of other citizens, or to the permanent and aggregate interests of the community. [10]

Similarly, in recent times experts have been called upon to design political systems to help ameliorate ethnic rivalries and tensions. Playing in to the design of these systems are issues of representation, legitimacy, political moderation and feasibility. For example, United Nations electoral specialist Carina Perelli decided upon a single-district list system of proportional representation for the first Iraqi legislative election in January of 2005. Perelli's rationale was driven in large part by concerns that the new system fully represent Iraq's ethnic diversity while not aggravating ethnic tensions. Perelli argued that a single district would reduce regional factions and tribalism while allowing for the possibility of historically repressed and displaced communities of interest to accumulate their votes. Issues of intergroup conflict are not only of relevance in newly emerging democracies—these issues are also of concern in established democracies, many of which have electoral laws to ensure that a certain percentage of legislative seats go to women or ethnic minorities, and that ban extremist parties from fielding candidates.

In this paper I formally model the interplay between political institutions and the formation of group identity and conflict. I first assume that each individual belongs to a fixed collection of *social groups*. A group could, for example, consist of all individuals of a particular ethnicity, religion, race, gender, class or nationality. Individuals may choose whether or not to *identify* with one or several of these groups. When an individual identifies with a group he categorizes himself

as a member of that group and defines himself in terms of the group's perceived characteristics. I specifically assume that when an individual identifies with a group he will exhibit favoritism toward that group and care about the status of that group relative to certain other groups in society. Underlying the model is the idea that every person has a latent collection of utility functions that correspond to particular choices of identity, or self-categorization. For example, a person choosing an identity based on religion may have very different preferences than if he had chosen an identity based on nationality.

Political institutions affect an individual's choice of group identity by determining how individual and group preferences are translated into states of the world. In other words, institutions make certain groups better or worse off. Institutions in this model are parameterized in part as a distortion between the voting weight each group is allotted and its size relative to the total population. This definition is in keeping with much of the literature on comparative electoral systems, which is concerned largely with the proportionality profiles of different electoral rules. Highly proportional systems minimize the distortion between the percentage of votes a group wins and the percentage of seats it is allocated in parliament. Measures of proportionality such as the Gallagher index are commonly used to evaluate different electoral systems, with the general finding that majoritarian and plurality systems are the least proportional, and the list systems of proportional representation the most proportional (although within the list systems there is considerable variation depending upon the electoral quota or series of divisors used). Similarly, an increase in district magnitude generally increases the proportionality of a system, and higher electoral thresholds decrease proportionality.

This paper utilizes a simple characterization of general equilibrium in a setting where individuals make personal decisions over their own identities and these choices affect social policy. Using this model, I seek to examine several questions about identity and institutional design. What effect does the composition of society, or social context, have on identity choices? What effect do national and group prosperity have on identity choices? Can a well-designed institution entirely eliminate the threat of ethnic conflict? Or conversely, can an institution be designed that will always incite ethnic conflict? And last, are there particular types of groups that an institution should favor over others?

This last question is particularly important with respect to the model provided here because any given institution will generically favor certain groups over others. This bias occurs in part because legislative seats are not divisible, and in part because compromise over certain policy dimensions may be impossible to achieve; different ideologies can be incompatible with each other. An institutionally favored group may have greater numbers than others, higher levels of political participation, greater financial resources, or stronger intensity of preference. Defined in terms of such biases, a successful institution may be one that shapes group identities so that intergroup conflict can be managed in a sustainable way.

The paper proceeds as follows: Section 2 presents the formal model of group identification and political institutions. It also presents the equilibrium concept, which is inspired by the related work of Shayo [13]. In this section I also present proofs of mixed and pure strategy equilibrium existence under general conditions. Section 3 presents an application of the model to a setting in which individuals face a trade-off between ethnic self-assertion and nationalistic identity. Section

4 concludes.

2 The Model

In the formal model society contains a finite collection of social groups. Every individual belongs to some subset of this collection of groups, but an individual may or may not choose to identify with a group that he belongs to. Identification with a group implies that the individual defines himself in terms of the group's perceived characteristics, cares about the relative status of that group in relation to certain other groups and enjoys resembling other members of his group. Individuals make a cognitive choice over which social groups to identify with. These choices over group memberships affect the preferences of citizens, and thus affect any choice of social policy made by society.

2.1 Citizens

Society N consists of a continuum of citizens $i \in N$, each indexed by a real number on the $[0, 1]$ interval. Given a fixed political institution (described in the following section), society makes a decision over a compact and convex policy space $X \subseteq \mathbb{R}^M$ with generic element $x \in X$. Each citizen i has a continuous and strictly quasiconcave *material payoff function* $\pi_i : X \rightarrow \mathbb{R}$, that describes his personal preferences over the policy space. Citizen i has an *ideal point*, $p_i \in X$, that maximizes his material payoff function. Ideal points are distributed over X according to a probability density function f , with cumulative density function F .

2.2 Groups and characteristics

Suppose that there are an exogenous and finite number of ways to describe an individual, and that each description of an individual involves a particular *characteristic*. A characteristic is a descriptive category that people may care about, and are able to compare themselves to others along. Examples could include race, gender, income, religion, nationality, intelligence, or political affiliation. Let $\mathcal{C} = \{C_1, \dots, C_{|\mathcal{C}|}\}$ be the set of all such characteristics, with generic element $C \in \mathcal{C}$.

Each *characteristic* partitions society into a finite collection of disjoint *groups*. If, for example, C equals “gender,” then C partitions society into two groups: man and woman. In this case, $C = \{\text{man, woman}\}$. A simple society in which people are only categorized according to gender and nationality could, for example, have characteristic set $\mathcal{C} = \{\{\text{man, woman}\}, \{\text{natives, foreigners}\}\}$. Let G be the collection of all groups, with generic element g . Thus, $G = \cup_j C_j$. Groups are denoted by two subscripts, j and k , with g_{jk} being the k^{th} group with characteristic j . Then, in the above example, $G = \{g_{11}, g_{12}, g_{21}, g_{22}\}$, with g_{21} being “natives” (with characteristic “nationality”).

