Ethnicity or class?
Identity choice in elections and its implications for redistribution *

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Abstract

I develop a model of elections where parties form endogenously and appeal for votes by making promises to ethnic groups or to an economic class. Voters have both a class and an ethnic identity, and they respond to electoral appeals by determining which identity will yield them the largest share of government resources. The model suggests that under both plurality rule and PR, high inequality encourages ethnic politics. Since ethnic politics results in less redistribution than class politics, the redistributive effect of democracy is weakest when inequality is largest. Empirical tests provide evidence that the effect of democracy on redistribution diminishes as inequality increases. I also provide evidence that ethnic voting increases when inequality is high relative to ethnic diversity. Extensions of the theoretical model suggest other factors that mitigate against class politics, including powerful elites within ethnic groups and government revenues that come from windfalls rather than taxes.

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1 Introduction

People typically have multiple identities. One type of identity that is ubiquitous in all societies is economic “class” – which is defined by an individual’s level of economic well-being. And in many countries, individuals also have at least one “ethnic identity” – a language, religion, race, ethnicity, tribe, or caste that is typically inherited at birth. Ethnic and class identities frequently become salient in democratic politics because they create an efficient means for politicians to organize the quest for votes and for voters to understand the link between vote choice and access to government resources. But if people have multiple identities, how do particularly identities become salient, and how does the answer to this question influence the type of distribution and redistribution that results from democratic elections? The goal of this paper is to develop a theory of identity formation in elections, with a central focus on tradeoffs individuals often face between voting their class and voting their ethnic identity.

I analyze a model of elections where voters belong to one of two ethnic groups– the majority group or the minority group – and where they also have one of two incomes, rich or poor. Individuals can become party entrepreneurs, paying a small cost to form a political party that represents a group or class. If they do so, the parties can appeal for votes by committing to distribute government resources to the group or class the party represents.

The fundamental assumption underlying the theory is that all agents in the model are motivated by material self-interest. *Ex ante*, individuals have no intrinsic attachment to either their ethnic group or their class, and there are no non-economic policies – such as those related to culture, education, or religion – that can be exploited to attract votes. Instead, particular identities emerge in electoral politics as the product of the strategic formation of parties by party entrepreneurs and strategic voting by individuals who wish to maximize the benefits they receive from state policy. In this contest to reap government benefits, both class and ethnic identity can be exploited as attributes that permit the inclusion or exclusion of certain individuals from access to government resources. Since individuals can emphasize either type of identity when voting for parties, they do so instrumentally. Parties, knowing that voters exploit identity instrumentally, are constrained in the circumstances under which they can win power based on class versus ethnic appeals. The goal is to understand when each type of identity will emerge and how government resources will
distributed as a consequence.

Understanding the factors that encourage the emergence of ethnic identity in elections is intrinsically important, not the least because there is considerable evidence that when ethnic politics are prevalent, so are negative governance outcomes, including lower levels of public goods provisions (e.g., Alesina, Baqir and Easterly 1999, Baldwin and Huber 2010, Miguel and Gugerty 2005), lower levels of economic development (e.g., Alesina and Ferrara 2005) and higher incidence of civil conflict (Esteban, Mayoral and Ray 2012). But the model highlights another important reason to study identity formation in elections: the emergence of ethnic as opposed to class politics has important implications for the redistributive effect of democratic elections. When class politics emerges, government resources are targeted to the poor. The canonical “tax and transfer” model (e.g., Meltzer and Richard 1981) assumes that such redistributive class politics are the only means for contesting elections, and in this framework, redistribution becomes greater as inequality increases. When ethnic politics become a central mechanism for attracting votes, the redistributive consequences of elections are diminished because when government resources are distributed based on ethnic identity, some subset of the rich (those in the winning group) share in the government spoils, and some subset of the poor (those in the losing group) are left out of access to government resources. Thus, when ethnic parties are dominant, elections should have smaller redistributive effects than when class parties are dominant.

The model identifies a number of factors that encourage ethnic as opposed to class politics, and central among them is economic inequality. When inequality is high – i.e., when there are a large number of poor individuals – a class-based party representing the poor can promise little to each constituent because distributing government resources to the poor spreads the resources very thinly. High inequality therefore opens the door to successful ethnic appeals because ethnicity provides a mechanism for forging smaller electoral coalitions that exclude some segments of the poor from access to government resources. Importantly, then, the redistributive consequences of democracy should be most muted precisely in conditions where inequality is highest, the opposite of what one concludes when one assumes that class is the only means for contesting elections. Ethnic heterogeneity is also important. In ethnically homogenous societies, a party representing the majority ethnic group can obviously promise little to each individual in their group. This opens the door to successful class appeals, particularly when inequality is not too large.
The paper is organized as follows. The next section reviews the related literature. I then describe in section 3 the general structure of the model and how the model's exogenous parameters are linked to the Gini coefficient of inequality and to ELF. Section 4 examines the baseline model under plurality electoral laws, and section 5 examines the model under the assumption of proportional electoral laws. Section 6 provides some empirical tests of the model. First, I test the model's implication that redistributive consequences of democracy should decline as inequality increases. Second, I examine the model's prediction about how economic inequality interacts with ethnic diversity to influence the role of ethnic identity in electoral politics. I then explore two extensions of the theoretical model, focusing on the power of elites within groups and the origin of government revenues. The final section concludes.

2 Related literature.

It is widely accepted that ethnic identity is not strictly primordial, but rather is “constructed,” emerging, often instrumentally, from the social context (e.g., Horowitz 1985, Laitin 1998, Chandra 2004 and Posner 2005). At the same time, ethnic categories are intrinsically important because they provide a menu from which politicians can choose as they target voters for inclusion or exclusion in efforts to build winning electoral coalitions (e.g., Bates 1983, Chandra 2004, Horowitz 1985, and Posner 2005). Indeed, a central reason that targeting votes based on “ethnicity” – broadly defined to include language, caste, racial, ethnic, tribal or (in some contexts) religious identities with which one is born – is that ethnicity often provides a clear marker that makes it possible to delineate unambiguously who is included and excluded from a governing coalition. This is true because individuals cannot decide that they belong to any ethnic group. They cannot decide, for example, that they are dark skinned if they are light skinned. But individuals are often born with multiple group identities – they may have tribal and language group, for example – and thus it is important to understand when particular identities will emerge. Some research therefore focuses on how politicians use ethnicity to target voters. Chandra (2004), for example, focusing on India, emphasizes that ethnic parties are most likely to succeed in patronage-democracies when they have competitive rules for intra-party advancement and when the ethnic group they seek to mobilize is large enough to win. Other research focuses more explicitly on individual level calculations that
transcend the electoral context, such as Laitin (1998), who focuses on the size of groups and on the expectations that individuals have about the behavior of others.

This paper shares with this previous research in comparative politics an interest in understanding identity choice, but it is most closely related to and influenced by Posner (2004, 2005). Posner describes ethnic electoral politics as a sort of “ethnic head count,” where the challenge politicians face is to form a minimum winning coalition of ethnic groups. Parties strategically employ appeals to particular group identities, and voters invoke the particular identities that give them access to the highest levels of government resources. Thus, specific identities that are relevant in some jurisdictions will not be relevant in others. Central to Posner’s argument is the idea of pivotal groups. An ethnic group is pivotal if it is likely to be in a winning coalition regardless of which ethnic identity in its repertoire is activated. The pivotal group will activate the ethnic category that gets the smallest winning coalition elected and that thus restricts the spoils of the state to the smallest number of individuals possible.

This research builds on Posner’s idea that identity choice occurs instrumentally as individuals seek to become part of minimum winning electoral coalitions. Perhaps the most important difference is the potential role played by economic class in the model here. Like the vast preponderance on research in identity politics, Posner focuses on instrumental choices among possible “ethnic” identities, and thus does not consider the possibility that lower income individuals could band together to support parties that represent, for example, all the poor rather than parties that represent specific groups.\(^1\) By focusing exclusively on the form of ethnic politics, this existing research leaves unanswered the question of why ethnic markers become salient in electoral competition in the first place. As a consequence, it does not take into consideration the role of inequality in shaping the nature of electoral politics, or the role of identity choice in shaping the redistributive consequences of elections.

The model here also differs from related formal models in political economy. A central objective is to depart from the canonical “tax and transfer” framework that assumes all electoral politics is class politics, and that thus concludes that in democracy, more inequality leads to more redistribution (e.g., Meltzer and Richard 1981, Boix 2003, Acemoglu and Robinson 2005). By al-

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\(^1\)Recent research that considers empirically the conditions that facilitate ethnic politics include Huber (2012), who examines the role of electoral laws and Huber and Suryanarayan (2013) who focus on the effect of inequality between groups.
lowing the role of class to emerge endogenously in electoral competition, we can see how inequality can play quite a different role in shape electoral behavior and the redistributive consequences of elections.

A number of recent models depart from the tax-and-transfer framework by studying the possibility that parties can compete for votes on dimensions unrelated to class. Shayo (2009), for example, explicitly models whether individuals identify with their class or their nationality. Thus, like in the model here, individuals have multiple identities that they can tap at election time, one of which is class (they are rich or poor). But the other identity is not an ethnic group on which individuals can differ, but rather is a single national identity to which all individuals can adhere. Thus, “identity politics” in Shayo does not create a basis for exclusion of particular groups (as it does here) and is not driven exclusively by individual interest in material gain (as it is here). Instead, his model focuses on the fact that an national identity is something like a second dimension (as in Romer 1998), the importance of which is influenced by exogenous factors, and the presence of which often distracts (particularly poor) individuals from their economic self-interest, leading to lower levels of redistribution. The model here differs not only in that individuals are placed in different ethnic groups (that are potentially relevant in electoral politics) and that identity choice is not driven by any factor other than material gain.

The model here is related to a number of models where electoral competition breaks up class coalitions by offering subsets of the poor the opportunity to form coalitions with subsets of the rich, at the exclusion of the remaining poor.\textsuperscript{2} Most closely related is Fernàndez and Levy (2008), who model elections under plurality rule where individuals are either rich or poor, and where (only) the poor can have a group identity as well (i.e., the poor can have particular preferences for a group-specific good). As in their model, parties in the analysis below arise endogenously and make credible policy promises. Fernàndez and Levy’s general focus, however, is on how the diversity of group interests among the poor affects the propensity of class politics to emerge. Their model suggests that ethnic diversity has a non-monotonic effect on the amount of general (rich to poor) redistribution that occurs, with increases in diversity diminishing redistribution at low levels of diversity and increasing redistribution at high levels of diversity. The model here focuses more explicitly on identity choice and thus allows rich and poor to have a group-specific identity

\textsuperscript{2}Examples include Levy 2005, Austen-Smith and Wallerstein 2005, Huber and Stanig 2011, and Huber and Ting 2013
that creates the identity problem for all individuals. This makes general inequality central to the analysis and allows group based coalitions that include the rich and the poor. In addition, the model here considers PR as well as plurality electoral laws, examines the effects of windfalls versus general taxation, and considers the within-group distribution of power.

3 The model, inequality and ethnic diversity

To analyze “identity choice” in elections, I model a voter’s decision to support a party that represents his or her class as opposed to a party that represents his or her “ethnic group.” A general sketch of the model is as follows. Individuals belong to one of two (ethnic) groups, the majority group or the minority group, and individuals are either rich or poor. In addition, there exist agents who can pay a cost to become a “party entrepreneur,” forming a party that represents an ethnic group or class. Party entrepreneurs make credible campaign promises about how government resources will be distributed to the individuals they represent. If a party representing a particular group wins an election, it distributes the promised government resources to the members of the group the party represents, and the entrepreneur keeps any residual that is not distributed. “Class politics” prevails – and individuals choose “class identity” – when the winning party makes class-based promises and government resources are distributed based on income. “Ethnic politics” prevails – and individuals choose “ethnic identity” – when the winning party makes ethnic group-based promises and government resources are distributed based on ethnic group membership.

