

WEAK STATES, ROUGH TERRAIN, AND LARGE-SCALE ETHNIC VIOLENCE
SINCE 1945*

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FIRST DRAFT – Comments appreciated

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ABSTRACT

The first part of the paper uses the Minorities at Risk data set to address the following puzzle: What relatively exogenous factors differentiate the small number of groups that have experienced large-scale ethnic and communal violence since 1945 from the much larger number that have not? We find that in this period large-scale ethnic violence has taken two major forms – separatist wars and contests between groups to control an internationally authorized “state.” Such wars have been much more likely the poorer and more slow growing the country’s economy in the years prior to onset of violence. Minorities appear more likely to experience such wars if they have some regional base, are not primarily urban, are relatively large groups, live in rough terrain, and have ethnic brethren who dominate a neighboring state. Cultural differences from the dominant group, such as language and religion, are not associated with higher probabilities of rebellion. Nor is the level of democracy of the state (after controlling for wealth), or measures of economic and cultural discrimination.

The second part of the paper shows how most of these findings can be explained in a game model that focuses on the interaction between the state’s choice of counterinsurgent effort, and the choice of individual members of a minority whether to become active rebels. In the model, the main determinants of the scale of civil violence are structural factors that influence rebels’ military prospects for any given level of counterinsurgent effort. Factors that lower the marginal efficacy of counterinsurgent spending, such as rough terrain, lead the state to prefer to fight an on-going low-level war rather than continuously spend enough to keep such rebellions at a minimal level. The model yields numerous additional hypotheses, the most interesting of which concern the role of social support for would-be rebels. We argue that deadlocked, intensely destructive civil conflicts may often arise from a collective action problem among the *nonrebels* of the minority group, for whom the private benefits of supporting rebels exceed the collectively disastrous social costs. This is the exact opposite of the conventional theoretical wisdom about rebellions and revolutions, which treats rebelling populations as having common interests and sees rebellions as evidence that a debilitating collective action problem has been *solved*.

1 Introduction

The end of the Cold War appears to have been accompanied by an upsurge in civil and especially ethnic violence. Certainly, large-scale civil violence in the former Soviet Union (Nagorno-Karabagh, Chechnya, Abkhazia, Ossetia, Transdnier) is linked to the end of the Cold War and the collapse of the Soviet state. The war in the former Yugoslavia may be as well. And one can make a good case that the end of the superpower competition is partially responsible for state disintegration and ethnic violence in Liberia, Somalia, and Zaire.¹ But perhaps this is just an older trend made more visible by the end of the Cold War. Gurr's data on ethnic conflict in the post-World War II period indicate that "the greatest absolute and proportional increase in numbers of groups involved in serious ethnopolitical conflicts occurred between the 1960s and the 1970s, from thirty-six groups to fifty-five" (Gurr 1994, 350).²

Whatever the details of the trend, civil and especially ethnic violence is certainly much more common now than is interstate violence of the classical sort. It tends to be far more protracted than interstate war as well.³ Large-scale ethnic violence merits explanation both because of the enormous human suffering it causes and because it could be an important piece of evidence in the larger puzzle of how world politics and polities are evolving.

Despite the near-constant presence of large-scale ethnic violence in post-Cold War headlines – in Bosnia, Kosovo, Rwanda, Congo, Turkey, Kashmir, Sri Lanka, Nagorno-Karabagh, to name a few instances – large-scale ethnic violence is *not* ubiquitous. For every group that has been involved in heavy fighting since 1945, there are ten or a hundred or more others that have not (Fearon and Laitin 1996). In this paper we address, both empirically and theoretically, the question of *why some groups have been involved in large-scale ethnic violence while most others have not been*. The first part of the paper uses a modified version of the Phase III Minorities at Risk data set to establish some basic empirical regularities. We ask if there are measurable, relatively exogenous factors that can reliably distinguish the groups that have seen large-scale violence.

In an effort to explain the disparate empirical findings, the second part of the paper studies the strategic interaction between the members of a minority group and a central

¹Laitin (1999) develops this argument with respect to Somalia.

²By our own reading of Gurr's Phase III MAR data, there is *no* clear post-War trend in the rate of groups becoming involved in large-scale ethnic violence. For five-year periods beginning in 1945, the number of new cases scoring "small-scale guerrilla war" or worse on the MAR rebellion indicator (see below), is, respectively, 12, 3, 7, 13, 8, 3, 16, 7, 10, and 13. Because of persistence in rebellions, however, the total number of such cases has increased steadily in the period, from 12 between 1945 to 1949 to 64 in 1990 to 1994.

³See Licklider (1995) and Walter (1997) for evidence on the intractability of civil and ethnic conflicts.

government. We consider a model in which members of the minority choose whether to become rebels while the government chooses how much to spend on counterinsurgent or police efforts. The model produces a surprisingly rich set of comparative statics, which can make sense of almost all the empirical findings. The mechanisms identified by the model yield a variety of additional empirical implications as well. The remainder of this introduction briefly summarizes these two parts of the paper.

Empirically, we find, first, that there are two types of large-scale ethnic violence in the post-War period, *wars of secession or autonomy* (e.g., Chechnya, the war for Tamil Eelam in Sri Lanka) and *violent contests* over a recognized state apparatus (e.g., Lebanon, Somalia). Wars of secession have typically occurred in countries with a perceived majority ethnic group, while contests tend to occur in countries with no perceived majority group (mainly in sub-Saharan Africa).

Second, we find that a minority group is more likely to be involved in large-scale fighting with the government when the minority (1) resides in a poor (low GDP per capita) country; (2) resides in a country that has a slow growth rate of GDP per capita in the period prior to the onset of the violence; (3) is neither predominantly urban nor widely dispersed; in other words, it has some perceived *rural base* within the country; (4) has a larger rather than smaller share of the country's population; (5) is economically disadvantaged *relative to* the dominant group(s); (6) resides in a country with *less* rather than more ethnic heterogeneity; and (7) has coethnics who dominate a neighboring state. Findings 1, 2 and 3 are fairly robust across regions and econometric specifications; findings 4, 5, 6, and 7 are moderate associations that, depending on the exact specification, might be due to chance. We also suggest, on the basis of an "interocular" test, that minorities appear more likely to be engaged in significant violence with the state (8) if they reside in *rough terrain*, and hills and mountains in particular.⁴

Third, we find that a number of factors that the case study literature on ethnic conflict says should matter do not, by themselves, help separate out the ethnic groups that have seen major violence. These include, most notably, *cultural differences* between the minority and the dominant group; neither linguistic nor religious difference predicts a higher probability of violence. Next, when we control for the above factors, measures of the *degree of economic and cultural discrimination* against a minority appear unrelated to the minority's propensity to rebel. Finally, comparing countries with similar growth rates and per capita incomes, *political democracy* appear to have no systematic influence on the propensity of minorities in a country to rebel.

What explains these diverse empirical regularities? It is not difficult to spin out ad hoc conjectures that might explain the seven findings individually. Instead, in the second part of

⁴We are still working on a systematic coding for terrain.

the paper we try to construct a more integrated and theoretically coherent explanation by examining the strategic interaction between governments and minority groups. We consider a model in which individual members of a minority choose whether to act as rebels, while a central government chooses how much to spend on a counterinsurgent campaign. The expected benefits of acting as a rebel decrease with the intensity of the government's effort, as does the damage the rebels can inflict.