Let $G_i \in \times_j C_j$ denote Player i 's *type*. Player i 's type consists of the collection of groups that i is a member of. Note that an individual can only be a member of a single group with any given characteristic. So referring to the above example again, if $G_i = \{g_{11}, g_{22}\}$ then individual i 's type is “male foreigner.” It is not possible, however, for $G_i = \{g_{21}, g_{22}\}$ (or for i to be a native foreigner). For ease of notation, let t be a generic type and T be the set of all types, with $t \in T$ and $T = \times_j C_j$.

This setup reflects the idea that every individual belongs to a particular set of groups, that these

groups may be used to describe the individual on the basis of different characteristics, and that individuals may identify more or less strongly with different groups. Consider, for example, a person who is white, female, Jewish, Californian, and middle-class. This person may identify very strongly with her Jewishness but not with her gender, race, social class or home state. The goal of the following model is to formalize the question of how individuals choose their own identities and to examine the role that political institutions may play in determining how individuals choose to think of themselves.

2.3 Individual self-categorization and intergroup comparisons

An *action* $a_i \in A_i$ for individual i is a choice of identity, or self-categorization. Thus, i 's choice set A_i is defined as $A_i = G_i$. Let $A = G$ be the set of all possible actions. Individuals may also choose varying levels of identification with several groups. Let i 's *strategy space* be Σ_i , the set of all probability distributions over A_i . A mixed strategy for player i , σ_i , is an element of Σ_i , with $\sigma_i(a_i)$ being the probability that σ_i assigns to action a_i . Note that while mixed strategies are allowed in this framework, for much of the remainder of the paper I will focus solely on pure strategy equilibria (i.e. instances in which individuals only identify with a single group).¹ Let

¹Non-degenerate mixed strategy equilibria to this game will exist, and so it is possible to interpret the model as one in which individuals may identify more or less strongly with multiple groups. I avoid this interpretation solely to make the analysis of the game more transparent. While it is clear that many people strongly identify with multiple groups in the real world, it should also be noted that in real-world settings intergroup judgments frequently revolve around a single dimension of group differentiation. See [7], pp. 582-583.

$a : [0, 1] \rightarrow A$ be a *pure strategy action profile*, a function mapping the collection of individuals into actions such that $a(i) = a_i$. Let \mathcal{A} be the set of all action profiles. Function $\sigma : [0, 1] \rightarrow \Sigma_A$ is a *strategy profile*, with $\sigma(i) = \sigma_i$ and (abusing notation slightly) Σ_A being the set of probability distributions over A . Σ is the set of all strategy profiles.

At any fixed policy $x \in X$, individuals receive utility from both policy outcome x and from their choice of group identity, σ_i . Furthermore, individuals receive utility from an interaction between these two variables, because any given policy outcome may affect different groups differently, and individuals care about the relative status of their group in relation to certain other groups. Player i 's payoff to strategy σ_i at a fixed policy $x \in X$ is

$$\sum_{a_i \in A_i} \sigma_i(a_i) u_i(\pi_i(x), R(a_i, x)).$$

$R : A \times X \rightarrow \mathbb{R}$ is the *relative status* of identification with a_i given policy x . This term captures a comparison of group a_i with one or more other groups *that share the same characteristic as group a_i* . As an example, a person identifying with the group “women” would only evaluate her group in relative to “men,” and not to “blacks,” “Christians,” “Americans,” etc. As above, π_i is i 's material payoff function. Utility is assumed to be continuous, strictly quasiconcave and increasing in both arguments.

Finally, note that individual utility functions are only dependent upon policies and actions. At a fixed policy $x \in X$ and for each individual $i \in N$, u_i is a function of both policy x and identity choice σ_i . To simplify notation it will be useful to think of utility as a function of x and σ_i . Let $v_i(x, \sigma_i) = \sum_{a_i \in A_i} \sigma_i(a_i) u_i(\pi_i(x), R(a_i, x))$ be termed individual i 's *subjective utility function*.

2.4 Political institutions

Political institutions in this model govern how the preferences of different societal groups are aggregated into policy. If an institution favors one group over another, then the policy preferences of members of the favored group are weighed more heavily in determining national policy. Intuitively, we can think of an institutionally favored group as being more capable of winning legislative seats (but once a legislature is chosen the preferences of each legislator count equally in determining policy). The voting weight given to a group by a given institution can be a function of many different factors, the most obvious of which is the electoral formula used within the institution. However, other characteristics of a political institution can also affect proportionality; examples include minimum electoral thresholds, district boundaries, ballot structure, voting and candidacy requirements, and access to the media. Thus, political institutions are not necessarily equivalent to electoral rules.

Formally, a *political institution* consists of two parts: a *weighting function* ρ and an *aggregation rule* s . The weighting function represents the composition of a legislature with respect to the various societal groups. The aggregation rule describes how the preferences of legislators are aggregated into policy. Thus, the weighting function and aggregation rule represent two important components of any political institution: the electoral system and the process of intra-legislative bargaining.

Weighting function ρ is denoted $\rho = \{(\rho_1, \dots, \rho_{|G|})\}$, where for all $C \in \mathcal{C}$ and $g \in C$, $\rho_g > 0$ and $\sum_{g \in C} \rho_g = 1$. Thus each ρ is a collection of probability distributions over each characteristic

$C \in \mathcal{C}$. Let \mathcal{P} be the set of all weighting functions, with $\rho \in \mathcal{P}$. The term ρ_j represents the voting weight group g_j is given in the political institution's determination of national policy relative to other groups sharing the same characteristic. For example, if $\rho_g = \frac{\int_{i \in g} dF(p_i)}{\sum_{h \in G} \int_{i \in h} dF(p_i)}$ for all groups g then the system is completely proportional, in that the interests of each group are weighted exactly in proportion to the group's relative size: the legislative body is a perfect microcosm of society. Thus, if society is fifty percent female, thirty percent black and ten percent Christian then the legislature would also be fifty percent female, thirty percent black, and ten percent Christian.

Aggregation rule s translates the weighting function ρ and a strategy profile $\sigma \in \Sigma$ into a specific policy outcome.² Thus $s : \mathcal{P} \times \Sigma \rightarrow X$. Let \mathcal{S} be the set of all aggregation rules. The outcome induced by a given institution is denoted $s(\rho, \sigma) \in X$.

Note that a given political institution is not affected by actions taken by individuals. Thus, an institution biases policy in favor of particular groups regardless of whether individuals choose to identify with those groups or not. An example is the institutional norm in some countries of staggering male and female candidates on party lists (a practice called “zipping”), in order to ensure that a certain number of female candidates win seats. This institution can be regarded as biasing policy outcomes toward the interests of women, regardless of whether women choose to identify with “women” as a group, and regardless of what the preferences of women actually are.