Formally, consider a population \( n \) of measure 1. Let \( A \) denote the majority group, which has a size of \( n_A \), and let \( B \) denote the minority group, which has a size of \( n_B \), so that \( n_A + n_B = n \) and \( n_A > n_B \). Individuals are rich (\( R \)) or poor (\( P \)). Let \( n_P \) denote the number of poor individuals in society and \( n_R \) denote the number of rich individuals. We assume that the poor are a majority, with \( n_P > n_R \) and \( n_R + n_P = n \). The number of individuals in ethnic group \( j \) and class \( k \) is denoted by \( n_{jk} \) and the set of individuals in ethnic group \( j \) and class \( k \) is denoted by \( j_k \) (so, for example, \( n_{AR} \) is the number of rich individuals in group \( A \) and \( A_R \) denotes this set of individuals). Thus, individuals belong to one of four subgroups: \( A_P, A_R, B_P \) and \( B_R \). Since \( n_{AR} = n_A - n_{AP} \), \( n_{BP} = n_P - n_{AP} \) and \( n_{BR} = 1 - n_P - (n_A - n_{AP}) \), the structure of a population is defined by three parameters: \( n_A, n_P \) and \( n_{AP} \). I ignore the substantively uninteresting case where any subgroup has a majority.
(which means I assume that \( n_{AP} < \frac{1}{2} \) since the poor in \( A \) are the only subgroup that could be a majority). In large electorates, the probability that the groups or subgroups are identical in size obviously goes to zero. If therefore simplify the analysis by eliminating substantively uninteresting ties, assuming that no subgroups or groups are exactly the same size, so that for any \( r, s \in M = \{A, B, P, R\}, n_r \neq n_s, \) and for any \( r, s, w, u \in M, n_{rs} \neq n_{wu} \) and \( n_{rs} \neq n_u \).

Before any transfers or government action occurs, there is a fixed level of income in society, with the rich holding some fraction of income and the poor holding the rest. As a consequence, as the number of poor increases (and thus the number of rich decreases), inequality increases. As an example, consider the case where the total income in society is \( Y = 1 \). Assume that the rich have one-half of the total income (so that the rich share is \( Y^R = \frac{Y}{2} \)) and the poor have the other half (so that the poor share is \( Y^P = Y^R = \frac{Y}{2} \)). The poor share \( Y^P \) equally and the rich do the same, so there are only two levels of income in society (before government action occurs). Let \( y^P \) (alternatively, \( y^R \)) be the income of a poor (rich) individual. Then \( y^P = \frac{1}{2n_P} \) (and \( y^R = \frac{1}{2n_R} \)). Given that \( n_P > n_R, y_P < y_R \). As we show in Appendix[A] with this assumption about pre-existing income, the Gini coefficient of inequality can be written as a function of the number of poor, \( n_P \):

\[
G = n_P - Y^P = n_P - \frac{1}{2}
\]

Thus, in the model, \( G \) increases as \( n_P \) increases.

The parameters also define widely used measures of ethnic diversity like ELF, the widely-used measure of ethnolinguistic fractionalization, and EP, the widely used measure of ethnic polarization (Reynol Querol 2002). These measures are essentially identical when there are only two groups. Here, both are increasing as \( n_A \) decreases.

4 The model with plurality rule and exogenous government revenues.

In many democracies, particularly in the developing world, few government revenues come from direct taxes on income or wealth, but instead come from other sources, such as natural resources, foreign aid, sales from state-owned farms or industries, or taxes on imports or exports. I therefore begin the analysis by assuming that party competes for votes by offering platforms that describe
how exogenous government revenues, \( \pi > 0 \), will be distributed. In an extension of the baseline model below, I assume that government revenues come from an income tax on the rich.

Since parties can form to represent a class or a group, there are at most four parties that can form: \( P_P \) (representing the poor); \( P_R \) (representing the rich); \( P_A \) (representing the majority group \( A \)); and \( P_B \) (representing the minority group \( B \)). Each party therefore represents two subgroups – \( P_A \), for example, represents subgroups \( A_P \) and \( A_R \).

At the beginning of the game, each of the potential four parties has an individual who is the party’s entrepreneur. If the party entrepreneur wishes to form the group’s party, she must pay a cost, \( \delta > 0 \), which can be arbitrarily small. A party entrepreneur for \( m \in M = \{A, B, P, R\} \) who pays \( \delta \) proposes a party platform, \( p'_m > 0 \), which describes the payment that each individual in \( m \) will receive if \( P_m \) wins. Thus, if the party representing the poor, \( P_P \) proposes \( p'_P = x \) and \( P_P \) wins, then each poor person – no matter how they vote – will receive \( x \). Parties therefore cannot discriminate against particular members of the group they represent, but instead must treat all group members the same. This implies that the maximum platform for a party representing group \( m \) is \( \frac{\pi}{n_m} \), which occurs if the party entrepreneur proposes to distribute the entire \( \pi \) to the group her party represents. Let \( P' \) be the vector of party platforms, so that \( P' = (p'_A, p'_P, p'_B, p'_R) \).

The model therefore rules out two types of parties. First, parties cannot form to represent a sub-group of an ethnic group. A party cannot form, for example, to represent only the poor within the majority group. This assumption is crucial to the focus on the identity choice problem central here and without it, the model is trivial – a party can alway form and win by representing the smallest subgroups that form a majority. This assumption that parties cannot appeal to subgroups is also consistent with existing research on the nature of ethnic parties and the appeals that they make for votes (e.g., Chanda 2009, Gadjoeva 2013). Those studies find no evidence of subgroup appeals and they contain no mention of efforts to differentially appeal to particular classes within groups. Indeed, the purpose of such parties is to avoid such appeals by seeking votes based on identity. Since ethnic appeals are “class-free,” it may be very difficult for a party to credibly commit to an “ethnic strategy” whereby they represent only a subset of an ethnic group. Although I rule out “sub-ethnic parties,” I do consider the case below where ethnic parties can be organized so that the rich within the group can control within-group distribution.

Second, the model rules out party commitments that transcend group and class. For exam-
ple, a party cannot credibly commit at once to the rich and the minority group. This assumption again sharpens the focus on the group vs. class dichotomy of central interest here. And although parties can and do attempt to make commitments that transcend group or class, such commitments should clearly be less credible to the voters than a commitment to a particular group or class. If a party represented the rich and the minority group, for example, the poor in the minority group should rightfully worry that the party could be captured by the rich and work against the interests of the poor. Similarly, the members of the minority group might worry that the party could be captured by the rich in the majority group to work against the interests of the minority group. Below I discuss the implications of relaxing this assumption and point out that the assumption is crucial for generating differences between plurality and proportional electoral systems.

Campaigns are not static events, and parties often have an opportunity to respond to the strategies of other parties. Such responses, however, are not always possible, perhaps because of timing issues (there may be too little time), reputational factors that create lock-in, or internal party decisions rules, to name but a few factors. I therefore model the possibility of response probabilistically. After party platforms are initially established (i.e., after $P'$ exists), one party entrepreneur is randomly selected to update her platform, allowing the entrepreneur (whether she formed a party in the initial stage or not) to offer a new platform at a cost $\bar{\delta}$. Let $\gamma_m > 0$ be the probability that $P_m$ is selected to update its platform and let these probabilities for all parties be denoted by the vector $\Gamma = (\gamma_A, \gamma_P, \gamma_B, \gamma_R)$ where $\gamma_A + \gamma_P + \gamma_B + \gamma_R = 1$. Let $\bar{\gamma}_m$ denote the party that is recognized to update its platform, so, for example, $\bar{\gamma}_A$ indicates that $P_A$ has been recognized to change her platform. At the time that parties set their initial platform, party entrepreneurs know $\Gamma$, the probability that each party will be recognized to change its platform, but they do not know which specific party will be chosen.

For any $\bar{\gamma}_m$, we can characterize the party system from which the voters choose. Define $P_m$'s updated platform given the platforms of the other parties as $p_m(P')$. If the entrepreneur for $P_m$ is not recognized to change her platform, then $p_m(P') = p'_m$. If the entrepreneur for $P_m$ is recognized to change her platform, then her optimal strategy can be to change her platform or to leave it unchanged. The party system that structures the voters' choices therefore depends on the initial party proposals, $P'$, the realization of $\gamma_m$ ($\bar{\gamma}_m$), and the updated strategy of the party recognized to change its platform. Denote this party system as a vector of party platforms,
\( P(P', \bar{\gamma}_m) = (p_A(P'), p_P(P'), p_B(P'), p_R(P')) \). Where doing so creates no confusion, I will simply refer to the party system facing the voters as \( P \).

### 4.1 Agent utility functions

After a party system forms and voters vote, a voter receives the amount promised to his or her group in the platform of the winning party. Thus a voter receives the promised amount if the voter belongs to one of the two subgroups that the winning party represents, and receives zero otherwise. Formally, let \( p_m^* \) be the platform of the winning party, \( P_m \), which represents individuals from group or class \( m \), and let \( u_{jk}(p_m^*) \) be the utility of a voter of ethnic group \( j \) and class \( k \) given \( p_m^* \). Then

\[
 u_{jk}(p_m^*) = \begin{cases} 
 0 & \text{if } j \neq m \text{ and } k \neq m \\
 p_m^* & \text{if } j = m \text{ or } k = m. 
\end{cases}
\]

The utility function of party entrepreneurs has three components. First, an entrepreneur receives the policy payment offered by the platform of the winning party if the entrepreneur represents any voter who is represented by the winning party. For example, if \( P_A \) wins, then an entrepreneur for \( P_P \) receives \( p_A \) because there are poor individuals in \( A \) who are represented by \( P_A \). But an entrepreneur for \( P_B \) does not receive \( p_A \) in this case because \( P_B \) does not represent any voters who are represented by \( P_A \). To avoid adding citizens to the population, to implement this assumption, I assume that if the entrepreneur represents any voters that are also represented by the winning party, the entrepreneur herself is one of the individuals represented by this party. This assumption is a simple way of incorporating incentives parties have to form in order to influence the policy of the winning party. For example, a poor person in \( A \) could have incentives to form \( P_P \) in order to influence the platform of \( P_A \) given that this poor in \( A \) receive a payoff if \( P_A \) wins. An alternative (albeit notationally cumbersome) assumption that would lead to the same effect of policy on party behavior would be one where party entrepreneurs are selected from the set of voters who belong to any subgroup that a party represents.

Second, if the entrepreneur offers the winning platform, she keeps any government resources that are not distributed to voters after honoring the platform. Define the residual for the entrepreneur of the winning party, \( P_m \), as \( e_m = \pi - p_m^* n_m \). Note that we can think of \( e_m \) as a
measure of corruption or political rents that accrue to party entrepreneurs rather than to ordinary citizens in equilibrium. Finally, an entrepreneur pays her cost $\delta$ of offering a platform and $\bar{\delta}$ of updating her proposal. Note that if $p_m = 0$ then $P_m$ does not form (and there are no costs of formation).

If $p^*$ is the winning platform, then the utility to the entrepreneur for party $m$ from this outcome is

$$u_m(p^*) = \begin{cases} 
-\delta - \bar{\delta} & \text{if } P_m \text{ loses and represents no voters represented by the winning party} \\
p^* - \delta - \bar{\delta} & \text{if } P_m \text{ loses but represents some voters represented by the winning party} \\
p^* + e_m(p_m) - \delta - \bar{\delta} & \text{if } P_m \text{ wins}
\end{cases}$$

(1)

Equilibrium behavior. Voters from each subgroup are identical and vote in the same way. Let $v_{jk} = P_m$ denote that subgroup $jk$ supports $P_m$. Define $V_{-jk}(P)$ as the vector of voting strategies for the three subgroups other than $jk$ given the specific party system $P$. Define $p^*(v_{jk} = P_m|V_{-jk}(P))$ as the winning platform if for party system $P$, subgroup $jk$ supports $P_m$ and other subgroups have voted as specified in $V_{-jk}(P)$. Consider the example where all four parties have offered a positive platform, and where $V_{-AP}(P) = (v_{AR} = P_A, v_{BP} = P_B, v_{BR} = P_B)$. Then $p^*(v_{AP} = P_A|V_{-jk}(P)) = P_A$ and $p^*(v_{AP} = P_P|V_{-jk}(P)) = P_P$. That is, if the rich in $A$ support $P_A$, the poor in $B$ support $P_P$, and the rich in $B$ support $P_R$, then $P_A$ wins (and $P_A$ is the winning platform) if the poor in $A$ support $P_A$. And if the poor in $A$ support $P_P$, $p^* = P_P$.