To summarize the main result of the model, relatively exogenous factors that increase a rebel group's *military prospects* – rough terrain, a poor and administratively inept government, or international financial support – increase the number of rebels for any given level of counterinsurgent effort. This is so despite the fact that up to a point, the government spends more on counterinsurgency in response (if the rebels are sufficiently favored by exogenous factors, the government backs off and leaves them their local rule). The minority group's economic alternatives to rebelling also matter – greater poverty and slower economic growth make being a rebel more attractive, and in equilibrium will increase both total rebellion and total counterinsurgency. Variants on the basic model yield a variety of other implications. For example, measures of discrimination against minorities may be unrelated to levels of rebellion because states choose to discriminate more against groups whose military prospects for rebellion are low. Finally, the model also suggests that long-running civil wars like those in Sri Lanka or Turkey may be deadlocked not as a result of hard bargaining by uniformly nationalist groups, but rather due to a collective action problem *within* the minority group: Nonrebels (rationally) do not consider the social costs of the private support they offer to guerrillas.

Violence in the basic model is inefficient. There are, in principle, monetary or policy transfers from the government that would make all parties better off. As stated, the argument does not explain why the state and the insurgents are unable or unwilling to strike bargains to avoid the (often very large) costs of fighting. If rough terrain and weak states favor insurgents, why doesn't this simply shift bargaining power without influencing the probability of violent conflict?

A really developed answer to this question requires another paper.⁵ However, the analysis here suggests several possibilities, which are sketched in the conclusion. To summarize, a mutually advantageous peaceful deal may require state transfers (direct or via policy) to *only* those members of the minority group who are willing to take up arms. Anything more, such as a grant of autonomy or independence, and the state would prefer the costs of a low-intensity civil war. But targeting transfers to only those members of the minority group willing to rebel is problematic for several reasons. In the first place, members of the minority have private information about their willingness to take up arms, and an incentive to misrepresent it. Second, rebels might lose valuable social support if they demanded private

⁵One subject of our work in progress.

transfers rather than public goods like autonomy or equal treatment within the state. Both logics tend to work against transfers targeted only to those willing to become rebels, and in favor of more generalized, public policy transfers that are more costly (relative to their impact) for the state.

Section 2 discusses the Phase III Minorities at Risk data set and the dependent variables we employ. Section 3 examines the most prevalent forms of large-scale ethnic violence in the post-War period, based on this sample. Section 4 addresses the empirical puzzle of what factors distinguish the “high violence” from the “low or no violence” cases in the sample. Section 5 presents a game theoretic of insurgency, and a discussion of different ways the model can be interpreted. Section 6 shows how the model’s comparative statics help make sense of the empirical findings of the first part of the paper. In addition, in section 6 we draw out a range of other theoretical and empirical implications of the model. Lastly, section 7 briefly addresses the question of what prevents Pareto-improving government-rebel bargains.

2 The Phase III Minorities at Risk data

2.1 Case selection

The original Phase III MAR data set contains information on 268 culturally defined minority groups in 113 countries. To be included, a group had to reside in a country with population greater than one million in 1990, had to have itself a population greater than 100,000 or 1% of country population, and had to meet at least one of the four criteria Gurr et al. used to decide if the group was “at risk.” For these, Gurr et al. asked whether (1) the group suffers “discrimination” relative to other groups in the country, (2) the group is “disadvantaged from past discrimination,” (3) the group is an “advantaged minority being challenged,” or (4) the group is “mobilized,” meaning that “the group (in whole or part) supports one or more political organizations that advocates greater group rights, privileges, or autonomy.”⁶

The “at risk” criteria do not appear to have been operationalized and applied in any very systematic way.⁷ In practice, it appears that the coders selected cases of ethnic and

⁶Manual, p. 7 and 65. Note that the same ethnic group can be coded in more than one country.

⁷There is also the possibly impossible problem of deciding what the “group” is in cases where group boundaries and self/other descriptions are highly contested or unclear. MAR’s rule was to “code groups at the highest within-country level of aggregation” (Gurr 1993*a*, 8). Thus, MAR codes as single groups “Hispanics” in the U.S., “Pashtuns” in Afghanistan, and “Southerners” in Chad and Sudan when one could argue for greater disaggregation in each case. “Russians” are coded as a minority in Ukraine, though group boundaries in this case are at best “in formation” (Laitin 1998). The coding of a number of the African groups in the sample could be criticized on similar grounds, and our impression is that quite a few African

other communal minorities that have at some time since 1945 been engaged in some sort of friction with the state or other groups, or who are widely thought to face significant levels of discrimination or relative poverty. Thus, the cases have been selected by criteria that may be associated with our dependent variable of interest, violence. This implies that we cannot generalize our empirical results beyond the set of ethnic groups already involved in some political activity or significantly deprived.⁸

Despite these questions and problems, our impression is that overall the case selection and coverage is serviceable for a first-cut effort to explain cross-sectional variation in levels of civil violence involving communal groups that have some minimal level of political mobilization. If we randomly choose countries and then look to see what groups appear in the list, most of the time we find a good correspondence between the groups included and our own sense of how people in the country code themselves and others (keeping in mind the “at risk” criteria of selection).⁹ In addition, the data includes what appears to us to be reasonable if imperfect measures of levels of violence across cases, which we next describe.

2.2 Measures of violence: The dependent variables

For our purposes, the ideal dependent variable would code the number of deaths due to ethnic violence per year and per capita for each group. This is unavailable now and not likely to become so any time soon. Very rough estimates (though not broken down by group or year) are available for many of the worst cases, and below we use estimates obtained by Gurr (1994, Appendix) as a check on the measure that we actually adopt for most of the analysis.¹⁰

In lieu of the best, the MAR data contain two variables that are imperfect but useable measures of levels of violence: REBEL (for “rebellion”), and COMCON (for “communal conflict”). Rebel is coded on an eight-point scale, and COMCON on a seven-point scale, as

groups are omitted altogether that arguably might satisfy the “at risk” criteria. The lumping together of almost all minority ethnic groups in Latin American countries under the heading “indigenous peoples” may also be problematic.

⁸And even within this set there are some minor distortions that may result from the selection criteria; see xx. In our current work, we are drawing a sample of groups from a larger set to try to address the selection bias problem.

⁹We know little about how this works in Latin America, so the remark should be qualified for this region, and we should also qualify it for many African countries, where it is often the case that far fewer ethnic groups appear in the data than are discussed in the literatures on these countries.

¹⁰Licklider (1995) also provides a set of rough estimates. We have not yet done the work to make these usable in this data set.

follows:¹¹

Table 1: Ethnic violence indicators

Rebellion scale		Communal Conflict scale	
Value	Label	Value	Label
0	None reported	0	No conflict evident
1	Political banditry	1	Indiv. acts of harassment (no fatalities)
2	Campaigns of terrorism	2	Political agitation
3	Local rebellion	3	Violence by indivs, gangs
4	Small-scale guerilla activity	4	Anti-group rallies
5	Intermediate-scale guerilla activity	5	Communal riots, armed attacks
6	Large-scale guerilla activity	6	Communal warfare (protracted, large-scale intercommunal violence)
7	Protracted civil war		

REBEL is coded for each group for each five year period beginning in 1945 and ending in 1994; thus, it appears in the data set as REBEL45x, REBEL50x, and so on. COMCON is coded for each ten year period beginning in 1940.¹² Of these two indicators, REBEL seems best able to serve as a proxy for levels of interethnic violence. With few exceptions, cases that score high on REBEL, say 6 or 7, are cases that we know to have quite high levels of fatalities, with more than 1000 dead in a short time for many of them.¹³ And conversely, we can think of few cases that we know to have very high fatalities (say, more than 1000 per year) that do not appear with a 4, 5, 6, or 7 on the REBEL variable.¹⁴

Whereas REBEL codes violent activities directed at the *state*, COMCON is defined as “open conflicts with other minorities and the majority or dominant group *but not* conflicts

¹¹The descriptions are taken from the MAR codebook.