²Aggregation rule s actually translates a weighting function and the preferences of individuals (contingent upon a prior choice of group identity or identities) into a policy outcome. Given this framework only strategies, and not utility functions, are being varied; thus we can use a strategy profile to represent a profile of subjective utility functions.

Because institutions are purposefully left abstract in the model, it is useful to consider several particular institutions and how they would work into the main existence theorems (Theorems 1 and 2) that follow in the next section. I will first define a class of institutions that I term *weighted median voter rules*. For this definition I will assume that the policy space is the real line and that individuals have ideal points $p_i \in \mathbb{R}$. When individual i chooses strategy σ_i then the policy that maximizes i 's utility shifts to point $n_i = n(p_i, \sigma_i) \in \mathbb{R}$.

Definition 1 Let $\rho = (\rho_{g_1}, \dots, \rho_{g_{|G|}})$ be a weighting function. At strategy profile σ let $f_g(n_i)$ be the distribution of group g voters' utility-maximizing policies. A weighted median voter rule is an institution $s_m(\rho, \sigma)$ that satisfies the following:

$$s_m(\rho, \sigma) = x \text{ such that } \int_{-\infty}^x \frac{1}{|C|} \sum_{C \in \mathcal{C}} \sum_{g \in C} \rho_g f_g(n_i) dn_i = \frac{1}{2}.$$

In words, a weighted median voter rule produces an outcome equal to the median of the distribution of voter ideal policies, when the preferences of members of each group are weighted according to ρ . We can interpret this institution as representing a parliamentary system in which each group g wins a percentage ρ_g of legislative seats and legislative voting occurs through majority rule.

A simpler institution is the following form of direct election:

Definition 2 Let x_g denote a policy corresponding to group $g \in G$ and let $\rho = (\rho_{g_1}, \dots, \rho_{g_{|G|}})$ be a weighting function. A direct election is an institution $s_d(\rho, \sigma)$ that produces the following outcome:

$$s_d(\rho, \sigma) = \frac{1}{|C|} \sum_{C \in \mathcal{C}} \sum_{g \in C} \rho_g \int_{i \in g} \left[\sum_{a_i \in A_i} \sigma_i(a_i) x_{a_i} \right] dF_g(p_i).$$

Under a direct election a voter's action corresponds to a choice of policy, x_{a_i} . In this case the institution simply takes a weighted average of these choices. Choices of individuals are weighted more or less heavily based on their group memberships.

An important difference between these institutions is how they treat the interaction between individual actions and ideal points p_i . Under a weighted median voter rule, strategies and ideal points are interacted in order to form new ideal points, n_i . Under the direct election however, only the individual's action counts in the institution's determination of policy.

Phrased differently, think of the following two institutions. The first is a median voter rule that simply picks the ideal point of the median voter as an outcome (provided one exists). The other is a plurality rule that picks the alternative receiving the most votes. In the former institution information about the voters is utilized in making a policy determination (and no information about actions is used because the voters take no action). In the latter only information about voter actions is utilized. Voter-specific information is unnecessary for the institution to work. This difference—i.e. whether or not the institution utilizes voter-specific information in determining policy—will be discussed in the following section, as it affects the potential equilibria of the model.

2.5 Equilibrium

The equilibrium concept is a variant of *social identity equilibrium*, defined by Shayo [13]. At equilibrium, people choose to associate with the group that maximizes their utility out of the set of groups that they possibly *could* associate with. When people associate with such groups, and make decisions based upon their group identification, they still want to retain that group identifica-

tion. Equilibrium is a collection of group identifications σ^* and a social policy x^* that satisfy this property. The following definition formalizes this idea.

At a given $(s, \rho) \in \mathcal{S} \times \mathcal{P}$ a *social identity equilibrium* is a social policy x^* and collection of identities σ^* such that the following two conditions hold:

1. For all $i \in N' \subseteq N$, with $\int_{i \in N'} dF(p_i) = 1$, then $\sigma_i^* \in \operatorname{argmax}_{\sigma_i \in \Sigma_i} v_i(x^*, \sigma_i)$
2. $x^* = s(\rho, \sigma^*)$.

The first condition says that in equilibrium no individual wants to deviate from his choice of group identity σ_i^* at equilibrium policy x^* , except for possibly a set of individuals of measure zero. The second condition implies that policy x^* is a policy induced by institution (s, ρ) under strategy profile σ^* .

The following theorem proves that there exists an equilibrium whenever institution $s(\rho, \sigma)$ is continuous in individual ideal points and individual strategies. Three additional conditions are also needed.

Condition 1 *For each player type t , ideal points are distributed according to an atomless probability density $f_t(p_t)$ over X .*

Condition 2 *The joint distribution of individual ideal points by type is $\hat{f}(p_1, \dots, p_{|T|}) = \prod_t f_t(p_t)$.*

Condition 1 implies that there is a continuous probability distribution over the ideal points of individuals of a particular type. Condition 2 says that the ideal points of individuals are independent across types.

Condition 3 *Individual utility functions are of the same form for all individuals, so that there exist functions π and u such that for each $i \in N$, $\pi_i(x) = \pi(p_i, x)$ and $u_i(\pi_i(x), R(a_i, x)) = u(\pi(p_i, x), R(a_i, x))$.*

Theorem 1 *When the institution is a continuous function of individual ideal points and actions then there exists a social identity equilibrium.*

Proof: I will first prove existence for a different game of incomplete information with a finite number of players. I will then show that equilibria of this game can be reinterpreted as equilibria of my model.

Let the new set of players be denoted $T \cup q$, where $T = \{1, \dots, |T|\}$, with generic player $t \in T$. The institution is represented by a single non-strategic player, q . Thus, all individuals of a particular type, as defined in Section 2.2, are now represented by a single player t . Each player $t \in T$ observes his ideal point, p_t drawn from distribution f_t . After observing his own ideal point, each player chooses an action in A_t , where A_t denotes the collection of actions available to individuals of type t . Player q chooses an action in $A_q = X$ that is dependent on the strategies chosen by each t . An action profile is denoted $a = (a_1, \dots, a_{|T|}, a_q)$.