Given a party system $P$, I define an equilibrium voting strategy for subgroup $jk$ as

$$v^*_{jk}(P) = \begin{cases} 
P_m & \text{if } u_{jk}(p^*(v_{jk} = P_m|V_{-jk}(P)) > p^*(v_{jk} = P_m'|V_{-jk}(P)) \\
P_m & \text{if } u_{jk}(p^*(v_{jk} = P_m|V_{-jk}(P)) = p^*(v_{jk} = P_m'|V_{-jk}(P)) \text{ and } e_m > e_m' \\
P_m & \text{if } p_m > 0 \text{ and } p_{m'} = 0 \\
\emptyset & \text{if } p_m = p_{m'} = 0
\end{cases}$$

(2)

A Nash equilibrium at the voting stage exists if the vote choice of all subgroups satisfies eq 2. Equation 2 simply states that a voter will choose the party that yields the best platform
for the voter given the voting strategies of other subgroups. If there is no party that represents a voter, the voter abstains. If there is only one party that represents the voter, the voter plays the weakly dominant strategy, which is to support this party. Finally, there may be both a class and ethnic party that represent a voter. In this case, the voter chooses the party that yields the highest expected utility given \( P \) and given the strategies of other voters. If a voter is indifferent between his class- and ethnic-based parties, I assume the voter supports the party whose entrepreneur has retained the largest surplus (i.e., who has the largest \( e_m \)). This tie-breaking rule makes it possible to avoid requiring party entrepreneurs to choose platforms that maximize on an open set. Suppose, for example, that a voter is pivotal in choosing between \( P_j \) and \( P_k \) and that \( p_j = p_k \). By assumption, \( n_j \neq n_k \), so assume \( n_j < n_k \). This implies that it is always possible for \( P_j \) to offer more to its voters. If \( P_k \) proposes to distribute all of \( \pi \) to voters, for example, its platform is \( \frac{\pi}{n_k} \). But then since \( n_j < n_k \), \( P_j \) could propose \( \frac{\pi + \epsilon}{n_k} \) and win against the larger group. Of course, as \( \epsilon \to 0 \), \( \frac{\pi + \epsilon}{n_k} \) converges to \( \frac{\pi}{n_k} \). The tie-breaking assumption rules out the need to make such \( \epsilon \) proposals.

**Equilibrium behavior of parties.** Given a party system, \( P \), voters will choose optimally (per Eq. 2), producing a winning party platform. Let \( V^*(P) = (v_{AP}, v_{AR}, v_{BP}, v_{BR}) \) be a Nash equilibrium in voting strategies of voters given a party system \( P \) and let \( p^*(V^*(P)) \) be the winning platform given these voting strategies. In principal, there could be multiple equilibrium given some \( P \), but below we show that this possibility is never relevant to the choice of strategies by party entrepreneurs.

Consider some potential party, \( P_{m'} \), where \( m' \in M \). Let \( P'_{-m'} \) be the initial party platforms of all parties other than \( m' \). Consider the expected payoff of adopting \( \hat{p}_{m'} \) given \( P'_{-m'} \). With probability \( \lambda_m \), \( P_m \) will be recognized to change its platform. Let \( P(\hat{p}_{m'}, P'_{-m'}, p_m(\bar{\lambda}_m)) \) be the party system that results given \( P_{m'} \) proposes \( \hat{p}_{m'} \), other parties propose the vector of platforms \( P'_{-m'} \), \( P_m \) is selected to adjust her platform, and \( p_m \) is the optimal adjusted platform. Let \( V^*(\cdot) \) be a Nash equilibrium voting strategies given this party system, and let \( p^*(V^*(\cdot)) \) be the winning platform given these voting strategies. The utility for the entrepreneur from \( \hat{p}_{m'} \) given \( \lambda_m \) is therefore \( u_m(p^*) \) as defined in Eq. [1]

The expected utility to an entrepreneur depends on the realization of \( \lambda_m \) and can be written as
\[
EU_{m'}(\hat{p}_{m'}; P'_{-m'}) = \sum_{m \in M} \lambda_m u \left[ p^* | V^* (P(\hat{p}_{m'}, P'_{-m'}, p_m(\bar{\lambda}_m)) \right].
\]  

(3)

A set of party strategies is a Nash equilibrium if for all parties, \( m' \in M \) and for all \( \hat{p}_{m'} \neq \tilde{p}_{m'} \),

\[
EU_{m'}(\hat{p}_{m'}; P'_{-m'}) > EU_{m'}(\tilde{p}_{m'}; P'_{-m'}).
\]  

(4)

Thus, holding the strategies of other parties constant, any choice by a party entrepreneur will produce a party system, and voters will respond to the party system by playing Nash equilibrium voting strategies, which determines an outcome. For each entrepreneur, the expected utility of a given strategy is defined by eq. 3 and a Nash equilibrium exists when all parties are choosing strategies that produce the highest expected utility given the actions of other party entrepreneurs.

The expected utility described in eq. 3 could be undefined if there are multiple voting equilibrium given a particular party system. One could address this issue by assuming an equilibrium selection criterion when multiple voting equilibria exist, or by assuming that each possible voting equilibrium is equally possible, for example. But this is unnecessary. It is obviously from eq. 2 that there will be a unique Nash equilibrium in voting if there exist only two parties, and lemma 1 shows that there can only be two parties in any equilibrium.

**Lemma 1** There will be two (and only two) parties in any plurality rule equilibrium.

**Proof.** There can exist no one-party equilibria. There cannot exist an equilibrium where only \( P_R \) or only \( P_B \) forms. If only \( P_R \) forms, then the entrepreneur for \( P_F \) would receive 0 from not forming but would win (with the support of all voters in \( A \)) and receive a positive payoff by forming and offering any \( p_P > 0 \). Thus, it could not be an equilibrium for only \( P_R \) to form. By the same logic, it cannot be an equilibrium for only \( P_B \) to form (because entrepreneurs for \( P_A \) could always defeat this party if it is the only party that forms). It thus remains to show that there cannot be an equilibrium where only \( P_A \) or only \( P_P \) forms.

Suppose \( p_R = p_B = 0 \) and \( n_A < n_P \). There cannot be an equilibrium where only \( P_P \) forms because for any \( p_P \), if \( p_A = p_P \), \( P_A \) will win with a positive residual, \( e_A \) (i.e., given \( n_A < n_P \),
$e_A > e_P$ when $p_A = p_P$). There also cannot be an equilibrium where only $P_A$ forms. To see this, consider the worst case for the entrepreneur for $P_P$, where $p_A = \frac{\pi}{n_P}$ so that even if $P_P$ pledges to distribute the entire $\pi$ to the poor, it will lose. If $p'_P = 0$, then with probability $\gamma_A$, $P_A$ will be recognized to adjust its platform. If this occurs, it will choose $p_A = \epsilon$ (the smallest possible positive proposal, which yields the highest possible residual, $e_A$) and win (because no other party has formed). Thus, the expected utility for the entrepreneur of $P_P$ from not forming is $EU_P(p_P = 0) = (1 - \gamma_A)\left(\frac{\pi}{n_P} + \gamma_A e\right)$. If $p'_P \in (0, p'_A]$, then with probability $\gamma_A$, $P_A$ will adjust its proposal to $p'_P$ and with probability $(1 - \gamma_A)$ there will be no adjustment. Thus, $EU_P(p_P \in (0, p'_A]) = (1 - \gamma_A)\left(\frac{\pi}{n_P} + \gamma_A p'_A\right) - \delta$, which (given $\delta$ can be arbitrarily small) is greater than $EU_P(p_P = 0) \forall \gamma_A$ and which is maximized when $p'_A = \frac{\pi}{n_P}$. Thus, if $n_A < n_P$, there cannot be an equilibrium where only one party forms because even if $p'_A = \frac{\pi}{n_P}$, the entrepreneur for the poor in $A$ always realizes a higher utility from proposing $p_A > 0$.

By an identical logic, if $n_A > n_P$, there cannot be a one-party equilibrium: $P_P$ can always ensure victory by offering $p_P = \frac{\pi}{n_A}$ but the entrepreneur for $P_A$ receives a positive expected utility from forming and proposing $p = \frac{\pi}{n_A}$ (because so doing prevents $P_P$ from adjusting its proposal to $\epsilon$).

**There cannot be more than two parties in any equilibrium.** There cannot be an equilibrium where there exists a party that does not represent any voters who are also represented by the winning party. The entrepreneur for such a party has a negative utility if she forms: she receives 0 in policy utility, does not win so reaps no residual from winning, and pays her cost of forming. Thus, she must not form in equilibrium. This implies that there cannot be an equilibrium with four parties because one party would necessarily represent voters who are not represented by the winning party. In addition, a three-party equilibrium could only exist if the winning party represented voters who are also represented by the other two parties.

Suppose there are three parties. $P_x$ represents subgroups 1 and 2, $P_y$ represents subgroups 3 and 4, and $P_z$ represent subgroups 1 and 3. This could not be an equilibrium in party formation if $P_x$ wins (because then $P_y$ would represent no voters who are represented by the winning party) and it could not be an equilibrium in party formation if $P_y$ wins (because then $P_z$ would represent no voters who are also represented by the winning party). Thus, in order for this to be an equilibrium in three parties, it must be the case that $P_z$ wins (since $P_z$ represents voters also represented by $P_x$.
$P_z$ could emerge the winner in equilibrium in three different ways. One possibility is that $n_1 > n_3 + n_4$ so that group 1 is pivotal. In any voting equilibrium group 1 will support $P_z$ if it offers a higher expected utility than $P_z$ and will support $P_z$ otherwise. Since the equilibrium outcome is determined by whether $p_x$ is larger than $p_z$, the expected benefit to the entrepreneur of any $p_y > 0$ is $-\delta$. That is, the policy outcome and the winner will be unaffected by $p_y$, and thus the entrepreneur will pay a cost of forming without affecting her policy utility or her chance of winning. $P - y$ therefore cannot form in an equilibrium in the case. Similarly, if group 3 is pivotal (e.g., because $n_3 > n_1 + n_2$), it can never be an equilibrium for $P_z$ to form.

Thus, it remains to show that there cannot be an equilibrium with three parties where both group 1 and group 3 support $P_z$ and the votes of both groups are pivotal (so that $P_z$ wins if group 1 supports $P_x$ and $P_y$ wins if group 3 supports $P_y$). In this case, it must be true that $p_z > p_x$ and that $p_z > p_y$. Note there cannot be an equilibrium where $p_x \neq p_y$: If this were true, the net benefit to the party making the lower offer would be $-\delta$ (because the winning party must respond to the higher proposal, making the lower proposal irrelevant to the outcome). Similarly, if $p_x = p_y$, one of the entrepreneurs could achieve the same outcome by not paying the cost of forming a party. Thus, it cannot be an equilibrium for both $P_x$ and $P_y$ to form in this case, and there can never be a three-party equilibrium. ■

The logic behind the requirement of two parties in equilibrium is straightforward. There cannot be a one-party equilibrium because the winning party could always adjust its proposal to give next to nothing to its constituents. Thus, an entrepreneur that benefits from the policy of the winning party has an incentive to enter, even if it loses, to force the winning party to offer as much as possible to its constituents. And there cannot be a three-party equilibrium because the policy of the winning party is victorious because it pledges as much or more than the second highest platform, making the platform of any third party irrelevant to the outcome, and thus imposing a cost on this party’s entrepreneur with no benefit.

If a second party does not form, then for any initial platform by the winning party, that winning party will adjust its platform to near zero if recognized to do so. This is why the second party
forms in equilibrium – to prevent the winning party entrepreneur from offering next to nothing to voters. But although this possibility of adjustment drives the strategy of the second party, in any equilibrium adjustment never occurs.

Lemma 2 In any equilibrium, it must be true that \( p_m' = p_m \forall m \).

Proof. Consider whether \( p_m > p_m' \) could ever be optimal in equilibrium (so that \( P_m \) adjusts its proposal upward). An entrepreneur can only benefit from adjusting her platform upward if \( p_m \) wins (given the other party’s platform, \( p_m' \)) and \( p_m' \) loses (given \( p_m' \)). But then \( p_m' \) could not be optimal given \( p_m' \) because the entrepreneur would have done better by proposing \( p_m \) initially. Consider whether \( p_m < p_m' \) could ever be optimal. It cannot be optimal to pay \( \bar{\delta} \) to adopt \( p_m < p_m' \) if \( p_m \) loses given \( p_m' \). Thus, \( p_m < p_m' \) is optimal only when \( p_m \) and \( p_m' \) both win, but \( p_m \) yields a higher \( e_m \). But if \( p_m < p_m' \) wins given \( p_m' \) it cannot be true that \( p_m' \) is optimal, as the entrepreneur for \( P_m \) would have obtained a better outcome by proposing \( p_m' = p_m' \). Thus, it can never be true that a party adjusts its proposal in equilibrium. 