¹²Each is also coded annually beginning in the 1985. We make no use of this data in this paper.

¹³We have noted some exceptions, such as Georgia/Russians 1990-94, which gets a 7 on REBEL90x. This is strange coding on other grounds as well, since presumably the “Russians” referred to here were Russian army units assisting the Abkhazis, rather than Russians living in Georgia.

¹⁴The measure also “gets right” a comparison that one might get wrong if one looked only at column-inches in the U.S. press: The *worst* cases of ethnic violence in Western Europe, such as Northern Ireland and Basque separatism in Spain, rate only 2’s, for “campaigns of terrorism,” on the rebellion index. This is a reasonable reflection of relative fatalities, since in both these cases between 1000 and 3200 have been killed over *almost 30 years*, a not atypical number for a five- or even one-year period in many of the more serious “third world” cases.

with the state, or with dominant groups exercising state power.”¹⁵ Thus, COMCON seems intended to capture more societal forms of violence, such as hate crimes, violent rioting, and relatively disorganized paramilitary warfare. Our impression is that only the most extreme value on COMCON, “communal warfare,” picks up many cases that have large-scale killing (say more than 250 dead in one year). Furthermore, these cases also tend to have high scores on REBEL. There are thirty-three groups that get a COMCON = 6 at some time in the whole period, and of these only eleven are cases that never get higher than 3 on the REBEL measure.

For this reason, in most of the analyses below we will use measures of violence constructed from the REBEL variables. In particular, we will mainly use VIO80, which takes a value of 1 if the group is coded as sustaining a “small-scale guerrilla war” or higher (REBEL ≥ 4) at any time since 1980, and 0 otherwise. We have tried modified versions that code a 1 also when the maximum value of COMCON for a group is 6, and find that the results are all substantially the same. With few exceptions, the results reported are robust to various other ways that the dependent variable might be specified. For instance, we have used MAXREB45 and MAXREB80, defined as the maximum value of the REBEL variables for the whole period (or for after 1980).¹⁶

We have undertaken two checks on the validity and reliability of these measures. First, we used the rough estimates of fatalities in 50 of the “most serious ethnopolitical conflicts” that Gurr studies in his 1994 article to construct a variable, DEATHS.¹⁷ The bivariate correlation of the log of this variable (LNDETH) with MAXREB45 is .73.¹⁸ Even more impressively, we find that if LNDETH is used as the dependent variable in our regressions below, the results are again substantially unchanged (in many cases they are even stronger).

For the second check, we constructed a new version of the dependent variable using data on “armed conflicts” since 1989 collected by researchers in Department of Peace and Conflict Research, Uppsala University, together with the International Peace Research Institute, Oslo (Wallenstein and Sollenberg 1997). The Uppsala group codes armed conflicts each year on a three-point scale – “minor armed conflict,” “intermediate armed conflict,” and “war” –

¹⁵Codebook, p. 77, emphasis in original.

¹⁶We also used average rebellion values, obtaining very similar results. In these cases where the dependent variable takes eight discrete values, we tried both standard OLS and also ordered probit, which does not assume that REBEL forms an interval scale.

¹⁷We used Gurr’s fatality estimates for the 66 cases he covers, taking the midpoint when he gives a range. All other cases were assigned a value of zero deaths, except for those scoring 6 or 7 on MAXREB45, which were treated as missing data. For most of the latter, we know that fatalities are quite high, easily above the 1000 total threshold applied in Gurr (1994) (e.g., Ethiopia, Lebanon and Chechnya in Russia). The results do not differ much if the deaths estimate is divided by number of groups involved or by group populations.

¹⁸To avoid $\log(0)$, we add 1 to DEATHS before taking the log.

which are distinguished by levels of estimated fatalities.¹⁹ For the period 1990 to 1994, we matched their cases to those in MAR whenever possible, coding 1, 2, or 3 for three grades of conflict, and zero for cases in MAR that did not appear in the Uppsala data. The resulting measure, UPREB90x, is correlated at .75 with REBEL90x, and can be used as the dependent variable in the analyses below without affecting the main results.

Based on these checks, we have some confidence that our measures based on the REBEL index are reasonable if imperfect proxies for numbers killed in intercommunal strife in this sample.

2.3 Distribution of the dependent variable

Table 2 below reports the distribution of MAXREB45, the highest rebellion value for each group for the whole period. Two points should be noted. First, by this measure, almost half of the groups in the sample were not involved in *any* violence with the state for the whole period from 1945 to 1994, despite a selection criterion that must bias the sample in favor of violent cases.

Table 2: Distribution of MAXREB45 by region

MAXREB45	W.Dems	L.Am	E.Eur	SSA	Asia	N.A/ME	Total	%
0	15	19	43	24	18	5	124	46
1	3	5	3	4	1	1	17	6.3
2	8	0	0	4	1	0	13	4.9
3	4	3	5	6	2	2	22	8.2
4	0	0	1	4	7	0	12	4.5
5	0	0	1	4	7	0	12	4.5
6	0	3	1	6	16	2	28	11
7	0	0	6	15	8	11	40	14.9
N =	30	30	59	66	57	26	268	100
%	12	12	22	25	21	10	100	
Avg. MAXREB45	1.03	1.07	1.20	3.08	3.72	4.46	2.48	

¹⁹They define an armed conflict as “a contested incompatibility which concerns government and/or territory where the use of armed force between two parties, of which at least one is the government of a state, results in at least 25 battle-related fatalities.” For an elaboration of terms in the definition, see Wallenstein and Sollenberg (1997, 354).

Second, observe that average levels of ethnic rebellion vary considerably across regions.²⁰ There is a striking gap between the average violence measures for N. Africa/Middle East, Asia, and Sub-Saharan African on the one hand, and Eastern Europe, Latin America and the “Western Democracies” on the other. In looking for factors that differentiate groups involved in significant violence, it will be important to check that proposed variables are not just proxying for “region,” which in turn may proxy for a host of unarticulated aspects of common history, economic development, or culture.²¹

3 Forms of large-scale ethnic violence since 1945

What kinds of violence do these numbers refer to? “Rebellion against the state” and “open conflicts with groups ... not exercising state power” are very broad designations. It makes sense to look more closely at the forms of ethnic and communal violence found in these cases. In general, we can distinguish between four major forms of ethnic violence.²²

1. Violence between members of different ethnic groups that does not directly involve arms of the state *on either side*. Examples include some ethnic riots, pogroms, feuding, and hate crimes. Such cases might be labelled *communal* or *societal* ethnic violence.
2. Violence where one or more groups control the state apparatus, and use it to attack members of a group or groups that are relatively unorganized or militarily weak (lacking access to state power). Examples include state-led pogroms, police brutality and similar oppression by state agents, and state-led or -assisted genocides. These might be labelled cases of *state-led aggression*.
3. Violence between a group that controls a recognized state apparatus and another that does not, where the latter seeks greater political autonomy or secession from the state. Examples include many cases of violence associated with attempts to secede to establish a separate state, or to join another existing state (for instance, Chechnya, Eritrea, Nagorno-Karabagh, and Tamils in Sri Lanka). We will refer all such cases, including violence associated with autonomy movements, as *separatist*.