As defined in [11], a *distributional strategy* for a Player t is a joint density μ_t over $X \times A_t$ for which the marginal density of X is f_t . A collection of distributional strategies for each player in T is denoted $\mu = \{\mu_1, \dots, \mu_{|T|}\}$. A strategy for Player q is simply a function ξ mapping each μ into X , where ξ is assumed to be continuous in μ .

From Conditions 1 and 2, each player t 's payoff depends on his own ideal point and the action

profile in the following way: $U_t : X \times \mathcal{A} \cup A_q \rightarrow \mathbb{R}$ such that $U_t(p_t, a) = w(p_t, a_q, a_t)$. Player q 's payoff is constant: $U_q = 0$.

When the players adopt distributional strategies $(\mu_1, \dots, \mu_{|T|}, \xi)$ then the expected payoff to Player t is:

$$EU_t(p_t, a) = \int_{X \times \mathcal{A}} w(p_t, a_q, a_t) d\mu_1 \dots d\mu_{|T|}, \quad (1)$$

where $a_q = \xi(\mu)$.

Let S_t be the set of Player t 's distributional strategies. Then an equilibrium is a fixed point in a correspondence C from $\prod_{t \in T} S_t \times X$ into itself, with:

$$C(\mu, a_q) = \left(\operatorname{argmax}_{\mu'_1 \in S_1} \int_{X \times \mathcal{A}} w(p_1, a_q, a_1) d\mu_{-1} d\mu'_1, \dots, \operatorname{argmax}_{\mu'_{|T|} \in S_{|T|}} \int_{X \times \mathcal{A}} w(p_{|T|}, a_q, a_{|T|}) d\mu_{-|T|} d\mu'_{|T|}, \xi(\mu) \right).$$

Because the action spaces of players t are finite (and thus compact), each player's set of distributional strategies S_t is a tight set of probability measures. By Prohorov's Theorem, the sets of distributional strategies are compact with respect to the topology of weak convergence.³ They are also convex, trivially. Similarly, the strategy space of Player q is compact and convex by the assumption that X is compact and convex.

Also note that $EU_t(p_t, a) = \int_{X \times \mathcal{A}} w(p_t, a_q, a_t) d\mu_1 \dots d\mu_{|T|}$ is linear (and thus quasiconcave) in μ_t which implies that the players' best response correspondences are convex-valued. Continuity of the players' utility functions implies that their best response correspondences are upper hemi-continuous. This, along with compactness of the strategy space, implies that the best response correspondences are compact-valued. Function ξ is continuous (and hence upper hemi-continuous) in μ by assumption. By Kakutani's fixed point theorem, an equilibrium exists.

³See [4], page 240.

Last, we must show that the equilibrium distributional strategies found in the modified game correspond to equilibrium strategies of the original game. Let the function $w(p_t, a_q, a_t)$ equal $u(\pi(p_t, a_q), R(a_t, a_q))$ defined in Condition 3 and let μ^* be a collection of equilibrium distributional strategies. For each type $t \in T$, and for all $i \in t$ let $\sigma_i^* = \mu_t^*(\cdot | p_i)$, or μ_t^* conditional on ideal point realization p_i . Suppose that for a collection of individuals of measure greater than zero σ_i^* is not a social identity equilibrium. Since there are a finite number of types this implies that σ_i^* is not a best response to σ_{-i}^* for a collection of individuals of type t with measure greater than zero. However, this contradicts the fact that μ_t^* was a best response for Player t in the modified game. Thus, σ^* is a social identity equilibrium. \square

The next theorem proves that there exists an equilibrium in pure strategies when one additional condition is met.

Condition 4 *Institution $s(\rho, a)$ depends solely on the actions taken by individuals, and not on the distribution of individual ideal points.*

Condition 4 says that the institution only utilizes the collection of individual identifications, and not any other individual characteristics, when determining policy.

Theorem 2 *When Conditions 1, 2 and 4 are met then there exists an equilibrium in pure strategies.*

Proof: Consider the same modified game as used in the proof of Theorem 1. A pure strategy in distributional form for Player t , s_t , is a distributional strategy μ_t whose conditional distributions

$\mu_t(\cdot|p_t)$ are point masses for each ideal point p_t . Pure strategy s_t is a *purification* of the strategy μ_t if two conditions hold. First, for almost every p_t , $s_t(\cdot|p_t)$ lies in the support of $\mu_t(\cdot|p_t)$. Thus, if μ_t is a best response to a collection of distributional strategies μ_{-t} , then s_t is also a best response to μ_{-t} . Second, for every player $t' \neq t$, and every $(n - 1)$ -tuple of strategies μ_{-t} , substituting s_t for μ_t preserves t' 's expected payoff: $EU_{t'}(\mu) = EU_{t'}(s_t, \mu_{-t})$.

By Conditions 1 and 2 we know that players' ideal points are independent and the distributions of ideal points by type are atomless. We also know that the sets of distributional strategies are compact with respect to the topology of weak convergence. We know that each player's action set is finite. Furthermore, players' payoffs depend only on their own type and on the action profile, by Condition 4. It follows from Dvoretzky, Wald and Wolfowitz's Theorem 8.1 in [1] that every distributional strategy μ_t has a purification s_t . Since we established the existence of an equilibrium in distributional strategies when $s(\rho, a)$ is continuous, it follows that there exists a purification of these strategies, and thus an equilibrium in pure strategies.

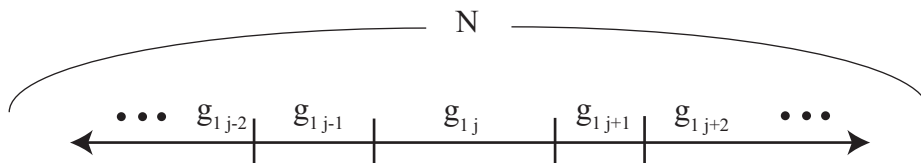
By the same argument in Theorem 1, it follows that there exists a pure strategy equilibrium a^* of the original game. \square

Continuity of the institution implies that the institution must be able to map distributional strategies into a compact and convex set of policies. This excludes institutions that pick outcomes from a finite set of alternatives (such as a collection of candidates, for example). Condition 4 implies that in order to ensure the existence of a pure strategy equilibrium the institution may only consider the distribution of voter actions, and may not consider which voters took what actions. This excludes

institutions, such as the weighted median voter rule defined in Section 2.4, that take a combination of voter ideal points and actions as an input. However, Condition 4 would permit an institution such as the direct election defined in Section 2.4.