Since there are only two parties in any equilibrium, there must be one party that has a clear advantage, because it represents a smaller majority. This fact makes it possible to clearly define the winning platforms in any equilibrium.

Lemma 3 Consider a possible two-party system where \( P_m \) and \( P_m' \) both form and \( n_m < n_m' \). If there exists an equilibrium, then it must be true that \( p_m' = p_m' = p_m = p_m' = \pi_{n_m} \) and \( P_m \) wins.

Proof. In order for two parties to form, it must be true that the parties represent one subgroup in common: if this were not true, then the losing party would have a negative expected payoff of forming. By lemma 2, if there exists a two-party equilibrium, it must be true that neither party adjusts its platform if given the opportunity to do so. It also must be true that \( p_m = \pi_{n_m} \) in any equilibrium. Given \( n_m < n_m' \), \( P_m \) will win for any \( p_m \geq p_m' \) (and will lose otherwise). Given the maximum platform by \( P_m' = \pi_{n_m'} \), there can be no equilibrium where \( p_m > \pi_{n_m} \). Consider \( p_m' = p_m < \pi_{n_m} \). This could never be optimal because \( P_m' \)'s optimal response would be \( p_m' > p_m' \), which would defeat \( P_m \). Thus, in any equilibrium, it must be true that \( p_m' = p_m = \pi_{n_m} \). Finally,
given that in any equilibrium it must be true that \( p'_m = p_m = p_{m'} \), it must also be true that

\[ p'_m' = p_{m'} = \frac{\pi}{n_{m'}}. \]

For any \( p'_m' = \frac{\pi}{n_{m'}} \), the entrepreneur receives \( p_m - \delta \). For any \( p'_m' < \frac{\pi}{n_{m'}} \), the entrepreneur for \( P_m \) would adjust to \( p_m = p'_m' \), yielding an expected payoff for the entrepreneur of \( \gamma (p'_m') + (1 - \gamma) p'_m' - \delta < p_m - \delta \) (given that \( \delta \) is arbitrarily small).

Lemma 3 not only allows us to define the platform of the parties that form in any equilibrium, it also helps us to prove that in any equilibrium, the party of the rich and the party of the minority group will not form.

**Lemma 4** In any equilibrium, \( p_R = p_B = 0 \).

**Proof.** Consider \( P_R \). There are three possible two-party equilibria to consider.

- \( P_R \) and \( P_B \). This obviously cannot be an equilibrium because \( P_P \) would win with certainty, yielding a negative net benefit from forming \( P_R \).

- \( P_R \) and \( P_A \): By lemma 3, in any equilibrium the two parties must offer the same platform, which implies that \( P_R \) will win (given \( n_R < n_A \)) and that \( n_A P < n_R \) (otherwise \( n_R \) could never win and would not form), which means that the entrepreneur for \( P_P \) will receive 0. Consider the payoff to the entrepreneur from forming \( P_P \). In any voting equilibrium, \( v_{BR} = P_R \) and \( v_{BP} = P_P \). If \( v_{AP} = P_A \) then it must be true that \( v_{AR} = P_R \), which could not be an equilibrium (because the poor in \( A \) would do better by supporting \( P_P \). Thus, in any Nash equilibrium in voting strategies, \( v_{AP} = v_{BP} = P_P \) and \( P_P \) wins. Thus, it cannot be an equilibrium for \( p_P = 0 \) if only \( P_A \) and \( P_R \) have formed.

- \( P_R \) and \( P_B \): Consider the case where the equilibrium voting outcome from this party system is \( P_R \) wins, which implies that the rich in \( B \) prefer \( P_R \) to \( P_B \) and \( n_R > n_B P \). If \( P_P \) forms, then in any voting equilibria, the rich in \( A \) support \( P_R \) and the poor in \( A \) support \( P_P \). If \( n_{AP} \) is sufficiently large that the poor in \( A \) determine the voting outcome, then \( P_P \) obviously has an incentive to form. Consider the case, then, where \( n_{AP} < \min(n_R, n_B) \). Since it must be true that \( v_{AP} = P_P \) and \( v_{AR} = P_R \), there are 4 possible voting equilibria to consider:

  - \( v_{BP} = v_{BR} = P_B \). This is not a NE because the rich in \( B \) are prefer \( P_R \) given \( v_{AP} = P_P \) and \( v_{BP} = P_B \).
• \( v_{BP} = P_B \) and \( v_{BR} = P_R \): This is not a NE because the outcome is \( P_R \), which means the poor in \( B \) must prefer \( v_{BP} = P_P \).

• \( v_{BP} = P_P \) and \( v_{BR} = P_B \): This cannot be an equilibrium because the poor in \( B \) would prefer voting for \( P_B \) given that \( v_{BR} = P_B \).

• \( v_{BP} = P_P \) and \( v_{BR} = P_R \). It is straightforward to verify that this satisfies eq. 2 for all subgroups, and thus this would be the unique equilibrium if \( P_P \) formed.

Since \( P_P \) would always win by entering, it cannot be an equilibrium for \( p_P = 0 \) when only \( P_R \) and \( P_B \) have formed and \( P_R \) is expected to win. The logic is the same for why \( P_A \) must enter when only \( P_R \) and \( P_B \) have formed and \( P_B \) is expected to win.

The proof for why \( P_B \) cannot form is analogous and is omitted.

In any equilibrium, then, parties representing minority groups cannot form because they can always be defeated by the majority party, and they cannot influence the platform of the majority party (because they do not represent any voters who are represented by the majority party). Thus, in any equilibrium, the two parties representing the majority groups must form. The unique equilibrium is described in Proposition 1.

**Proposition 1** Under plurality rule with windfall revenues, there is a unique Nash equilibrium. In this equilibrium

- \( p_A' = p_A = p_P = \frac{\pi_A}{n_P} \) if \( n_A < n_P \)
- \( p_A' = p_A = p_P = \frac{\pi_A}{n_A} \) if \( n_A > n_P \)
- \( p_R = p_B = 0 \)

The equilibrium voting strategies given \( P \) are

- \( v_{AR}(P) = P_A \)
- \( v_{BR}(P) = \emptyset \)
- \( v_{BP}(P) = P_P \)
- \( v_{AP} = P_A \) if \( n_A < n_P \) and \( P_P \) if \( n_A > n_P \)
Proof. By lemma 1, in any equilibrium, there must be two parties, and by lemma 4 these parties cannot include $P_R$ or $P_B$. By lemma 3, if there is an equilibrium with $P_P$ and $P_A$, then $p'_A = p_A = p'_P = p_P = \frac{n}{n_P}$ if $n_A < n_P$ and $p'_A = p_A = p'_P = p_P = \frac{n}{n_A}$ if $n_P < n_A$. Thus, if an equilibrium exists it must be unique and be the one described in the statement. It only remains to show that these party formation and voting strategies represent a Nash equilibrium.

It is straightforward to confirm that the voting strategies satisfy the statement in 2: the poor in $A$ are the only subgroup represented by more than one party, and they support the party representing the smaller electoral majority (and hence the party that yields the largest residual for the entrepreneur).

To confirm that the party strategies are consistent with eq. 4, first consider the case where $n_A < n_P$.

(1) $p_R = 0$ is optimal. Suppose not, so that $P' = (p_P = \frac{n}{n_P}, p_A = \frac{n}{n_P}, p_B = 0, p_R \geq p_A)$. Note since $P_B$ has not formed it must be true that $v_{BP}(P') = P_P$ and $v_{BR}(P') = P_R$. There are two cases to consider. In the first, the rich in $A$ are not pivotal (because $n_{AP} > n_R$). In this case, the outcome will obviously be $P_A$ and the net benefit of forming $P_R$ is $-\delta$, so $P_R$ cannot form. In the second case, the rich in $A$ are pivotal. If $v_{AP}(P') = P_A$ then the rich in $A$ must support $P_R$, but this cannot be a Nash equilibrium in voting strategies because if the rich in $A$ support $P_R$, the poor in $A$ cannot support $P_A$ but rather must support $P_P$, which would win. Thus, in this case the outcome will be $P_P$ and the net benefit of forming $P_R$ is again $-\delta$.

(2) $P_B = 0$ is optimal. Obviously, the entry of $P_B$ cannot affect the voting strategies of voters in $A$, and for any $p_B$, $P_A$ will win. Thus, the net benefit to the entrepreneurs in $A$ of forming $P_B$ is negative.

(3) $p'_P = p_P = \frac{n}{n_P}$ is optimal. Given the specified voting and proposal strategies, the entrepreneur for $P_P$ has an expected utility of $EU_P(p'_P = p_P = \frac{n}{n_P}) = \frac{\pi}{n_P} - \delta$. Suppose $P_P$ adopted $\bar{p}_P = 0$. In this case, if $P_A$ is recognized to adjust, it will adopt $p_A = \epsilon$, yielding the entrepreneur for $P_P$ an expected utility of $EU^{P_A}_P(\bar{p}_P = 0) = \gamma_A \epsilon + (1 - \gamma_A) \frac{\pi}{n_P}$. Thus, even ignoring the fact that $p'_P = p_P = 0$ can open the door to $P_R$ forming, given $\delta$ is arbitrarily small, $EU_P(p'_P = p_P = \frac{n}{n_P}) > EU_P(p'_P = p_P = 0)$. Consider $EU_P(p'_P = p_P = \epsilon) = \in (0, \frac{\pi}{n_P})$. In this case, if $P_A$ is recognized to adjust, it will adopt $p_A = p'_P$ and will win, yielding $\gamma_A p'_P + (1 - \gamma_A) \frac{\pi}{n_P} - \delta$ for $P_P$’s entrepreneur, which is strictly less than the payoff from the equilibrium proposal. Thus,
\( p'_P = p_P = \frac{\pi}{n_P} \) is optimal.

(4) \( p'_A = p_A = \frac{\pi}{n_A} \) is optimal. Given \( p'_A = \frac{\pi}{n_A} \), the entrepreneur for \( P_A \) prefers \( p'_A \) (which wins) to \( \bar{p}'_A < p'_A \) (which loses). Similarly, since any \( p'_A \geq \bar{p}'P \) will win, the entrepreneurs prefer \( p'_A \) to anything larger (because this maximizes the residual). For the same reasons, \( P_A \) will not adjust if recognized to do so. Thus, \( p'_A = p_A = \frac{\pi}{n_A} \) is optimal.

The logic when \( n_P > n_A \) is identical and is omitted. 

Proposition 1 shows that with plurality rule, in equilibrium only \( P_A \) or \( P_P \) – parties that represent majority groups – can win elections. The entry or potential entry of \( P_A \) ensures that \( P_B \) will not form, and the entry or potential entry of \( P_P \) ensures that \( P_R \) will not form. The poor in \( A \), then, are pivotal because their support is crucial to the victory of either \( P_P \) or \( P_A \). Which party is preferred by the poor in \( A \) depends on the size of the majority groups. If \( n_A \) is larger, then the entrepreneur for \( P_P \) can offer more to each supporter, and if \( n_P \) is larger, the entrepreneur for \( P_A \) can offer more. The winning party, then, will be the party that represents the smallest of the two possible majority groups.

The proposition therefore describes how inequality and ethnic diversity should influence whether class-based or ethnic-based parties should prevail in plurality elections. The proposition states that holding ethnic diversity (i.e., \( n_A \)) constant, as inequality (i.e., \( n_P \)) increases, it is more likely that ethnic politics prevails (i.e., \( P_A \) wins and the poor in \( A \) support parties that appeal to their ethnic rather than class identity). Similarly, holding inequality constant, as ethnic diversity decreases, it is more likely that class politics prevails (i.e., \( P_P \) wins and the poor in \( A \) vote their class identity).

The logic is related to how the size of a majority group influences the types of platforms that can win in equilibrium. A party representing the smallest majority group has a clear advantage. The most that the party representing the largest majority group can offer is to divide \( \pi \) equally among all members of this group, which would yield no residual for the party entrepreneur. But an entrepreneur for a party representing the smaller majority group can always promise more because the party has fewer constituents who need to be paid if the party wins. Thus, if \( n_A < n_P \), an entrepreneur for \( P_A \) can offer more than the best offer that the entrepreneur for \( P_P \) could make.
and it will win because the poor in $A$ can ensure (by threatening to form or actually forming a party for the poor) that they prefer this party’s platform to anything that $P_P$ could offer. By contrast, if $n_P < n_A$, an entrepreneur for $P_P$ can offer more than the best that the entrepreneur for $P_A$ could offer, and it will win because the poor in $A$ can ensure (by forming or threatening to form $P_A$) that they prefer this party’s platform to anything that $P_A$ could offer.