²⁰See Gurr (1993a) for the classification of which countries go in which regions; the scheme is fairly conventional.

²¹For example, Lindstrom and Moore (1995) and Gurr and Moore (1997, 1090) find strong significance for a variable coding “the mean level of rebellion during the 1980s by similar groups ... in the same geopolitical region.” They interpret this as supporting the view that ethnopolitical rebellion is subject to international diffusion. We would argue this is simply a version of a regional dummy variable, and could capture any of many possible reasons that different regions have different rebellion levels.

²²See Fearon and Laitin (1997a) and Fearon and Laitin (1997b) for a more detailed discussion of these distinctions and discussions of the meaning of “ethnic violence” and “ethnic group” (neither of which is straightforward).

4. Violence between ethnic groups seeking control (or increased control) of a recognized state apparatus. Examples include the 1975-1990 civil war in Lebanon and more recent events in Somalia, Liberia, Zaire, Rwanda, Burundi, and Afghanistan. We will refer to such cases as *contests* or *state breakdowns*.

These categories describe prototypes, since particular cases may have elements of more than one class.²³ Nonetheless, we believe that the typology usefully divides up the universe of cases of “ethnic violence.”

To get an idea of the distribution of types of large-scale ethnic violence as indicated by the MAR data, we undertook a rough-and-ready coding of the cases that had a MAXREB45 score of 6 or 7, or a maximum on the communal conflict indicators of 6, using the four categories given above. The rebellion scale should pick up separatist and contest cases, while the “communal conflict” scale should register societal violence and genocides.

Our major finding here is that *separatist/autonomy-related violence is the predominant form of large-scale ethnic violence in the post-war period*, if the MAR sample can be taken as representative. Of the 64 cases with MAXREB45 = 6 or 7 (large-scale guerrilla or protracted civil war) that we were able to code, we coded 46 as being either clearly separatist/autonomist or having elements of both a contest and a fight for autonomy (there were 5 of this mixed type). Sixteen cases were coded as clearly contests, and two as decolonization fights (which could be regarded as contests). Thus, by our rough reckoning, 64% (41 of 64) appear as clearly separatist/autonomy related, and 25% (16 of 64) as relatively clear contest.

But perhaps there has been a significant amount of ethnic violence outside of ethnic separatism and contests for state power, such as pogroms, genocides, and warfare between ethnic groups neither of which controls the state? Such cases should be picked up in the communal conflict scale of the MAR. When we consider the cases coded as reaching “communal warfare” on that scale between 1945 and 1994, however, our general finding is supported. On the 33 cases reaching the level of communal warfare, 16 are already included within the high rebellion set. Of the remaining 17 cases, 9 are related to contests for state power or state separation. There is only one possible case for genocide (Roma in Croatia in 1945-49).

So, unless the MAR data have completely missed a large set of highly lethal riots and genocides, it appears that *the worst cases of ethnic violence in the post-World War II period are linked with efforts to take control of a state apparatus or to protect one’s group from it by*

²³For instance, relatively spontaneous, “bottom up” ethnic riots may grow large due to deliberate decisions by state agents not to prevent them from escalating. Or, a decision on whether to seek secession or control of an existing state may, in a particular case, depend on military outcomes; Tigreans ended up controlling the center after seeking separation from Ethiopia, and Isaacs opted for separatism in Somalia after failing in a bid for the center. Or, violence that begins in an attempt to gain or preserve control of the center may evolve into a policy of state-led aggression to the point of genocide, as occurred in Rwanda (Prunier 1995).

exit or greater autonomy, with the latter sort being most common. Clearly, if we had data on the whole 20th Century, the Armenian genocide and the several genocides of World War II would raise the profile of this category, at least in terms of numbers killed in the worst cases. But for the post-war period, the problem of explaining large-scale ethnic violence must focus on separatist wars and civil wars for control of the state.

Why do some groups fight to exit or gain autonomy from a state, while others fight to take control of the existing state? A plausible hypothesis is that this choice will turn on the prospects for grabbing the center by military means, and that these prospects will depend in part on the perceived ethnic structure of the country. In brief, we hypothesize that when there is a perceived majority ethnic group, minority rebels will more likely aim for autonomy or secession. By contrast, if there is no perceived ethnic majority, contests for state power will be more likely. We undertook coding of whether the largest group in a country comprised more than 50% of the population, and found the following, for the cases which reached large-scale guerrilla war or “protracted civil war” at some time since 1945:

Table 3: Type of violence and ethnic structure in high violence cases

Type of Violence	Ethnic Majority?		Total
	No	Yes	
Separatism	13	27	41
Contest	13	4	26
Both	4	1	5
Decolon.	1	1	2
Total	32	32	64

Note that violent contests rarely occur in countries with a perceived ethnic majority.²⁴ And of the 13 cases of separatism in countries with no perceived ethnic majority, at least 8 involve small groups with no prospects of taking over a state dominated by another group or groups (four are North East India tribes, plus Afars in Ethiopia, East Timorese in Indonesia, Kurds in Iraq, and Tuaregs in Mali).

²⁴The four exceptions are the Chinese in the Malayan Emergency, perhaps a marginal exception because the insurgency was framed as communist and declared a common front with the proletarian Malays; Palestinians in Jordan, where the population shares are very close to 50-50; and Hutus and Tutsis in Rwanda, which is unusual for having a predominantly rural minority group with no regional base (Tutsis).

4 Group and country characteristics associated with large-scale ethnic violence

The empirical puzzle is to identify features of minority groups and the countries they live in that distinguish between the high and low violence cases. The theoretical puzzle is to explain any strong and interesting associations that we discover. For the empirical puzzle, our selection of possible factors was loosely guided or constrained by four basic considerations. First, we were obviously limited by the data available in the MAR and the resources and time available for coding new variables. Second, we are looking for independent variables that are *plausibly somewhat exogenous* to ethnic violence. That is, there should be no obvious and important causal path from ethnic violence to the “independent” variable. For example, group “grievances,” “mobilization,” and international military support are all suspect as “independent variables,” since all can be caused by rebellion (indeed, “mobilization” is almost a conceptually necessary condition for rebellion).²⁵ By contrast, per capita GDP in one period is plausibly exogenous to levels of rebellion in subsequent periods. Third, we were looking for factors that can be coded somewhat reliably. They are neither highly subjective or conceptually fuzzy, nor are they likely to be contaminated (unconsciously) by the coders knowledge of the outcome on the dependent variable (e.g., a variable coding for “presence of political grievances,” or “group desire for autonomy”). Finally, we were influenced by the literature on ethnic and nationalist conflict, which has stressed in particular cultural differences as a basis for ethnic conflict.

Table 3 reports two logistic regressions with VIO80 as the dependent variable. Recall that VIO80 takes a value of ‘1’ for groups that experienced small-scale or worse guerrilla wars at some time between 1980 and 1994, and ‘0’ otherwise. The two equations include independent variables that we think roughly satisfy the criteria above; they are defined and discussed below. Equation (1) includes only the most robust predictors across a range of specifications and controls. Equation (2) considers a larger set, including variables of interest that appear unrelated to VIO80, holding other factors constant.