3 Inducing “Passive Nationalism”

Since the First World War, and following the collapse of the colonial empires in the mid-twentieth century, the balance between ethnicity and state-building has remained a primary concern of scholars of ethnic conflict.[3] In this section I will examine a particular specification of this model designed to address the issue of ethnic versus nationalistic identification. I assume that each individual faces a choice between identifying with a particular ethnic group or with society as a whole (interpreted as a “national” identity). Thus, society is characterized according to $\mathcal{C} = \{\{g_{11}, \dots, g_{1k}\}, \{g_{21}\}\}$, with $C_1 = \{g_{11}, \dots, g_{1k}\}$ being characteristic “ethnicity” and $C_2 = \{g_{21}\}$ being characteristic “nationality.” It is assumed that each group is measurable with respect to the ideal points of its members. All citizens are assumed to be of the same nationality. For ease of notation, the group in C_1 that i belongs to will be denoted g_i , and the “nationality” group, g_{21} , will be denoted N . The figure below depicts an abstract partitioning of this particular society.



The policy space is assumed to be a closed and convex subset of the real line $X \subset \mathbb{R}$, and

individuals are assumed to have quadratic material payoff functions $\pi_i(x) = c_{g_i} - (p_i - x)^2$, where p_i is i 's *ideal point* and c_{g_i} is a positive constant.⁴ The term c_{g_i} represents a material advantage had by all members of group g_i , whether or not they choose to identify with g_i . It will be used to capture the fact that there may be intrinsic status differences across groups that are not policy related. Letting α_g denote the percentage of the population in group g , I use the term $\bar{c} = \sum_{g \in C_1} \alpha_g c_g$ (the average material advantage of individuals) to represent “national wealth,” the average non policy-related payoff given to a citizen of the nation.

Let $\mu_g(x)$ be the expected material payoff of a member of group g when policy x is chosen: $\mu_g(x) = \int_{i \in g} \pi_i(x) dF(p_i) / \int_{i \in g} dF(p_i)$. Then for all groups in C_1 , relative status is the sum of differences in μ_g across groups: $R(g, x) = \sum_{h \in C_1, h \neq g} \mu_g - \mu_h$.

The status associated with choosing a “nationalistic” identity is the average payoff of society as a whole: $R(N, x) = \int_{i \in N} \pi_i(x) dF(p_i)$.

Last, utility functions are assumed to be additively separable: $\forall i \in N, u_i(\pi_i(x), R(a_i, x)) = \pi_i(x) + \gamma R(a_i, x)$ with $\gamma \in \mathbb{R}_+$.

These assumptions have several useful implications. The first is that, at a given $x \in X$, individuals will choose to identify with group $g \in C_1$ if $g \in G_i$ and $R(g, x) > R(N, x)$, and will choose a nationalistic identity if $R(g, x) < R(N, x)$. Thus, when two individuals i and i' are members of the same ethnic group (i.e. $G_i = G_{i'}$), then they will make the same choice of identification unless

⁴Note that an ideal point may not be the *utility*-maximizing policy for an individual; such a policy will depend upon the individual's choice of group identity.

they are indifferent between the two choices. A second useful implication is that the relative status of group $g \in C_1$, or $R(g, x)$, is linear in x , and in particular

$$R(g, x) = \sum_{h \in C_1, h \neq g} \left[c_g - c_h + \frac{\int_{i \in g} -(p_i^2 - 2xp_i) dF(p_i)}{\int_{i \in g} dF(p_i)} - \frac{\int_{i \in h} -(p_i^2 - 2xp_i) dF(p_i)}{\int_{i \in h} dF(p_i)} \right]. \quad (2)$$

This is a consequence of the quadratic specification of π_i , and implies that identification with a particular subgroup simply shifts an individual's utility-maximizing policy to either the right or left of his ideal point by a fixed amount. Let \bar{p}_g denote the expected ideal point (or material payoff-maximizing policy) of a member of group g , so that

$$\bar{p}_g = \frac{\int_{i \in g} p_i dF(p_i)}{\int_{i \in g} dF(p_i)}.$$

Similarly, let

$$\bar{p}_g^2 = \frac{\int_{i \in g} p_i^2 dF(p_i)}{\int_{i \in g} dF(p_i)}.$$

If an individual i identifies with group $g \in C_1$ his utility is maximized at policy $x = p_i + \gamma \sum_{h \in C_1, h \neq g} (\bar{p}_g - \bar{p}_h)$. If an individual chooses a nationalistic identity then his utility is maximized at policy $x = (p_i + \gamma \bar{p}_N) / (1 + \gamma)$.

Note that the variance in the distribution of ideal points of members of group g , written σ_g^2 , equals $\bar{p}_g^2 - (\bar{p}_g)^2$. We can rewrite Equation 2 as

$$R(g, x) = \sum_{h \in C_1, h \neq g} \left[c_g - c_h - (\sigma_g^2 + (\bar{p}_g)^2) + (\sigma_h^2 + (\bar{p}_h)^2) + 2x(\bar{p}_g - \bar{p}_h) \right]. \quad (3)$$

The remainder of this section will focus on a particular type of pure strategy social identity equilibrium, which I term a *conforming equilibrium*. Hereafter the term ‘‘equilibrium’’ will refer to a conforming equilibrium.

Definition 3 A conforming equilibrium is a social identity equilibrium in which all individuals of a particular type choose the same identification: for all $i \in t$, $a_i^* = a_t^*$ for some $a_t \in A$.