The model suggests, then, that many African countries have the perfect combination for instigating ethnic politics. They often have very high levels of inequality, lowering the appeal of class-politics to poor voters, who seeks ways to limit the size of the winning coalition by excluding subsets of the poor. And the high levels of ethnic diversity make it possible to use ethnicity to this end. The model also suggests an obvious reason for redistributive class politics in homogenous countries like those of Scandinavia. If it is difficult in such contexts to fashion electoral coalitions based on identities other than income, making class-politics an attractive means for winning votes.

5 Proportional representation with windfall revenues

Under proportional representation (PR), the number of seats won by a party is proportional to the number of voters who support it. Elections might therefore produce no majority winner, resulting in coalition bargaining. This section explores the implications of PR for the emergence of ethnic-versus class-based electoral politics.

Interactions begin with party formation following the same structure as under plurality rule. Voters vote strategically so as to achieve the highest possible payoff given the voting strategies of others and the dynamics of coalition formation. As under plurality rule, indifferent voters select the party that produces the largest residual.

If a party wins a majority, it implements its platform and the party leader keeps the residual. If no party wins a majority, then a coalition bargaining process begins. Each leader of a party that receives votes can make a coalition proposal, $c_{jk} = x$, which states that party $j$ proposes a coalition with party $k$ to give $x$ to each person represented by $P_j$ and $P_k$. Such proposals can win only if $P_j$ and $P_k$ represent a majority in the legislature, and if $c_{jk} = c_{kj}$ (that is, the two parties agree on the proposal). If $P_R$ and $P_B$ receive support from a majority, for example, and $c_{BR} = c_{RB} = x$, then $P_B$ and $P_R$ form a majority coalition and all individuals who are rich or in group $B$ receive
Under coalitions, party leaders share equally the residual that is not distributed to voters. Thus, leaders from different parties in the same coalition have identical interests – they want to make the smallest winning proposal so as to maximize their residual.

Without additional constraints, when no majority exists, party leaders in a coalition have opportunities to bargain in bad faith vis-a-vis their constituents. At the extreme, party leaders can keep $\pi$ entirely for themselves. Such behavior would of course only work in the short-term, as voters would punish party leaders who did not bargain faithfully on behalf of the groups they represent. It is therefore important to impose an additional constraint on party behavior, and I adopt the following “good faith” assumption: a party leader pays a large cost $\phi > 0$ if she accepts a coalition proposal that gives her party’s constituents a lower payoff than the constituents would have received had they voted for any other party that has formed. Suppose, for example, that $P_A$ forms and receives the support of the poor in $A$. If the rich in $A$ support $P_R$ in anticipation of a coalition with $P_B$, $c_{BR}$ cannot give constituents less than the rich in $A$ would have received from supporting $P_A$.

In equilibrium, as under plurality rule, party formation strategies must be subgame perfect. Voters vote optimally given the parties that have formed and expectations about government formation. And party entrepreneurs maximize their utility in the coalition bargaining stage by agreeing to coalition bargains that provide the highest possible utility, subject to the “good faith” constraint. Although there are up to four parties and a wide variety of coalitions, it is straightforward to show that there are only three possible equilibrium governance outcomes.

**Lemma 5** Under proportional representation, there exist only three possible equilibrium governance outcomes:

1. $P_A$ wins a majority and forms a single-party government;
2. $P_P$ wins a majority and forms a single-party government; or
3. No party wins a majority and $P_R$ and $P_B$ form a majority coalition government.

**Proof.** By the same logic in the proof of Lemma 4, it can never be an equilibrium for $P_R$ or $P_B$ to win a majority. It therefore remains to show that the only possible equilibrium majority coalition includes $P_R$ and $P_B$. Any other coalition must include either $P_A$ or $P_P$. No equilibrium can result in a coalition of $P_A$ with another party, $P_k$. Such a coalition could at most provide $\pi \frac{n_A + n_k}{n_A + n_k}$
individuals represented by $P_A$ and $P_k$, which would yield no residual for the party entrepreneurs. But the entrepreneur for $P_A$ could always offer a platform that all members of $A$ prefer to this best possible outcome under the coalition, and that yields a positive residual for the entrepreneur. Thus it can never be an equilibrium for a party entrepreneur to offer a $p_A$ that leads the groups in $A$ to split their vote in a way that results in a coalition of $P_A$ with $P_k$. The logic for why there cannot be an equilibrium between $P_P$ and another party is identical: the entrepreneur for $P_P$ always prefers to offer a platform that wins a majority to offering a platform that results in a coalition.

Lemma 5 makes it relatively straightforward to characterize equilibria under PR with windfall revenues. Let $P^* = (p_A, p_P, p_B, p_R)$ denote the equilibrium party platforms, let $V^*(P) = (v_{AP}, v_{AR}, v_{BP}, v_{BR})$ be the equilibrium vector of voting strategies and let $c^*$ denote the equilibrium coalition agreement.

**Proposition 2** Under proportional representation,

1. If $n_A < n_P$ and $n_{AP} < n_B$ then $P_A$ wins and
   \[ P^* = (\frac{n_A}{n_P}, \frac{n_A}{n_P}, 0, 0) \]
   \[ V^* = (P_A, P_A, P_P, 0) \]

2. If $n_A < n_P$ and $n_{AP} > n_B$ then $P_B$ and $P_R$ form a winning coalition and
   \[ P^* = (\frac{n_A}{n_P}, 0, p_B > 0, p_R > 0) \]
   \[ V^* = (P_A, P_B, P_B, P_R \text{ or } P_B) \]
   \[ c^*_{BR} = c^*_{RB} = \frac{n_A}{n_P} \]

3. If $n_A > n_P$ and $n_{AP} < n_R$, then $P_P$ wins and
   \[ P^* = (\frac{n_A}{n_P}, \frac{n_A}{n_P}, 0, 0) \]
   \[ V^* = (P_P, P_A, P_P, 0) \]

4. If $n_A > n_P$ and $n_{AP} > n_R$ then $P_B$ and $P_R$ form a winning coalition and
   \[ P^* = (0, \pi n_P, p_B > 0, p_R > 0) \]
   \[ V^* = (P_P, P_R, P_B, P_R \text{ or } P_B) \]
   \[ c^*_{BR} = c^*_{RB} = \frac{n_A}{n_P} \]

**Proof.** (1) $n_A < n_P$ and $n_{AP} < n_B$: Following the same logic found under plurality rule, the specific platforms of $P_P$ and $P_A$ are optimal given that $P_B$ and $P_R$ do not form, and the voting strategies are optimal given the party system. It therefore remains to show that $P_B$ and $P_R$ cannot enter. Since $n_{AP} < n_B$ implies $n_A < n_R + n_{BP}$, there cannot exist an equilibrium where a coalition of $P_R$ and $P_B$ is the winner (because the entrepreneur for $P_A$ can always ensure that the rich in
A prefer \( P_A \) to this coalition). And since \( n_A < n_P \), an entrepreneur for \( P_A \) can always ensure that the poor in \( A \) prefer \( P_A \) to \( P_P \) (and the entrepreneur has an incentive to do so in order to obtain the residual). Thus, there cannot exist an equilibrium where any members of \( B \) receive a payoff from the winning party, and \( P_B \) therefore cannot form (because the expected payoff of doing so is negative). Give \( P_B \) will never form, \( P_R \) can never be a credible coalition partner, and thus the optimal platform for \( P_A \) is independent of \( p_R \), making the expected payoff of forming \( P_R \) negative.

(2) \( n_A < n_P \) and \( n_{AP} > n_B \): Given the party system, the voting strategies are optimal. Since \( p_P = 0 \), in any voting equilibrium, \( v_{AP} = P_A \) and \( v_{BP} = P_B \). Given \( p_A = c_{BR} \), the rich in \( A \) vote for the party that yields the largest residual to the entrepreneurs, which is \( P_R \) given \( n_{AP} > n_B \). The rich in \( B \) can support either \( P_R \) or \( P_B \) with no effect on the outcome. Thus, it remains to show that party formation strategies are optimal.

By lemma\(^5\) there cannot be an equilibrium where only \( P_R \) and \( P_B \) form (because if this occurred, one of these parties would win a majority). There also cannot be an equilibrium where \( P_R \) and \( P_B \) do not form because by forming they win with certainty (because \( n_{AP} > n_B \) ensures that no party can offer a platform that defeats the coalition) and reap a positive residual for their entrepreneurs. Thus, in any equilibrium \( P_R \) and \( P_B \) and at least one other party must form.

For \( P_R + P_B \) coalition to prevail and satisfy the “good faith” assumption, it must be true in any equilibrium where \( P_R \) and \( P_B \) form that \( c_{BR} = max(p_A, p_P) \): proposing \( c_{BR} > max(p_A, p_P) \) is not optimal because the entrepreneurs can win and keep a larger residual by proposing \( c_{BR} = max(p_A, p_P) \), and proposing \( c_{BR} < max(p_A, p_P) \) does not satisfy the “good faith” constraint. The expected outcome for any \( p_A > p_P \) is \( p_A \). Thus, the optimal platform for \( P_A \) given any \( p_P \) is \( \frac{\pi}{n_A} \) (because the maximum \( p_P \) is less than \( \frac{\pi}{n_A} \) given \( n_A < n_P \)). Since \( P_A \) will always adopt \( p_A = \frac{\pi}{n_A} \), for any \( p_P \), the expected benefit for the entrepreneur of forming \( P_P \) will always be negative (because the proposal does not affect the outcome).

(3) \( n_A > n_P \) and \( n_{AP} < n_B \): The structure of the proof is identical to that of (1) and is omitted.

(4) \( n_A > n_P \) and \( n_{AP} > n_B \): The structure of the proof is identical to that of (2) and is omitted. □
Recall that under plurality rule, the poor in \( A \) are pivotal, and party entrepreneurs must vie for their support. When inequality is high relative to ethnic heterogeneity, the entrepreneur for \( P_A \) has the advantage (because it represents a smaller winning coalition) and ethnic politics prevails. When inequality is relatively low, \( P_P \) has the advantage, and class politics prevails. Proposition 2 shows that under PR, it remains the case that ethnic politics is more likely to occur when inequality is high, that class politics is more likely when inequality is low, and that that the level of ethnic fractionalization defines how high or low inequality must be. But PR makes it possible for party entrepreneurs to break up group and class politics by dividing ethnic groups or the poor against themselves.

Consider the case where class politics prevails under plurality rule (\( n_A > n_P \)). With PR electoral rules, the poor in \( A \) are no longer pivotal: since they can only support parties that represent a majority of the population (i.e., can only support \( P_P \) or \( P_A \)), they can never be represented by a party that is a feasible coalition partner. Instead, the poor in \( B \) are pivotal. The poor in group \( B \) could be part of a pure class coalition with the poor in \( A \) (supporting \( P_P \)) or they could support \( P_B \) which could form a majority coalition with \( P^R \). When the number of poor in \( A \) is greater than the number of rich, the door opens for the coalition parties. Party entrepreneurs for \( P_B \) and \( P^R \) can ensure that the poor in \( B \) obtain more from a coalition than from \( P_P \). Proportional representation, then, makes it possible for party leaders to form smaller winning coalitions than would be possible in a class-politics equilibrium under plurality rule, thereby dividing the poor against themselves, with the poor in \( A \) supporting a different party than the poor in \( B \).

By the same logic, PR can alter the nature of group politics that we observe under plurality rule when ethnic diversity is large. Suppose \( n_A < n_P \), so that the pivotal poor in \( A \) prefer \( P_A \) to \( P_P \) under plurality rule. With proportional representation, the rich in \( A \) are now pivotal: they can choose between supporting a \( P_A \) majority party or a coalition between \( P^R \) and \( P_B \). Again, \( n_{AP} \) must be small for the rich in \( A \) to prefer the group-based outcome of \( P_A \). When \( n_{AP} \) is sufficiently large, party entrepreneurs for \( P^R \) and \( P_B \) can attract the rich in \( A \) away from \( P_A \), dividing the majority group against itself, with the rich in \( A \) supporting a different party than the poor in \( A \).