Note that the table gives the estimated *odds ratio* for each independent variable rather than the logit coefficient, along with the *t*-statistic (*z*) and significance level in a two-tailed test. The odds ratios make it easier to interpret the substantive size of the estimated effects. For instance, consider the .301 estimated for the effect of the log of country GDP per capita in 1960 (*lngdp60*). This means that a one unit change in *lngdp60* (i.e., approximately doubling GDP per capita) is associated with roughly three times lower odds that a group in the country will see large-scale violence after 1980. (Keep in mind, then, that odds ratios *less*

²⁵MAR includes measures for these variables, which have been used as important explanatory factors by various researchers working with this data (Gurr 1993*b*; Lindstrom and Moore 1995; Gurr and Moore 1997; Dudley and Miller 1998).

than one mean that the effect of the independent variable on the probability of large-scale violence is *negative*.)

Table 4: Predictors of VIO80

DV = VIO80	Equation 1			Equation 2		
	Odds Ratio	z	P > $ z $	Odds Ratio	z	P > $ z $
<i>Country-level variables</i>						
lngdp60	.301	-4.025	0.000	.260	-3.257	0.001
gdp6080	.244	-3.652	0.000	.205	-3.042	0.002
lnccpop	1.636	3.082	0.002	1.471	1.728	0.084
eneg	.812	-2.322	0.020	.846	-1.471	0.141
ndem74				1.037	0.454	0.650
<i>Group-level variables</i>						
pro95	10.061	1.652	0.099	61.969	2.372	0.018
regcon	14.461	3.524	0.000	15.355	2.724	0.006
ecdifx				1.164	0.996	0.319
domkin				2.359	1.166	0.244
langdif				.871	-0.206	0.837
difbelif				1.360	0.510	0.610
	N = 200 $\chi^2_{d.f.=6} = 78.98$ Prob > $\chi^2 = 0.0000$ Log likelihood = -80.94			N = 149 $\chi^2_{d.f.=9} = 57.69$ Prob > $\chi^2 = 0.0000$ Log likelihood = -55.76		

4.1 Factors associated, and not associated, with large-scale ethnic violence.

The independent variables considered can be divided into those measured at the level of the country the group lives – for instance, country GDP per capita – and those measured at the level of the group itself – for instance, the group’s population proportion within the country.²⁶

1. *Country-level factors*

- (a) lngdp60: Log of country GDP per capita in 1960. Since large-scale civil violence definitely causes lower GDP per capita, we measure per capita wealth as far prior

²⁶A little more than 60% of the variation in MAXREB45 and MAXREB80 is country-specific, in the sense that if one regresses these on 112 country dummies, they “explain” 61-63% of the variation.

to 1980-94 as we can and still retain a large number of cases in the sample.²⁷ The results indicate that *minorities living in relatively richer countries are significantly less likely to have group members fighting with the state*. This relationship appears to be quite robust across sets of regions. It does not depend, for example, on the presence of 30 relatively peaceful cases in the very wealthy advanced industrial states; these can be dropped and the variable remains powerfully significant, with the estimated odds ratio increasing only to .35. This result is also quite robust to changing the specification of the dependent variable or the other variables included in the model.²⁸

- (b) gdp6080: Growth rate of real GDP per capita, expressed as the ratio of per capita GDP in 1980 to that in 1960. As seen in equation (1) in the table, *minorities living in countries whose per capita incomes grew faster from 1960 to 1980 were significantly less likely sustain a violent rebellion after 1980*. Comparing a country with zero growth for this period to one whose GDP per capita doubled,²⁹ minorities in the former country are estimated to have four to five times greater odds of rebelling. The significance of GDP growth is not affected if we drop cases where significant rebellion began before 1980 (which would tend to lower the growth rate), or if we include the group’s rebellion score for 1975-79 as a “lag” term. This result is also quite robust across regions, with a negative correlation between growth rate and VIO80 for the cases within each region. It is also highly robust to different specifications of the dependent variable and the econometric model.³⁰
- (c) lncpop: Log of country population. We use the estimates in MAR, which are for as close to 1995 as possible, but the results are the same if we use the Penn World Tables estimates for 1960 or other years. The table indicates that *doubling the population of a country increases the odds that minorities in the countries will see significant rebellion by about 40%*. This relationship is not particularly robust, however, and depends somewhat on the seven minorities in India in the sample, all but one of which (Muslims) are coded for large-scale violence since 1980. If the Indian cases are dropped, the marginal effect of lncpop is halved and barely significant at the .10 level. It also ceases to be significant entirely if a dummy variable for Asian countries is included (India is coded within Asia).
- (d) eneg: Effective number of ethnic groups. This is a measure of the ethnic hetero-

²⁷Data is taken from the Penn World Tables version 5.6, supplemented by estimates of the relative per capita wealth of the Soviet republics in 1960 by McAuley (1979).

²⁸We have also used MAXREB80 and two different trichotomous versions of MAXREB80 as the dependent variable.

²⁹The mean of gdp6080 is 1.83.

³⁰GDP growth data is again from the Penn World Tables 5.6. Lack of estimates of the relative incomes in the Soviet republics in 1980 leads to the loss of these 30 cases for this estimation. We have estimates for the relative incomes in 1990 (from PWT5.6), which we have used along with 1980 Soviet Union GDP per capita to create estimates of 1980 incomes in the Soviet republics. Results are only strengthened if we use this larger sample, although lncpop loses some force.

geneity of the country, based on estimates from a 1960 Soviet ethnographic atlas (*Atlas Narodov Mira* 1964). Rather than simply counting numbers of groups, this measure accounts for the distribution of group sizes, so that a country with two equally sized groups gets a higher heterogeneity score than a country that is homogenous except for a 5% minority. *eneg*'s mean in the sample is 3.1, and it varies from approximately 1 (Germany, Japan) to a little more than 10 (Zaire).³¹

The bivariate correlation between *eneg* and VIO80 is positive (.14) – minorities in more ethnically heterogenous states tend to have higher violence scores. But this appears to be due to the fact that richer and faster growing countries tend to be more homogenous. As we have seen, wealth and economic growth are associated with less communal violence. Once we control for GDP per capita and GDP growth rate, as in Table 3, we find that *greater ethnic heterogeneity is associated with less ethnic violence*. That is, comparing countries with roughly equal economic circumstances, minorities in the more ethnically heterogenous ones will tend to have slightly lower rebellion scores. This result is moderately robust across different specifications, although, as discussed below, *eneg* may proxy for other factors common to countries in sub-Saharan Africa (those countries tend to have high *eneg* scores, and less rebellion than countries elsewhere after controlling for the economic variables).

- (e) *ndem74*: This is a measure of level of political democracy in the country in 1974 from the MAR, and based on Gurr et al.'s POLITY III data set. The bivariate correlation between *ndem74* and VIO80 is weakly negative, and this is still the case after controlling for other factors. If we consider the same measure from 1989 or 1994, then there is a significant negative bivariate relationship between political democracy and large-scale ethnic violence. However, (1) this disappears after controlling for per capita income in 1960 and income growth from 1960 to 1980, and (2) large-scale ethnic rebellion may influence levels of political democracy in any event, so it is more appropriate to use measures from prior to 1980. Several analyses of the MAR data appear to have concluded too quickly that political democracy is associated with less ethnic rebellion, because they did not control for wealth.³²

2. Group-specific factors:

³¹Thanks to Olga Shvetsova for providing us with this data. We have added estimates for the Soviet Republics based on information in the 1989 Soviet census, and for the former Yugoslav republics from (Woodward 1995, 32-33). The “effective number of ethnic groups” is defined as 1 divided by the sum of the squared population proportions of the ethnic groups in a country. If there are n equal sized groups, the measure equals n , and departures from an equal distribution reduce *eneg* below n .