Using Equation 3 we now get that if an equilibrium exists it can be characterized by the following:⁵

$$a_i^* = \begin{cases} N & \text{if } s(\rho, a^*) \in \left[\sum_{h \in C_1, h \neq g} (\bar{p}_h - \bar{p}_g) + \bar{p}_N - K, \sum_{h \in C_1, h \neq g} (\bar{p}_h - \bar{p}_g) + \bar{p}_N + K \right] \\ g_i & \text{otherwise,} \end{cases} \quad (4)$$

where

$$K = \sqrt{\left[\sum_{h \in C_1, h \neq g} (\bar{p}_g - \bar{p}_h) - \bar{p}_N \right]^2 - \left[\bar{p}_N^2 - \bar{c} + \sigma_N^2 + \sum_{h \in C_1, h \neq g} ((c_g - c_h) - (\sigma_g^2 + \bar{p}_g^2) + (\sigma_h^2 + \bar{p}_h^2)) \right]}.$$

3.1 Comparative Statics of Ethnic Identification

This section examines the dynamics of individual identity choice in the absence of any specific institutional assumption. Leaving institutions abstract enables us to assess the feasibility of certain types of equilibria under any institution. The following observations follow immediately from this specification of the model, and show that the parameterization of society (in terms of the means, variances, sizes, and wealth of the existing groups) will affect the types of equilibria that are possible. For example, under certain parameter values it will be impossible to induce an “all nationalistic” equilibrium under *any* political institution.

Observation 1 *It is always possible to induce an equilibrium in which $a_i = g_i$ for all $i \in N$ (an “all-ethnic” equilibrium) provided that the policy space is large enough.*

⁵Note that this equilibrium condition assumes that when individuals are indifferent they identify nationally.

To see this, note that all members of a group will choose an ethnic identity if policy is outside of a closed and bounded interval of the real line. Since there are a finite number of groups there is an upper and lower bound of the real line beyond which all groups will pursue an ethnic identity. If one of these bounds lies within the policy space then an ethnic equilibrium can always be induced by fixing policy beyond that bound. This observation reflects the idea that if policy is unresponsive to the preferences of voters and extreme enough (in the sense of hurting all groups) then all individuals will identify ethnically. This could occur, for example, as the result of a negative political or economic shock such as a famine, war, or the rise of a tyrannical dictator. The observation is consistent with recent work by Brancati and Bhavnani [5] who show that natural disasters create and intensify and within-state conflicts.

Observation 2 *Individuals will be more likely to identify with their ethnic group as it becomes more homogenous, and as its rival groups become less homogenous (with homogeneity defined in terms of variance).*

This observation follows immediately from the equilibrium conditions defined in Equation 4. The interval of policies at which an individual i will identify nationally shrinks as the variance of group g_i decreases and shrinks as the variance of competing groups increases, *ceteris paribus*.⁶ This observation does not depend specifically on quadratic material payoff functions, but does depend

⁶When showing this it is necessary to recall that $\sigma_N^2 = \sum_{g \in C_1} [\alpha_g(\sigma_g^2 + (\bar{p}_g)^2)] + (\sum_{g \in C_1} \alpha_g \bar{p}_g)^2$, with α_g being the fraction of the population in group g . This is because the total distribution of ideal points is a mixture of the group distributions.

on the concavity of these functions in ideal points p_i .⁷ With general concave functions then group homogeneity must be defined in terms of second order stochastic dominance for this observation to hold generally: it follows directly from the definition of a mean-preserving spread and Jensen's inequality.

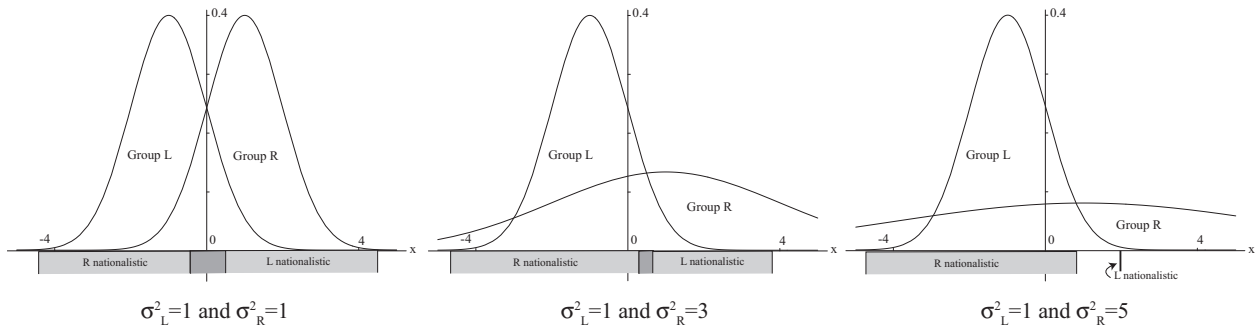


Figure 1: Ethnic identification as the variance of Group R increases

Figure 1 depicts a situation in which there are two ethnic groups, L and R of the same size. The ideal points of members of both groups are distributed normally, with Group L having mean $\bar{p}_L = -1$ and Group R having mean $\bar{p}_R = 1$. The figure shows the intervals of policies at which each group will identify nationally while varying the variance of R . As σ_R^2 increases, there are more policies at which members of R will identify nationally, and fewer policies at which members of L will identify nationally. The darkly shaded regions represent intersections of the groups'

⁷The assumption that material payoff π_i is concave in p_i may seem strange because it is typically assumed that utility is instead concave in policy x . However, if π_i is symmetric in p_i and x (i.e. is invariant to permutations of p_i and x) then concavity in p_i implies concavity in x . This symmetry will hold when, for example, utility is a function of the distance between p_i and x , because every distance function is symmetric.

nationalistic identification intervals—policies at which members of both groups will identify nationally.

Observation 2 is also consistent with the social psychology literature, and in particular social identity theory, which posits that individuals value group identification more highly the more similar they are to other members of their group [14]. It could also be loosely interpreted as explaining the persistent finding that identification is less likely in large groups. Although there is no strategic behavior in this model, this observation also has interesting implications that could be applied to more strategic settings. It suggests that under certain circumstances groups may have an incentive to pretend that they are more cohesive than they actually are.

Observation 3 *When groups are not too dissimilar in material advantage then an increase in national wealth decreases the likelihood that members of all groups will identify ethnically. When groups are very dissimilar then the effect of national wealth is ambiguous.*

Recall that the material advantage of group g , c_g , is simply an additive constant in the material payoff functions of all members of group g . National wealth is the average of these terms: $\bar{c} = \sum_{g \in C_1} \alpha_g c_g$. It is clear from Equation 4 that if $c_g = c_h$ for all $g, h \in C_1$ then the interval of policies at which individual i will identify nationally increases as \bar{c} increases. Because of the continuity of this interval in c_g and c_h , this interval will still be increasing in \bar{c} when c_g and c_h are close for all $g, h \in C_1$.