It is important to recognize that this difference between PR and plurality rule is driven exclusively by the assumption in the model that under plurality rule, parties cannot credibly commit to supporting both ethnic and class groups. If hybrid parties – that is, parties that represent both
a class and a group – can form under plurality rule, there would be no difference in the model between outcomes under plurality rule and outcomes under PR. In particular, with plurality rule, a hybrid party representing the rich and group $B$ could win under the same conditions that the $P_R$ and $P_B$ coalition wins under PR because this hybrid party would represent the smallest possible majority coalition.

Is it reasonable to suspect that the problems of committing to diverse constituents are the same under plurality rule and PR? As noted above, it might be quite difficult for parties to credibly commit to both an ethnic group and a class. The poor in $B$, for example, might reasonably worry that if they support a $P_{BR}$ party under plurality rule and it wins, then the rich within this party might adopt policies that are disadvantageous to the poor. Such a poor voter might reasonably expect that if it supports $P_B$ to bargain on its behalf in the coalition politics of PR, there will be less risk. The model obviously cannot resolve this issue, but the results and this discussion remind us that the effects of electoral laws might be due principally to the ability of different groups to credibly commit to electoral coalitions before elections occur (as they must under plurality rule) as opposed to after elections (as they do under PR). The greater the problems of ex ante commitment, the greater should be the differences between PR and plurality rule.

6 Testing the model.

Democracy is a governance structure that can reduce inequality by producing majorities to demand policies that redistribute income from the rich to the poor. Standard tax-and-transfer models, where electoral competition can only unfold along the class dimension, describe how inequality leads to higher taxes and higher levels of redistribution. The model presented here suggests that the effect of democracy on inequality depends on whether ethnic or class politics prevails. When class politics prevails, all government resources go to the poor, providing the greatest level of inequality reduction. But when ethnic politics prevails, some or all of the rich receive transfers and some of the poor do not, leading to a lower level of inequality reduction. Thus, examining how identity choice emerges endogenously in elections makes it possible to gain new insights into how elections influence the distribution of government resources.

A central result of the analysis is that democracies, whether they use proportional or plu-
ality electoral laws, do the least to reduce inequality when inequality is highest. As the proportion of individuals in society who are poor increases, the value to the poor of rich-to-poor redistribution decreases because there are so many poor who must share the spoils of government. As a consequence, when there are a lot of poor individuals, party entrepreneurs representing ethnic groups can build successful electoral coalitions that target subsets of the poor and thus exclude some poor individuals from access to government resources. Ethnic politics is an attractive way of doing this because group identity presents a clear criterion for inclusion and exclusion. Since ethnic groups are economically diverse, ethnic coalitions include some rich and exclude some poor, leading to lower levels of inequality reduction than is obtained from pure class politics. This result stands in sharp contrast to results from the standard tax-and-transfer framework, where all redistribution is assumed to be based on income and there is no option to redistribute by ethnic group.

This section explores two empirical implications of the theoretical model. The first concerns the redistributive consequences of democratic elections. Is it the case that the redistributive effect of democracy is greatest when inequality is lowest? The second concerns the mechanism. Is it the case that ethnic identity in electoral politics is greatest when inequality is large relative to ethnic diversity?

The redistributive effect of democracy. To examine how inequality affects the redistributive consequence of democracy, I estimate whether the effect of effect of democracy on redistribution is mediated by the underlying level of inequality when we control for ethnic diversity. To measure the redistributive effect of elections, I use the inequality data from Solt (2009). Solt develops a methodology for creating comparable, time-varying measures of the Gini index across a wide variety of countries. He measures both the gross Gini ($GINI_G$), which is inequality before taxes and transfers occur, and the net Gini ($GINI_N$) which is inequality after taxes and transfers occur. I measure inequality reduction, $IR$, as the proportion of inequality that is removed via taxes and transfers:

$$IR = \frac{GINI_G - GINI_N}{GINI_G}.$$ 

I explore how the causal effect of democracy on inequality reduction is mediated by in-
equality itself in two ways. The first is to employ an instrument for democracy in a two-stage least squares framework. The instrument, “Regional Polity at Regime Inception” (RPRI), measures the average regional Polity2 score (using the regions defined in Haber and Menaldo 2011) at the time that the country’s regime began (using Polity2’s date for the beginning of the regime), but excluding the country for which the measure is being calculated. For example, one of the surveys in the data set is from Finland in 2003. According to Polity2, the regime in place in Finland in 2003 began in 1944. The average Polity2 score for all countries (not just those countries in our sample) except Finland in Finland’s (neo-Europe) region in 1944 is 4.25, which is the score assigned to Finland’s 2003 survey for RPRI.3

The instrument is inspired by Knusten (2011), who draws on Huntington (1991) to argue that we can exploit the fact that democratization often occurs in waves to develop an instrument for democracy. For each democratization wave, there are geopolitical events that lead to regime change in groups of countries. These events include the revolutions in the US and France (wave 1) and the allied victory in WWII (wave 2). The third wave, Huntington argues, started in the mid-1970s in Spain and Portugal, and continued through the 1990s with the fall of the Soviet Union. Such geopolitical factors can directly lead to democratization, such as in Germany and Japan following the war or in many central European countries following the Soviet Union’s demise in 1989. But contagion effects are also very important, and they need not be linked to Huntington’s purported waves. At least since Starr’s (1991) study, scholars have argued the democratization often works via diffusion in the international system, where regional neighbors copy each other, as may be going on currently in several countries in the Middle East region.4

Reverse causation is obviously impossible with this instrument, as a country’s democracy score today(62,691),(952,947) obviously cannot affect regional democracy scores in the past. The larger concern is that RPRI might be affecting inequality reduction through some channel other than democracy that we cannot control for in the regressions. The existing research I am aware of reveals no specific factors that at once affect regime choice – which tends to be driven by geopolitics – that have an independent effect on inequality reduction. Of course this is always a concern with instruments and therefore my second approach is to estimate fixed-effects regressions.

3It is not possible to operationalize this instrument with any of the Freedom House scores because the Freedom House time series is too short.
4See, for example, Kopstein and Reilly (2000), Gleditsch, Skrede and Ward (2006), and Leeson and Dean (2009).
The models include the values of following control variables:

- **POLITY2** is the Polity2 measure, ranging from -10 to 10, taken from Polity IV, and lagged one year.

- **EP** is the Esteban and Ray (1994) polarization index with binary distances (Reynal-Querol, 2002). It is defined as \( P = 4 \sum_{n=1}^{m} n_i^2 (1 - n_i) \). Data on \( n_i \) comes from Fearon (2003) and is constant within countries.

- **GDP** is the the lagged value (by one year) of the log of real GDP per capita, lagged one year. The source is the Penn World Tables (2011).

- **POP** is the log of the population in millions, lagged one year, as reported by the Penn World Tables (2011).

- **OIL/DIAM** is an indicator variable that takes the value 1 if the country is ‘rich in oil’ or produces (any positive quantity of) diamonds. A country is ‘rich in oil’ if the average value of its oil production in a period is larger than 100 US dollars per person in 2000 constant dollars. The source is Ross (2011).

In addition, each model contains a lag of the dependent variable and a dummy variable for each year. Standard errors are clustered by country.

Table 1 presents the results where IR is the dependent variables. Model 1 present the results from OLS, using the lag of Polity2 rather than the instrument to measure democracy. Polity2 has a positive coefficient but it is not precisely estimated. EP and gross Gini both have negative and precisely estimated coefficients (indicating that higher values of these variables are associated with lower levels of inequality reduction).

Models 2-4 presents results using the RPRI instrument for democracy. The top of Table 1 presents the results for RPRI from the first-stage regression models in the two-stage least-squares models. Although to conserve space the table presents the first-stage results for only RPRI, the first stage regressions of course include all other regressors as well. Model 2 includes the direct effect of democracy, ethnic polarization, and gross inequality. We can see that the instrument is quite strong, with positive and precisely estimated coefficient. The coefficient for Polity2 in the
### Table 1: Democracy and inequality reduction

<table>
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<th>Method</th>
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<td>0.008***</td>
<td>(.003)</td>
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<td>(.007)</td>
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<td>0.954***</td>
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</table>

Note: Dependent variable is IR, Inequality reduction. All continuous variables are standardized to have a mean of 0 and standard deviation of 1 to facilitate comparisons of coefficients. * p<.10, ** p<.05, *** p<.01
second stage is positive and precisely estimated, and the coefficients for EP and Gini are negative and rather precisely estimated.

Our main concern is to examine whether the effect of democracy is mediated by inequality, controlling for Gini. Since I have only one instrument for democracy, I cannot estimate this interaction directly in the 2SLS framework, but it is possible to estimate the model separately in “high” inequality and “low” inequality countries. The mean of the countries’ gross Ginis in the data set is .45, so I have estimated the model on two sets of countries: those with a gross Gini less than .45 and those with a gross Gini greater than .45. If the effect of democracy on inequality reduction declines as inequality increases, the coefficient on democracy in the first set of countries should be weaker than the coefficient in the second set of countries. This is exactly what we find: the coefficient on democracy in the high inequality countries (model 3) is .006 and is not statistically significant, even at the .10 level. The coefficient for democracy in model 4, with the lower inequality countries, is .008 – one-third larger – and is much more precisely estimated (p=.009). Thus, the effect of democracy on inequality reduction seems to be greatest when inequality is lowest.

We can explore this interaction directly outside the 2SLS framework by adding the interaction of democracy and inequality to fixed effects models. The results of these models are presented in models 5 and 6. Model 5 estimates the direct effects of democracy and inequality. (We cannot control for EP in these models because it is constant within countries.) All of the substantively important variables in the model are estimated with very large error, except population, which has a negative coefficient (indicating that population grown within a country results in less redistribution). Model 6 includes the interaction of democracy with inequality. Polity2 has the expected positive sign and is more precisely estimated (p=.12), gross Gini has the expected negative sign (with p=.14) and the interaction has the expected negative sign (with p=.09).

The marginal effect of interest – the effect of democracy on inequality – is given in Figure 1. The figure graphs the marginal effect and 95-percent confidence interval for the Polity2 variable at different levels of inequality. We can see that at low levels of inequality, the effect is positive and quite large, with the 95-percent confident interval ranging from around 0 to above .4. But at higher levels of inequality, the coefficient becomes much smaller and crosses into negative territory when the Gini is about two-thirds of its maximum value (though it is not statistically significant in this range). Thus there is evidence in the fixed effects models that democracies do less to reduce
This empirical analysis asks whether the redistributive effects of democracy are conditioned by inequality and ethnic diversity by examining the interactive effect of democracy and inequality, holding ethnic diversity constant. This has the advantage of allowing us to identify the causal effect of democracy on redistribution, and to avoid classifying countries as democratic or not. An alternative way to explore the implications of the model, however, and one that allows us to get at the interaction of ethnic diversity and inequality, is to identify the set of democracies and then examine whether the effect of inequality on redistribution is conditioned by EP. Although we cannot estimate 2SLS (because I have no instruments for inequality or EP) or fixed effects models (because EP is constant within countries), we can explore whether the expected relationships associations exist in the data. In particular, while we expect that both Gini and EP depress redistribution in democracies, the negative effect of inequality should decrease (i.e., the effect should move toward 0) as EP increases because under large EP, ethnic politics is most likely to emerge at any level of Gini. That is, inequality is most important when society is not so diverse that ethnic politics is most likely to prevail.
Table 2: Gini, EP and redistribution in democracies

<table>
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Note: Dependent variable is IR, Inequality reduction. All continuous variables are standardized to have a mean of 0 and standard deviation of 1 to facilitate comparisons of coefficients. * p<.10, ** p<.05, *** p<.01
The results are presented in Table 2. The dependent variable remains IR. I adopt two different definitions of democracy. In the first, Polity2 is greater than 0, which includes the “most democratic” anocracies. In the second, I include only those countries where Polity2 is greater than 5. These are countries that have all the trappings of real democracy. The first 2 columns examine the set of countries where Polity2>0 and model 1 includes only the direct effects of inequality and diversity. We find that both variables depress the level of redistribution within democracies. Model 2 includes the interaction. The coefficient for both variables are positive, and as expected, the interaction is negative, confirming the expectation from the model that the effect of inequality will dissipate as societies become sufficiently diverse. Models 3 and 4 present the same estimations using Polity>5 as the cutoff. We find almost identical results.