³²cites We also considered a variable *dem74* which is the difference between the POLITY III democracy and autocracy indicators for 1974; there was no difference in the results. If REBEL90x is the dependent variable, *ndem89* is significant in a bivariate regression but is “wiped out” once we control for income. By some arguments, for example Mansfield and Snyder (1995), levels of violence should be maximized in states that are midway between extreme autocracy and robust democracy. There is no support for this hypothesis in these data (the square of *ndem74* has a positive sign and is insignificant).

- (a) prop95: The minority group’s proportion of the total population, taken from the MAR data.³³ *Proportionally larger groups seem to be more likely to be engaged in significant fighting with the state.* For example, a 25% minority is estimated to have odds of large-scale rebellion about two times greater than those of a 5% minority, other things equal. The significance of prop95 depends considerably on whether we are also controlling for country size (lncpop). The reason appears to be that there are quite a few large Asian countries that have significant insurgencies being fought by relatively tiny minority groups. These are almost exclusively hill and mountain peoples around the peripheries of states like India, Burma, and Vietnam.
- (b) regcon: Regional concentration of the minority group. This dichotomous variable takes a value of 0 when the minority group is either primarily urban or widely dispersed throughout the country, and 1 otherwise. That is, regcon = 1 is associated with the group having a *rural base* somewhere in the country.³⁴ In these data, minorities that have a rural base are *far* more likely to see large-scale ethnic violence than urban and widely dispersed minorities. This is a powerful and robust factor.³⁵ Indeed, a closer look at the data reveal that urban and widely dispersed groups almost never score high on the rebellion index. Only 5 of the 76 urban and highly dispersed minorities in the data, 6.6%, score VIO80 = 1 (three cases in Rwanda and Burundi, Palestinians and Sunnis in Lebanon). This compares to 36.5% of the 192 minorities with some rural base.³⁶

We can begin to make sense of this finding if we recall that the most common form of large-scale ethnic violence in this period has been ethnic separatist wars. Urban and widely dispersed groups typically lack a patch of territory that some subset of group can plausibly assert as their own. If an urban or widely dispersed group is going to be involved in ethnic violence, it will more likely take the form of a contest for the existing state (as in the Rwanda, Burundi, and Lebanon cases just noted), or urban riots, which rarely kill the numbers typical of guerrilla wars.

- (c) ecdifx: This seven-point scale is a summary measure of the economic standing of the minority group *relative to* the dominant group or groups, taken from MAR. The “full” regression results in equation (2) indicate that economic differentials are positively related to levels of ethnic rebellion, though in this specification the estimated effect is neither statistically nor substantively significant. The weakness is due in part to multicollinearity in equation (2). In a specification that includes only the “robust” variables along with ecdifx, and even including regional dummies,

³³Although coders were instructed to obtain estimates as close as possible to 1995, our impression is that they derive from censuses and long-standing guesses spread out over the whole post-war period.

³⁴regcon collapses groupcon, a variable in MAR (regcon = 1 when groupcon = 2 or 3; regcon = 0 when groupcon = 0 or 1. Using groupcon does not affect any results reported here.

³⁵Partially excepting Africa, where almost all minorities are coded as regcon = 1, and several cases of widely dispersed groups in Rwanda and Burundi have high violence scores.

³⁶Monica Toft was the first to stress the power of group concentration as a correlate of rebellion in the MAR data set (Toft 1996).

the odds ratio for *ecdifx* is greater than one and is almost significant at the .05 level. By controlling for national income per capita, as we have, *ecdifx* is effectively rendered a measure of the *absolute* in addition to relative income disparity. It is interesting to note that the bivariate correlation between *ecdifx* and VIO80 (or MAXREB80, or MAXREB45) is only weakly positive. The reason is that, by this measure, there are greater economic disparities between minorities and dominant groups in the richer countries, and wealth is associated with less ethnic violence, as we have seen. Controlling for *lngdp60* doubles the correlation of VIO80 and *ecdifx*, from .09 to .18. This may suggest that absolute deprivation is more important than relative deprivation.

- (d) *domkin*: This variable, which we added to the data, is coded ‘1’ if ethnic brethren of the minority group politically dominate a neighboring country, and ‘0’ otherwise.³⁷ As shown in Table 3, having ethnic brethren who dominate a neighboring state is estimated to more than double the odds that a minority will be involved in significant violence. However, the effect is not significant, nor is it highly robust to different specifications.³⁸
- (e) *langdif*: A measure of structural (linguistic) difference between the historical language of the minority and the language of the dominant group(s) in the country. Dissatisfied with the measures of language difference in MAR on several grounds,³⁹ we undertook to code this in a more systematic and replicable fashion. Our measure varies from 0 to 1, with 0 indicating that minority and dominant groups speak the same language, and 1 indicating that their main languages belong to unrelated language families. Intermediate distances are the inverse of one plus the number of common supersets that the two languages belong to in a common linguistic classification scheme (?).⁴⁰

The results indicate that this measure of cultural difference is, if anything, associated with *lower* levels of ethnic violence, although statistically the effect is indistinguishable from zero. The finding is the same if we use either of MAR’s two codings for language difference (*culdifx2* and *lang*, made into dichotomous indicators), or if we recode our measure to take a value of 0 if *lanfdif* equals 0 and 1 otherwise. This “nonresult” is robust in the sense that *langdif* is consistently not significant across regions and specifications.

³⁷The codings used for this analysis are “rough and ready,” by the authors. We are currently working on a more systematic version.

³⁸The Phase I MAR data included a measure of whether there were “segments” of the minority in neighboring countries. An indicator variable constructed from “*numsegx*” is positively related to VIO80 but is thoroughly insignificant, statistically.

³⁹See [NSF proposal on web].

⁴⁰For example, Basques in Spain are coded as 1, because Basque is an isolate not in the Indo-European family, while Catalans get a .125 (= 1/8), because, like Spanish, it is an Indo-European, Italic, Romance, Italo-Western, Western variant, Ibero-Romance, Northern variant language.

- (f) difbelief: Religious difference. This variable is coded ‘1’ if the minority group’s predominant religion or sect differs from that of the dominant group or groups in the state (based on the MAR variable “beliefs”). Religious difference is associated with marginally higher rebellion scores, but the effect is not even close to being statistically significant.

In addition to these factors, we also considered MAR measures of political, economic, and cultural discrimination against the minority group in the 1990s and a measure of the country’s population growth from 1960 to 1980. Excepting the index of political discrimination in the 1990s, none of these have any significant effect on VIO80 or MAXREB80. Because increased political discrimination is often caused by violent rebellion, there is little rationale for viewing the 1990s political discrimination measure as a relatively exogenous determinant of violence levels after 1980.⁴¹

4.2 Controlling for regional effects

As shown in Table 2, average levels of violent rebellion involving minorities differ systematically across regions of the world. “Region” surely proxies for a variety of common features that could influence the odds of large-scale violence. By adding controls for region to the econometric model above, we can ask whether any of the independent variables found to be important there are in fact merely proxying for other, unknown features that are specific to some region. Alternatively, if a regional dummy variable is insignificant, this suggests that the regional differences observed in Table 2 are due to the effects of the more general variables rather than any region-specific influences.