Figure 2 depicts the effect of increasing national wealth ($\bar{c} = \frac{1}{2}c_L + \frac{1}{2}c_R$) in two cases. Again, both groups are distributed normally with $\bar{p}_L = -1, \bar{p}_R = 1$, and $\sigma_L^2 = \sigma_R^2 = 1$. The left graph

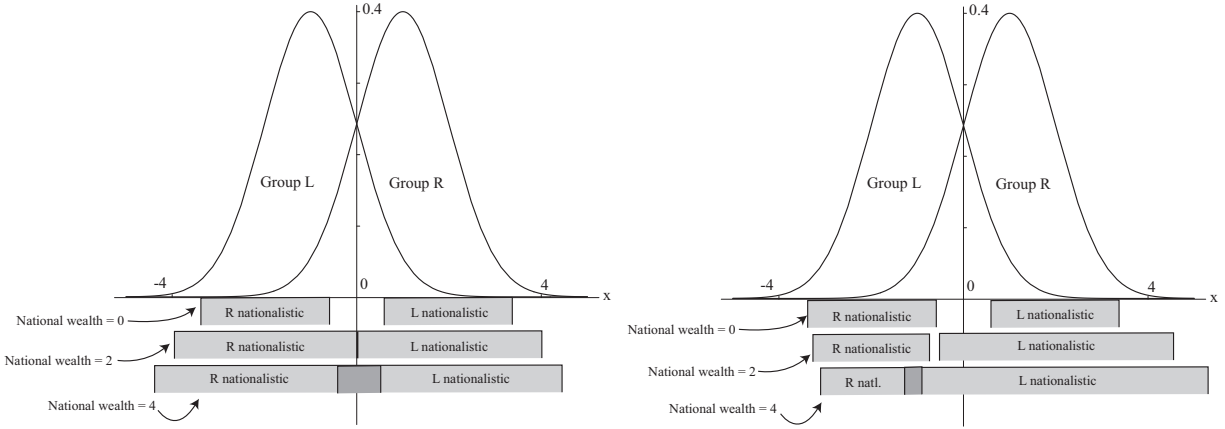


Figure 2: Increasing national wealth when groups are equally advantaged ($c_R = c_L$) and unequally advantaged ($c_R = 4c_L$)

shows the effect of an increase in \bar{c} when the material advantage of both groups is the same. The right graph shows the effect of increasing \bar{c} when the material advantage of R is four times that of L .⁸ In the former case the interval of policies at which each group identifies nationally is always increasing in \bar{c} . In the latter case this interval is increasing for L and decreasing for R . Ultimately, for a high enough \bar{c} this interval will disappear completely for group R .

It is not difficult to precisely characterize how different these material advantage terms can be for an increase in national wealth to reduce the likelihood of ethnic identification for all individuals. For example, suppose there are two groups g and h and that $c_g = \beta * c_h$, where β is a positive constant. Let α be the fraction of individuals in g and $1 - \alpha$ be the fraction in h . Then increasing \bar{c} will increase the range of policies at which *all* individuals identify nationally whenever $\beta \in [\frac{\alpha}{1+\alpha}, \frac{2-\alpha}{1-\alpha}]$. This observation suggests that, in addition to utilizing political institutions as

⁸In particular, when $\bar{c} = 0$ then $c_L = c_R = 0$, when $\bar{c} = 2$ then $c_L = \frac{4}{5}$ and $c_R = \frac{16}{5}$ and when $\bar{c} = 4$ then $c_L = \frac{8}{5}$ and $c_R = \frac{32}{5}$.

a means of promoting non-ethnic identification, it may also be beneficial to design economic institutions that equalize material advantage across groups and that increase the material advantage of all citizens. However, if ethnic groups are too unequal in their material advantage then increasing the overall wealth of the nation may actually incite ethnic identification. Thus, the effect of wealth on ethnic identification will vary depending on wealth inequality across groups.

3.2 Institutional Design

Using some of the intuition gained from the previous section we can characterize certain desirable properties of institutions in terms of the policies they produce. The particular property I will focus on is the robustness of individual identifications to policy shocks. For example, if an equilibrium is possible in which all individuals identify nationally we may want to ensure that we can stay at that equilibrium even if there is a small, exogenous shock to policy. The following informal definition of a *social point* captures this idea.

Definition 4 *Suppose that there exists an equilibrium in which $a_i = N$ for all i . Then the social point is a policy x^* that maximizes the distance that policy would need to shift before an individual would deviate to strategy $a_i = g_i$.*

In terms of the figures presented in the previous section, the social point is the midpoint of the interval of policies on which all groups choose to identify nationally. The following example depicts the social point along with the set of equilibrium policies produced by every possible weighted median voter rule in a two-group setting.

Example 1 *Equilibrium under a weighted median voter rule*

Figure 3 depicts the equilibrium policy and action profile for all possible weighted median voter rules when there are two ethnic groups of the same size, L and R .

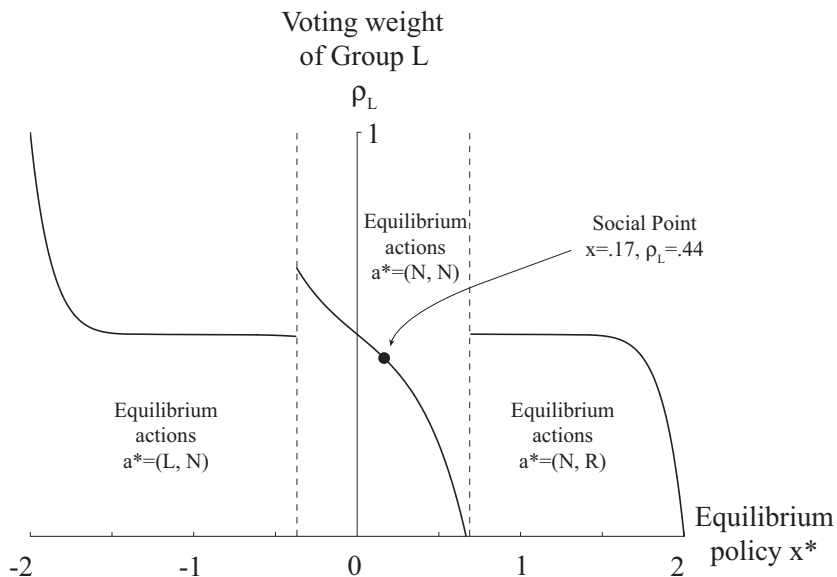


Figure 3: Equilibrium with two groups of unequal variance

Both groups are distributed normally, with means $p_L = -1$ and $p_R = 1$. Group L has variance $\sigma_L^2 = 0.2$ and Group R has variance $\sigma_R^2 = 1$. Each group has the same material advantage ($c = 4$) and places a weight on relative status equal to $\gamma = 0.5$. The y -axis varies the voting weight given to Group L by the weighted median voter rule. The x -axis is the policy outcome. The graph shows, for each voting weight ρ_L , the equilibrium action profile and policy induced by that action profile. For example, when $\rho_L = 0$ then two equilibria are possible: one in which both groups identify nationally and the policy is $x = \frac{2}{3}$ and another in which L identifies nationally and R

identifies ethnically, and the policy is $x = 2$.