The marginal effect of inequality on redistribution at different levels of EP is depicted in Figure 2, along with the 95 percent confidence interval. The top panel is for the case where Polity2>0 and the bottom panel is for the case where Polity2>5 (which drops 11 of 110 countries). Both pictures show that inequality, measured by the gross Gini, has a negative and statistically significant relationship with redistribution, as long as EP is not too large. This negative effect of inequality approaches 0 as EP becomes sufficient large. Thus, as the model suggests, inequality reduces the redistributive effects of democracy, but only in countries that are not too diverse ethnically.

Inequality and ethnic identity in elections. The analysis above provides evidence that the redistributive effects of democracy decline as inequality increases, which is consistent with the predictions of the model. In the model, the mechanism resulting in this effect is the that inequality encourage ethnic politics, which in turn results in less redistribution. But the model again suggests an important interaction: the degree to which inequality is related to ethnic politics depends on the level of ethnic diversity. When it is possible to form a small ethnic majority, inequality may have little effect because there is such a strong incentive for ethnic politics at almost any level of inequality. As societies become more homogenous, then when inequality is sufficiently high, we should see ethnic politics winning out over class politics.

We can test for the presence of this interaction using data from Huber (2012), which develops a suitable measure, Party Voting Polarization (PVP), for examining the relationships described
Figure 2: The marginal effect of inequality on redistribution at different levels of EP
in the model. To construct PVP, one compares the ethnic basis of support for each party with the ethnic basis of support for each other party to measure the extent to which any two parties differ in their ethnic basis of support. This measure of difference will take the value 0 if the basis of ethnic support is identical for the two parties (for example, if both parties get 80 percent of their support from group 1 and 20 percent from group 2) and it will take the value 1 if one party receives all its support from one group and another party receives all its support from another party. Formally, \( \tilde{r}_{ij} \) is the distance in the electoral bases of support for parties \( i \) and \( j \), which is defined as

\[
\tilde{r}_{ij} = \sqrt{\frac{1}{2} \sum_{g=1}^{G} (P^i_g - P^j_g)^2},
\]

where \( P^i_g \) and \( P^j_g \) are the proportion of supporters of parties \( i \) and \( j \) who come from group \( g \), and there are \( G \) groups. To create a measure of how ‘ethnified’ the party system is, one aggregates the measures of distance, invoking the polarization perspective to weight the party distances by party size, so that

\[
PVP = 4 \sum_{i=1}^{N} \sum_{j=1}^{N} p_ip^2_j \tilde{r}_{ij}.
\]

\( PVP \), then, is a measure of voting outcomes that describes the degree to which voters have sorted themselves by ethnic group when they vote. It invokes the polarization perspective, and it takes it maximum value when there are two parties, each of equal size and each with their own basis of ethnic support.\(^5\) The expectation from the model is that the degree to which voters will sort themselves at election time based on ethnicity will depend on inequality and EP. We should therefore expect to find that PVP increases with inequality and EP, but that there should be an interaction, with the effect of inequality on PVP being largest at low levels of EP, and with the effect of inequality on voting outcomes disappearing as EP grows large.

From Huber (2012), we have survey-based measures of PVP from 67 elections in 43 democracies. We regress this variable on our measures of inequality and EP, as well as other controls. Those not included above include:

\(^5\)See discussion in Huber 2012.
Table 3: Inequality, ethnic diversity and ethnic parties

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R-squared .38 .36 .44 .43
N 67 69 67 69

Note: The DV is PVP. Robust standard errors in parentheses.
* p<.10, ** p<.05, *** p<.01

- PR is an indicator variable that takes the value 1 if the electoral law is proportional representation.
- ResSeg is a measure of how geographically isolated groups are from each other, and is from Huber (2012).
- Afro2, Afro3, CSES are indicator variables for surveys used, with WVS the omitted category (see Huber 2012).

I estimate OLS models with robust standard errors. The results are given in Table 3.

Model 1 includes the gross Gini and EP directly, plus all the controls. EP has a strong positive effect, which one would expect given the construction of PVP. And the findings for the PR indicator variable are consistent with the analysis in Huber (2012). But the results show little effect
of inequality on ethnic voting. We should expect this variable to have a positive coefficient (i.e., parties should have a stronger basis of support in unequal systems), and it does, but it is measured with considerable error (p=.48). Since many of the coefficients in Model 1 are measured with substantial error, model 2 drops the variables from model 1 that have the most imprecisely estimated coefficients. The estimate for the gini remains positive, is somewhat larger, and is somewhat more precisely estimated, but the coefficient estimate is far from statistically significant.

The theoretical model, however, suggests that the effect of Gini on ethnic politics should depend on the level of ethnic diversity, as described above. Model 3 therefore adds the interaction of Gini and EP to model 1. The results show that the direct of Gini is now positive and precisely estimated, while the coefficient on the interaction is negative and precisely estimated. Thus, the effect of inequality on ethnic voting declines as ethnic polarization increases. Model 4 removes the variables from model 3 that are estimated with considerable error, and the results for the remaining variables are robust.

Figure plots the marginal effect of inequality on PVP at different levels of EP. We see that consistent with the argument, this effect is positive and is declining in EP. As EP reaches about .45, the coefficient is no longer significant at the .05 level, and the estimated effect become negative (though not significant) when EP reaches about .65. Thus, though we do not have causal evidence for these effects, we do find precisely the association predicted by the model: we see more ethnic voting when inequality is higher, as long as EP is not too large.

7 Heterogeneous power within groups.

The model provides an intuitive argument about the role of inequality and ethnic diversity in shaping the emergence ethic politics and for understanding the effect of democracy on on redistribution. It also provides a flexible framework that can be extended in a variety of ways, and in the remainder of the paper, I consider two extensions. In this section I relax the assumption that all members of groups are equal, and in the next section I introduce taxes on the rich.

In the model above, party entrepreneurs are motivated by personal gain. To win votes, entrepreneurs must treat all members of the group they represent equally. In parties representing
Figure 3: The marginal effect of inequality on PVP at different levels of EP

Ethnic rather than economic groups, this assumption might be particularly strong given the economic heterogeneity that exists within groups. In many contexts, there are asymmetries within groups, with the rich having considerable power to influence the allocation of resources. We often find, for example, that the rich within groups benefit disproportionately from group-specific policies (e.g., Sowell 2004), which makes sense given that the rich often hold positions of power and have the education and experience to extract the most from government. This might be particularly important when group leaders like tribal chiefs can directly and indirectly influence policy outcomes through their interactions with legislators and their constituents (Baldwin 2013a and 2013b). It is therefore worthwhile to consider the model under a different assumption about ethnic parties. In this section, I assume that only the rich within a group can form an ethnic party, that when they do so, they can discriminate between the rich and poor within their group, and that ethnic party leaders are motivated not by personal gain, but by advancing the well-being of the rich within their group.

Specifically, consider the plurality rule model with windfall revenues, and let $\bar{p}_j$ be the commitment of ethnic party $j$ to the poor in $j$. If $P_j$ wins, the proportion of $\pi$ not allocated to the poor in $j$ is shared equally by the rich in $j$. For example, if $P_A$ wins an election, then the payoff to each poor person in $A$ is $\bar{p}_A$, the total going to the poor in $A$ is $\bar{p}_A n_{AP}$, and the residual to be
shared by the rich in $A$ is $\pi - \bar{p}_A n_{AP}$. We make the same tie-breaking assumption that when voters are indifferent, they vote for the party that has the largest total residual. Thus, for the poor in $A$, they will support $P_A$ when $\bar{p}_A = p_P$ if $\pi - \bar{p}_A n_{AP} > \pi - p_P n_P$. It is straightforward to show that when the rich control distribution within their ethnic group in this way, class politics never emerges in equilibrium.

**Proposition 3** With windfall revenues, under any electoral rule, if the rich control the distribution of $\pi$ within their group, there exist no equilibria where $P_P$ wins.

**Proof.** $P_P$ can win only if the entrepreneur for $P_P$ can offer the poor in $A$ more than they would receive from supporting $P_A$. The maximum possible $p_P$ is $\frac{\pi}{n_P}$, which yields no residual. But if $\bar{p}_A = \frac{\pi}{n_P}$, there will be a positive residual for the rich in $A$ equal to $\pi - \frac{\pi}{n_P} n_{AP}$. Thus, an entrepreneur for $P_P$ can never defeat an entrepreneur for $P_A$. ■

If the rich control resource distribution within their ethnic group, class-based identity never emerges in electoral politics and class-based parties never win. The logic is simple. The poor can choose either a class-based party – which if successful yields $\frac{\pi}{n_P}$ to each poor person – or they can choose a group-based party. When the rich control distribution within their ethnic group, they can ensure that the poor in their group receive at least $\frac{\pi}{n_P}$, eliminating any incentives for the poor in their group to support a class-based party. The rich in the majority keep the residual after paying off the poor in their group. Note that as inequality increases, the residual that the rich keep also increases.

### 8 Government revenues from taxes on the rich.

In some democratic contexts, substantial government revenues come from taxes, and these taxes affect government revenues directly (because they determine the proportion of income that goes to the government) and indirectly (because tax revenues are a function of labor, which responds to tax rates). In this section, I assume that government revenues do not come from windfalls, but rather come from taxes on the rich, and that these taxes also affect the incentives of the rich to engage in revenue-generating labor. This makes it possible to explore the impact of taxes on the
incidence of group versus class politics.

I focus on the case of plurality rule examined in Proposition 1, where the poor in $A$ are pivotal in determining whether $P_A$ or $P_P$ prevails in equilibrium (although the logic developed here would apply under PR as well). Assume that only the rich pay taxes, and that the rich receive utility from consumption, $C$ and leisure, $L$. They can supply labor, $L$, at a fixed wage, $w$ (which is set equal to 1), and they have a fixed stock of capital, $K$. There is a proportional tax rate, $t$, on labor income. If $P_P$ wins, the rich receive nothing from the government; they only pay taxes. If $P_A$ wins, the (tax free) transfer to the rich in group $A$ is $\lambda_{AR}$. As discussed in the previous section, it may be the case that there are asymmetries in power within groups, and here I will not make an explicit assumption about what proportion of total revenues the rich in $A$ will receive if $P_A$ wins, but rather will assume that this amount cannot exceed that which would make the poor in $A$ prefer supporting $P_P$ to $P_A$. The budget constraint on consumption is $C = (1 - t)L + K + \lambda_{AR}$, where $\lambda_{AR} = 0$ if $P_P$ wins and where $\lambda_{AR} = 0$ always for the rich in $B$. The time constraint is $T = L + L = 1$. Let $\alpha$ be the weight that the rich give to consumption, and for simplicity assume that $\alpha$ is the same for the rich in both groups. Then the preferences over consumption and leisure are given by $U(C, L) = \alpha \ln C + (1 - \alpha) \ln L$, which (substituting the budget and time constraints) can be written as $U(C, L) = \alpha \ln ((1 - t)L + K + \lambda_{AR}) + (1 - \alpha) \ln (1 - L)$.

Let $L^*_C(t)$ be the equilibrium labor output as a function of $t$ if class politics prevails because $P_P$ wins, and let $L^*_G(t)$ be the equilibrium labor output if group politics prevails because $P_A$ wins. We focus on parameter values that produce an interior solution. A central implication of having group politics prevail in any equilibrium is that the government transfer to the rich in $A$ reduces the marginal value of labor for this group, and thus results in less labor by the rich when group politics prevails than when class politics prevails.

Lemma 6 $L^*_C(t) > L^*_G(t) \forall t$.