The only independent variables in equation (1) that are affected by the inclusion of regional dummies are country size (*lnpop*) and ethnic heterogeneity (*eneg*). At least in some part, the country size variable appears to “proxy” for Asia. Minorities in Asia tend to have high rebellion scores (in this data), and Asia countries tend to be large. So the predictive power of *lnpop* may or may not stem from a causal relationship between country size and the probability of violent rebellion.⁴² The measure of ethnic heterogeneity, on the other hand, may proxy for some feature or features about sub-Saharan Africa, the region whose countries have the highest *eneg* scores. After controlling for economic wealth and/or growth rates, minority groups in sub-Saharan Africa are significantly *less* likely than minorities in

⁴¹The discrimination measures tested were *allpd90* (political discrimination), *alled90* (economic discrimination), and *culres90* (cultural restrictions). All were positively associated with both VIO80 and REBEL90x, although the latter two insignificantly so.

⁴²The estimated effect of *lnpop* becomes insignificantly positive when an Asia dummy is included. However, if the Asian cases are dropped from the sample, the effect of *lnpop* remains significant, which suggests that there is a relationship here even outside of the Asian countries.

other countries to be engaged in violent rebellion. Perhaps this has something to do with the high degrees of ethnic heterogeneity there, or perhaps it is something else.

No regional dummy is significant if the full complement (less one, to allow estimation) is added to equation (1), although this may be due to multicollinearity among the regions.⁴³ If we add regional dummies one by one, we find that the Western and Eastern European countries are essentially “on the regression line.” Minorities in Latin American and sub-Saharan African countries are significantly less likely than comparable groups in other countries to see violent rebellions; minorities in Asia and North Africa/Middle East are significantly more so. The basis for these remaining differences is important topic for further research.

4.3 Rough terrain

Students of guerrilla war stress the importance of rough terrain for a guerrilla movement to subsist and thrive (Laqueur 1998). Guerrillas need mountains, jungles, or in a few cases, deserts, for a base of operations. Plains, cities, and agriculturally developed areas seem to allow more effective counterinsurgency campaigns by the state. “Eyeballing” the data, we were struck by how many minorities in the sample, especially in Asia, have a reputation as “mountain peoples,” even to the point of being named as such. To give a few examples: Kurds (cases in Iraq, Turkey, and Iran), Chittagong Hill Tribes in Bangladesh, Montagnards in Vietnam, Northern Hill Tribes in Thailand, several mountain groups in Burma and North East India. As we have seen, in this sample a very high proportion of the groups in Asia have experienced large-scale violence since 1945. Fully 80% (33 of 41) of the Asian groups that have a rural base saw small-scale guerrilla war or more since 1945, and 70% since 1980. Might terrain be a variable that would help distinguish the high- from the low-violence cases?

We have not completed a systematic coding of a terrain variable, which presents various difficulties. However, a “rough and ready” coding for the Eastern European cases in the sample – where there is more variation to explain than in the Asian cases – is suggestive. Of the 37 “rural base” minorities in Eastern Europe that we had information to code, eight saw large-scale ethnic rebellion since 1945, all associated with the 1991 collapse of the Soviet Union. Of these, only one, “Slavs” in Moldova, is a group living mainly in plains or “good” terrain. Table 5 gives the base rates as well. Note that mountain groups were six times more likely to see large-scale fighting with the state following the Soviet collapse, in these data.

⁴³We checked this using OLS and MAXREB80 as the dependent variable, because logit on VIO80 crashes due to perfect prediction in the Western region.

**Table 5: Violence and rough terrain for
“rural base” minorities in Eastern Europe**

	VIO45	
Mountains?	0	1
No	17 94%	1 6%
Yes	12 63%	7 37%
Total	29 78%	8 22%

Certainly living in rough terrain is not anything like a *sufficient* condition for ethnic violence. In this small set, 12 of the 19 “mountain” groups did not see large-scale violence. And obviously a very large number of ethnic minorities – some in the MAR sample and most not – live in mountains or jungle but are not engaged in fighting with the state. Within the sample, many of the South American indigenous groups live in the Andes but are not fighting; outside the sample, the Caucasus region and Papua New Guinea are filled with tiny ethnic minorities not fighting significant rebellions. At best a variable coding rough terrain might act as something like a “near necessary” condition for large-scale ethnic violence, in a way similar to having a rural base. That is, ethnic minorities that live in *good* terrain for the government may be highly unlikely to see highly lethal violence.⁴⁴

Bad terrain almost surely helps explain why there are so many ethnic minorities that are tiny compared to the dominant groups, but can nonetheless sustain significant guerrilla conflicts with the state. Table 6 lists the “rural base” groups in the MAR sample that have less than 2% of country population and scored a ‘1’ on VIO80. With few exceptions they are hill or mountain peoples.

⁴⁴It is no coincidence that mountainous and other “bad terrain” areas have higher densities of culturally and linguistic diverse groups – states succeed first in their homogenizing projects in the plains, lowlands, and river valleys.

Table 6: Less than 2% but fiesty

Country	Group	Mountains?
ANGOLA	CABINDA	No (coastal plains)
AZERBAIJ	ARMENIANS	Yes (Nagorno Karabagh)
BANGLADE	CHITTAGONG HILL TRIBES	Yes (Arakan range)
BURMA	KACHINS	Yes (Arakan range)
	MONS	No (lower Burma)
GEORGIA	ABKHAZIANS	Yes (Caucasus)
INDIA	ASSAMESE	No (Brahmaputra valley)
	BODOS	Yes (N.W. Assam)
	KASHMIRIS	Yes (Himalayas)
	MIZOS	Yes (Arakan range)
	NAGAS	Yes (Naga Hills)
	SIKHS	No (agric. plains)
	TRIPURAS	Mixed (Naga Hills, Ganges Delta)
INDONESI	ACEHNESE	Yes
	EAST TIMORESE	Yes
	PAPUANS	Mixed
IRAN	BALUCHIS	Yes
	TURKMEN	Yes
MOROCCO	SAHARAWIS	No (desert)
PHILIPPI	IGOROTS	Yes
USSR	CHECHENS	Yes (Caucasus)

4.4 Summary of empirical findings

The most robust empirical results from this analysis of the MAR sample can be summarized in two sentences. First, minorities living in poor or slow growing countries have a higher propensity to be engaged in large-scale violence with arms of the state. Second, urban and widely dispersed minority groups are far less likely to see large-scale violence than are groups that have some sort of rural base. We also found some evidence to suggest that group size (relative to country population), country size, the presence of ethnic brethren who dominant a neighboring state, relative ethnic homogeneity, and rough terrain are associated with higher probabilities of rebellion.

A striking aspect of the most robust findings is how similar they are to the results those of Brustein and Levi (1987) and Tong (1988), who studied cross-sectional determinants of rebellion in very different early and pre- modern contexts. Brustein and Levi asked why some regions in Britain, France, and Spain between 1500 and 1800 experienced peasant rebellions,

while others did not. They found that subsistence agriculture (as opposed to commercial), “uplands” (hill country), and distance from the center predicted higher likelihoods of peasant rebellion. Using a remarkably detailed data set, Tong asks why some districts of China during the Ming dynasty had higher levels of banditry and rebellion than others. He found that local famines, distance from provincial military bases, and hill country predicted higher violence levels.