For $\rho_L \leq \frac{2}{3}$ two equilibria are almost always possible: when $0 \geq \rho_L < \frac{1}{2}$ then both (N, N) and (N, R) are equilibrium profiles, and when $\frac{1}{2} < \rho_L \leq \frac{2}{3}$ then both (N, N) and (L, N) are equilibrium action profiles. When $\rho_L > \frac{2}{3}$ the unique equilibrium action profile is (L, N) . The social point occurs at $x \approx 0.17$ and $\rho_L \approx 0.44$ under an (N, N) equilibrium action profile. Note that the institution will favor Group R at this policy because the variance of Group R is greater than the variance of Group L . In fact, the results from the previous section can be reinterpreted in terms of the social point and the weighted median voter rule that induces it, as the following observation demonstrates.

Observation 4 *In a two-group setting, a weighted median voter rule that induces the social point will favor heterogeneous groups over homogeneous ones and poor groups over wealthy ones.*

This observation follows immediately from Observations 2 and 3 and the fact that at any (N, N) equilibrium policy outcome x is increasing in ρ_R (the voting weight given to Group R) and decreasing in ρ_L . The interval of policies at which group g identifies nationally is always centered at $\bar{p}_h - \bar{p}_g + \bar{p}_N$. Therefore, increasing the variance of Group R , for example, will shift the social point away from \bar{p}_L , as Figure 1 showed. This shift will correspond to a higher voting weight ρ_R given to Group R .

To see that the institution will favor poor groups over wealthy groups it is useful to note that if L and R have the same variance (i.e. $\sigma_L^2 = \sigma_R^2$) and are the same size then the size of the

interval of policies at which each group will choose to identify differs only in the c_R and c_L terms.⁹ The interval of policies at which Group R , for example, will identify nationally is smaller than the interval at which Group L will identify nationally if and only if $c_R > c_L$. Thus, wealthier groups have smaller intervals on which they will identify nationally, and this will shift the social point towards the mean of the poorer group. Again, this shift will correspond to the poorer group receiving a voting weight greater than $\frac{1}{2}$, even though both groups are of the same size.

Last, I will briefly discuss the problem of equilibrium selection in this model. To refer back to Example 3, note that while a weighted median voter rule with $\rho_L \approx 0.44$ can induce the social point as a policy outcome it can also induce a different equilibrium: action profile (N, R) and equilibrium policy $x \approx 1.75$. Thus, the question of equilibrium selection is important because even simple specifications of the model can generate multiple equilibria. The multiplicity of equilibria may be one explanation for a number of inconsistent findings in studies on the effect of ethnic context on group conflict and prejudice. V. O. Key’s “threat hypothesis” [9] predicts that large concentrations of ethnic minorities inspire hostility and prejudice among members of a dominant group by threatening competition for scarce resources. Alternatively, Allport’s “contact hypotheses” [2] predicts the opposite: that increased contact between groups reduces inter-group tension and conflict by breaking down ingrained stereotypes. Cain, Citrin and Wong [6] argue that the mixed support for both hypotheses may reflect the fact that racial attitudes appear to be more a product of the social

⁹Seeing this is not immediately transparent from the equilibrium conditions outlined in Equation 4. It requires expanding out the \bar{p}_g and \bar{p}_h terms in the definition of K following Equation 4, and letting $\bar{p}_N = \frac{1}{2}\bar{p}_g + \frac{1}{2}\bar{p}_h$.

and political backgrounds of individuals rather than the ethnic composition of their communities. This paper makes a different observation: the mixed support for both hypotheses may occur because the identity choices of individuals depend on an interaction between context (modeled as the composition of groups within society) and political outcomes (modeled as current policy). Looking at equilibria solely as a function of context will often not yield a unique prediction in this model.

4 Conclusions

In this paper I presented a formal model of the relationship between political institutions and ethnic identification and conflict, taking ethnicity to be a strategic choice. I first examined how the composition of groups within society, or social context, affects choices of ethnic identification. I obtained several results that are consistent with previous findings: individuals are more likely to identify with a group as the group becomes more homogeneous, and are less likely to identify with the state as policy becomes more extreme (relative to the preferences of individuals within society). I also found that the effect of national prosperity is ambiguous; when groups are similarly wealthy then increasing the wealth of the nation increases the likelihood that individuals will identify nationalistically. However, when groups are very unequal then increasing national wealth may actually increase the likelihood of ethnic identification.

I also examined several questions in institutional design. I found that it is always possible to design an institution that will induce ethnic conflict, while it is not always possible to induce nationalistic identification. However, the results suggest that other mechanisms exist to suppress

ethnic conflict: a combination of foreign investment and monetary transfers may be capable of inducing nationalistic identification in settings where political institutions cannot. However, if the foreign investment is unequally distributed or unsustainable then any benefits may only be temporary.

Last, the results suggest that if an institutional goal is to induce an equilibrium in which individuals choose to identify with the state rather than along ethnic lines, then a well-designed institution will favor heterogeneous groups over homogeneous groups and poor groups over wealthy ones. A “favored” group in this model is a group that is more capable of winning legislative seats.

The problem of equilibrium selection remains an important consideration because the model can generate a multiplicity of equilibria, even in simple environments. Potential avenues for future research include incorporating strategic players into the model as a means of refining the set of equilibria. Examples of such players could include one or more political actors seeking to incite or quell ethnic conflict (as in Posner [12]), or a government seeking to reduce racial or ethnic disparity through the use of affirmative action or monetary transfers.

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