Proof. Note that $U(C, L)$ is concave in $t$ for both group and class based politics. Solving the first-order conditions when $\lambda_{AR} = 0$ yields $L^*_C(t) = \frac{K(1 - \alpha)t + \alpha(t - 1)}{t - 1}$, which is decreasing in $t$. And for group politics (when $\lambda_{AR} > 0$), $L^*_G(t) = \frac{(K + \lambda_{AR})(1 - \alpha)t + \alpha(t - 1)}{t - 1}$, which is also decreasing in $t$. $L^*_C(t) > L^*_G(t)$ whenever $\lambda_{AR} > 0$, which is always true (given the assumption that the rich in $A$ always receive some transfer if $P_A$ wins).
There is an economic cost of ethnic politics. Taxpayers in the model have a diminishing marginal utility of consumption, and thus they will work less if they are given a transfer that requires no work. Under ethnic politics, the rich in A receive transfers, which reduces their incentive to provide revenue-generating labor. Since the rich in A work less when $P_A$ wins than when $P_P$ wins, total economic output from labor will be less when ethnic politics prevails than when class politics prevails. This also means that total government revenues from taxes will be less when $P_A$ wins, meaning that the size of $\pi$ will not be the same under ethnic and class politics. Let $t^*_C$ be the equilibrium tax rate under class politics (i.e., the tax rate set by $P_P$ if it wins). This tax rate would maximize total revenues because under class politics the poor pay no taxes and they share government revenues among themselves. Let $\pi^*_C(t^*_C)$ be total government revenues when the rich are making optimal labor decisions in response to $t^*_C$. If $P_A$ wins, it is less clear what the optimal tax rate would be (since the rich in A, who would be part of the winning coalition, benefit from government transfers but also pay taxes), although no tax rate could result in $P_A$ winning unless, in conjunction with $\lambda_{AR}$, it yields the poor in A as much as they would receive if $P_P$ wins. For our purposes, it is not necessary to state the explicit tax rate that is adopted if $P_A$ wins. Instead, let $t^*_G$ be any tax rate that is adopted if $P_A$ wins, so that $\pi^*_G(t^*_G)$ is total government revenues if ethnic politics prevails. Lemma 7 shows that for any $t^*_G$, total government revenues are always greater in an equilibrium when $P_P$ wins than when $P_A$ wins.

**Lemma 7** For any $t^*_G$, $\pi^*_C(t^*_C) > \pi^*_G(t^*_G)$.

**Proof.** If class politics prevails, the rich in both groups respond identically (because no rich receive transfers) and thus total government revenue is given by

$$\pi^*_C(t^*_C) = t^*_C \cdot L^*_C(t^*_C) \cdot n_R$$

$$= [t^*_C \cdot L^*_C(t^*_C) \cdot n_{AR}] + [t^*_C \cdot L^*_C(t^*_C) \cdot n_{RB}]$$.

Under ethnic politics, the rich in A respond differently to $t^*_G$ than do the rich in B. The rich in B receive no transfers, and thus their optimal labor output is given by $L^*_C(t^*_G)$. The rich in A do receive transfers, and thus their optimal labor output is given by $L^*_G(t^*_G)$. Total revenues are therefore
\[
\pi_G^*(t_G^*) = [t_G^* \times L_G^*(t_G^*) \times n_{AR}] + [t_G^* \times L_C^*(t_G^*) \times n_B^*].
\]

There are two cases. In the first, \( t_G^* = t_C^* \). This implies that the revenues received from labor output by the rich in \( B \) will be the same under ethnic and class politics, and thus \( \pi_C^*(t_C^*) > \pi_G^*(t_G^* = t_C^*) \) if the rich in \( A \) produce more revenues under class politics than under ethnic politics, which is true if \( t_C^* \times L_C^*(t_C^*) > t_C^* \times L_G^*(t_G^* = t_C^*) \), or if \( L_C^*(t_C^*) > L_G^*(t_G^*) \), which is true by Lemma 6.

In the second case, \( t_G^* \neq t_C^* \). Given \( t_G^* \) is revenue maximizing when the rich receive no transfers, we know that there are more revenues generated by the rich in \( B \) under class politics than under ethnic politics (i.e., \( t_G^* \times L_C^*(t_C^*) < t_C^* \times L_G^*(t_G^*) \) for any \( t_G^* \neq t_C^* \)). In addition, the rich in \( A \) produce fewer government revenues under ethnic politics. To see this, note that by Lemma 6, for any \( t_G^* \neq t_C^* \) it must be true that \( t_G^* \times L_G^*(t_G^*) < t_C^* \times L_G^*(t_G^*) \). In addition, given \( t_C^* \) is revenue maximizing under class politics, it must also be true that \( t_G^* \times L_C^*(t_C^*) < t_C^* \times L_C^*(t_C^*) \). By transitivity, \( t_G^* \times L_G^*(t_G^*) < t_C^* \times L_C^*(t_C^*) \), ensuring that \( \pi_C^*(t_C^*) > \pi_G^*(t_G^*) \).

We can now describe the conditions under which ethnic or class politics prevails in the model where government revenues are endogenously determined by taxes.

**Proposition 4** Under plurality rule, the conditions for class politics are easier to satisfy when government revenues are obtained from taxes on the rich rather than from windfalls.

**Proof.** In Proposition 1, where revenues are from windfalls, the poor in \( A \) are pivotal and ethnic politics prevails if \( n_P > n_A \). With taxes on the rich, the maximum that an entrepreneur for \( P_A \) could offer is \( \frac{\pi_G^*(t_G^*)}{n_A} \) and the maximum that an entrepreneur for \( P_P \) could offer is \( \frac{\pi_G^*(t_G^*)}{n_P} \). Thus, an entrepreneur for \( A \) could only win if \( n_P > \frac{\pi_G^*(t_G^*)}{\pi_G^*(t_G^*)} \). From Lemma 7, \( \pi_C^*(t_C^*) > \pi_G^*(t_G^*) \), which implies that it is more difficult for the entrepreneur for \( P_A \) to win when revenues derive from taxes on the rich.

Proposition 4 shows that raising revenue through taxes on the rich makes ethnic-based politics less attractive to the poor in \( A \). The reason is unrelated to any general effect of taxes on revenues, but rather is due to the differential effect of taxes on revenues under ethnic-based as opposed to class-based politics. The labor model used here makes the standard assumption that
there is a diminishing marginal utility of money (and thus of labor). Consequently, if taxpayers are given transfers, their incentives to work are reduced, which reduces the amount of revenues that the government collects. The pivotal poor in $A$, then, care not simply about the size of the winning coalition if $P_P$ or $P_A$ wins, they also care about how big the pie to be distributed will be under the two possible outcomes. It could be that $n_A$ is smaller than $n_P$ (making $P_A$ more attractive), but that the negative effect of a $P_A$ victory on $\pi$ is sufficiently large that the poor in $A$ prefer the class-based politics associated with a $P_P$ victory.

As in Proposition 2, the distribution of income within and across groups will have an impact on the emergence of class politics. This is because the most important factor in determining the revenue penalty of ethnic-based politics is the number of rich in $A$. The labor output of the rich in $B$ is not directly affected by whether ethnic or class-based politics exists (because they receive no transfers). Thus, holding the size of the groups constant, the greater the number of poor in $A$ (and thus the less the number of rich in $A$), the lower the revenue penalty associated with ethnic politics (because a larger proportion of rich will continue to work at “full output”). For this reason, if we developed the model under PR, we might see that taxes bring equilibrium behavior under PR in closer alignment with equilibrium behavior under plurality rule. With windfalls, the rich can form a coalition with the minority ethnic group when there are a large number of poor in the majority group. With taxes, the incentives of the poor in $B$ to form this coalition should be reduced because coalition politics provides government resources to all the rich, thereby depressing government revenues even more than is the case when resources go only to the rich in $A$ (as can happen under plurality rule).

9 Conclusion.

The model here attempts to improve our understanding of identity choice, electoral politics and the impact of democracy on redistribution by developing a theoretical framework in which the nature of political parties – whether they base their electoral appeals on class or ethnicity – and the identity choice of individuals emerge endogenously. The model suggests several clear avenues for future research. First, the model’s framework could be usefully embedded in the development of explicit models of democratic transitions because it has implications for how autocrats from differ-
ent ethnic groups view the costs of transition. Second, across contexts, the boundaries between ethnic categories can be more or less porous, with markers like race being more difficult to change than markers like language. One could extend the model to consider the impact of “porous” group identity on the emergence of ethnic politics. Third, the model could relax the assumption that there are only two ethnic groups. While moving in this direction could clearly bring the model in closer alignment with the empirical reality in many countries, it is doubtful that many of the central insights from this paper would change substantially. In particular, for any number of groups, the value of class politics will always be lowest when inequality is highest; PR will always make it possible to develop smaller winning coalitions than plurality rule (when parties cannot commit to cross-group electoral coalitions), taxes on the rich will always increase the value of class politics to the poor whereas windfall revenues will make ethnic politics more attractive to ethnic groups, and powerful rich elites will always make it possible for ethnic parties to discourage class politics. Finally, it would useful to consider a dynamic model of elections. Each time an election occurs, there is redistribution of wealth in society, which in turn will affect the possibilities of subsequent success of ethnic or class parties. A dynamic framework would yield insights into the relative stability of identity choice over time.
10 References


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A Appendix

We can link the parameters in the model to the Gini coefficient ("\(G\)"). Recall that the Gini is derived from the cumulative distribution function of income, or the Lorenz curve, which is depicted in Figure A.4. In this example, where income is continuous, individuals are arrayed across the x-axis from poorest to richest. The y-axis depicts the proportion of income in society that is held by individuals to the left of any point on the x-axis. In the figure, for example, there is a point at .8 on the x-axis and .5 on the y-axis, which means that the poorest 80 percent of individuals in society possess 50 percent of society’s income. The areas marked A and B in the figure can be used to calculate the Gini coefficient, which is given by the ratio \(\frac{A}{A+B}\). As inequality increases, the Lorenz curve will bend to the southeast – the area in B will decrease, and at the extreme of inequality, where one person controls all of the income in society, the area A will comprise all of the area under the 45-degree line. At the other extreme of perfect equality, the Lorenz curve will follow the 45-degree line, and the area B will comprise all of the area under the 45-degree line (with the area A equal to 0).

![Figure A.4: G with continuous incomes](image)

For continuous distributions of income, where the Lorenz curve is given by \(L(x)\), the Gini
The coefficient is:

\[ G = 1 - 2 \int_0^1 L(x)dx. \]  

(7)

Our goal is to express \( G \) as a function of the parameters in the model. Consider Figure A.5 where \( n_P = .8 \). Since by assumption, the poor control half the income and the incomes are identical among members of the rich and poor groups, the Lorenz curve is composed of two line segments: a straight line from \((0,0)\) to \((.8,.5)\), and a straight line continuing from \((.8,.5)\) to \((1,1)\). Note that \( y_P = \frac{1}{16} \), which is the slope of the line segment to the left of .8 in Figure A.5. Similarly, \( y_R \) is the slope of the line segment to the right of .8 (which equals \( \frac{1}{3} \)).

Given our assumptions about the distribution of income, it is straightforward to express the Gini depicted in Figure A.5 using eq. 7. Note that the area under the curve, \( L(x) \), is a function of the area under the curve from 0 to \( n_P \) (i.e., the area \( A \)) and the area under the curve from \( n_P \) to 1 (areas B+C). Since the slope of the Lorenz curve from 0 to \( n_P \) is the average income of the poor, \( y_P \), the area in A is given by \( \int_0^{n_P} y_P xdx \). For the area under the curve from \( n_P \) to 1, we need to account for areas B and C. Let \( C^R \) be the height of the rectangle defined by the area in C (which we have assumed is .5). Then the area under the curve from \( n_P \) to 1 is given by \( \int_{n_P}^{1} [y_R x + C^R] dx \). Thus,

\[ G = 1 - 2 \left( \int_0^{n_P} y_P xdx + \int_{n_P}^{1} [y_R x + C^R] dx \right) \]

The assumption that \( Y_P = Y_R = \frac{1}{2} \) simplifies the algebra for expressing \( G \). The area A equals \( \frac{n_P Y_P}{2} \), the area B equals \( \frac{n_R Y_R}{2} \), and the area C equals \( n_R Y_P \). Thus,

\[ G = 1 - 2 \left( \frac{n_P Y_P}{2} + n_R Y_P + \frac{n_R Y_R}{2} \right). \]  

(8)

Since \( Y_P = Y_R = \frac{1}{2} \) and \( n_R = 1 - n_P \), we can re-write eq. 8 as

\[ G = n_P - Y_P = n_P - \frac{1}{2}. \]

We can express the Gini coefficient, then, simply as a function of the number of poor in society. As
Proportion of the population that is poor

Proportion of income held by the poor

A: \( n \frac{Y_P}{Z} \)

B: \( n \frac{Y_R}{Z} \)

C: \( n \frac{Y_P}{Z} \)

Figure A.5: G using parameters from the model
$n_P$ goes to $\frac{1}{2}$, $G$ goes to 0. However, our assumption that the poor share half the income means that at $n_P$ goes to 1, $G$ goes to $\frac{1}{2}$. Of course, we make this assumption that $Y^P = Y^R$ simply to limit the algebraic complexity of the expression for $G$, and one could express $G$ as a function of $n_P$ under any assumption of the total proportion of income held by the poor.