This suggests an interesting interpretation of post-World War II “ethnic violence.” If it is associated with the same set of relatively exogenous factors – poverty and a degree of remoteness or natural protection from the center – then perhaps it should be seen as a modern form of peasant rebellion. The similarity of conditions for both helps make sense of the negative findings on the impact of cultural differences. Is post-War “ethnic violence” simply a continuation of peasants rebelling against would-be central state masters, structured by the same factors but presented in the language of nationalism?

5 A model of insurgency

We turn now to the theoretical puzzle: How to explain these various empirical results in a theoretically coherent (not purely ad hoc) way? We propose a simple model of the interaction between a state and the members of a minority group, from which a remarkable array of “comparative statics” hypotheses emerge. This section presents the elements of the model – the structure of actions and the payoffs – and then discusses the multiple ways the model might be interpreted. The next section develops and applies the comparative statics results to explaining the empirical results.

5.1 The game form and payoffs

The structure of moves. We consider a one-shot game in which a central government, G , chooses a level of spending on counterinsurgent (or policing) operations, while at the same time each of n members of a minority group chooses whether to act as a “rebel” against the government. Thus, a strategy for an individual member of the minority group is a choice of whether to act as a rebel or to pursue his best available alternative job. A strategy for the government is simply a level of counterinsurgent spending $c \geq 0$.

Payoffs. If a member of the minority group chooses not to act as a rebel, he receives a reservation payoff r_i , which summarizes the individual’s present and future economic opportunities. Assume that the r_i ’s are drawn at the start of the game and distributed according

to the c.d.f. F , which is known by the government.⁴⁵

If a member of the minority group becomes a rebel, he gets an expected benefit $b(c, \alpha)$ that depends on the government's level of counterinsurgent spending c and a parameter α . The expected benefits term $b(c, \alpha)$ summarizes all the *immediate* attractions and disadvantages of life as a rebel. These may include the potential material benefits of theft, looting, or the successful appropriation of taxing powers in region; any status value or self-gratification from acting aggressively for a nationalist cause; material support from ethnic brethren; and the costs of possible imprisonment, death, as well as the often hard life of an outlaw.⁴⁶ Greater amounts of counterinsurgent spending by the government are assumed to reduce the expected benefits of being a rebel at a decreasing rate (formally, $b_1(c, \alpha) < 0$ and $b_{11}(c, \alpha) > 0$). Figure 1 illustrates a typical $b(c, \alpha)$ as a function of counterinsurgent spending c .

The parameter α will be used to index the impact of several factors on the efficacy of counterinsurgent spending by the government. For example, α can represent the impact of terrain, with larger α implying worse terrain for the government forces (hills, swamps, deserts, etc.). Thus, the expected benefit of being a rebel is increasing as the terrain gets worse ($b_2(c, \alpha) > 0$), and we assume that worse terrain reduces the marginal efficacy of counterinsurgent effort ($b_{12}(c, \alpha) > 0$). More generally, in this vein α can represent any exogenous factor that improves the rebels' *military prospects* – increased availability of small arms, safe havens and military support across an international border, or financial and military support from other states or from a diaspora.⁴⁷

Alternatively, α can be taken to index the government's competence at counterinsurgency, with higher α implying *lower* competence. When the government is less competent, the same level of spending yields higher expected benefits. Finally, α can be taken as a measure of the material and social support for the rebels from members of the minority who have chosen *not* to act as rebels. In line with the large literature on guerrilla war that stresses the importance of support from noncombatants, it is natural to assume that greater support (higher α) increases the expected benefits of a rebel for a given level of c ($b_2(c, \alpha) > 0$), and that greater social support lowers the marginal efficacy of counterinsurgency ($b_{12}(c, \alpha) > 0$).

⁴⁵For the one-shot game it is immaterial whether the government also knows each individual's r_i . As we discuss below, however, this will be crucial when we consider whether civil violence can be reduced by government-rebel bargaining.

⁴⁶ $b(c, \alpha)$ is deliberately formulated in very general terms, which makes the results presented below more general. A more specific but perhaps also more intuitive formulation would explicitly incorporate a benefits term and a probability of capture or death at the hands of the security forces, the latter increasing in c .

⁴⁷Of course, the rebel's military prospects are ultimately *endogenous* in the model, since they depend on the government's choice of c . For this reason, if an improvement in exogenous influences on military prospects increases endogenous levels of rebellion in equilibrium, this cannot be "trivial" or "obvious."

In the basic model, α is taken as exogenous, which is admittedly odd if α is interpreted as support *chosen* by the players in the model who don't become rebels. In a variant on the model given below we make α a function of a choice by players in the model.

The government's payoffs are decreasing in the number of rebels, the expected benefits obtained by a rebel, and the cost of counterinsurgency. Formally, if there are m rebels, let the government's payoff be $-\beta mb(c, \alpha) - c$, where β is a parameter greater than zero. The term $\beta b(c, \alpha)$ is the cost per rebel of an attack to the government. Thus, counterinsurgent spending is costly by itself for the government, as are the attacks and depredations of the rebels. The parameter β scales the relative significance of rebel attacks and counterinsurgent spending for the government. Larger values for β imply that attacks matter more to the government relative to additional dollars spent on counterinsurgency; smaller values mean that the government will see alternative uses of money as more compelling than reducing the damage from rebel attacks.⁴⁸

This completes the definition of the one-shot game, which we will refer to as “the basic model.”

5.2 Interpreting the basic model: crime, mafias, and insurgencies

This bare-bones model can be interpreted in a variety of ways. It could be a model of ethnic insurgency, as we have described it. It could be a model of insurgency with no clear ethnic component, as in the civil wars in Algeria and Columbia. Or it could be a model of mafias or organized crime, or even a model of ordinary, “unorganized” crime. To see the last case, simply relabel the non-government players' actions as “commit crime” and “don't commit crime,” and think of c as the amount the government spends on policing.

This breadth of possible applications is intended, and we view it as a strength rather than a liability. While there are important differences among the phenomena of crime, mafias, ethnic and other insurgencies, we maintain that there are also fundamental similarities at the level of the strategic problems faced by those involved. The bare bones model is intended to capture these underlying structural similarities. In addition, it is a strength of the model if it yields empirical predictions consistent with the evidence despite its generality.

What is missing from the model that would allow it to distinguish between crime, mafias, and various sorts of insurgencies? In so far as these phenomena differ by *scale* – the number of “criminals” or “rebels” involved – the model *can* explain some of the differences, since the number of criminals/rebels/freedom fighters will be determined in equilibrium. But clearly there is more to our shared ideas about the differences between crime, a mafia, and

⁴⁸For more on the empirical interpretation of this parameter, see 6.5 below.

an insurgency than the number of people involved. It is also a matter of the criminals/rebels degree of internal organization, the nature of their activities and their professed aims, and perhaps the level of support they receive from the local population. Mafias and insurgencies are, by common understanding, more organized than are ordinary criminals, who act alone or with a small number of often ad hoc accomplices. Mafias and insurgencies also differ from ordinary crime in the nature of their activities – both seek to undertake state-like activities of local rule, in particular taxation and “protection,” but also the regulation of trade, the adjudication of disputes, and the provision of (forms of) justice (Gambetta 1993; Hess 1998). Insurgencies differ from mafias in their leaders’ professed aspiration to establish legitimate, recognized and often comprehensive government (a mafia is often content to rule in certain domains of illegal activity, often in deals with corrupt officials of the state), or to use force to pressure the state to implement specific policies. Finally, ethnic insurgencies are typically distinguished from nonethnic insurgencies either by the professed goals of the rebel leadership – to gain regional autonomy or national independence for an ethnic group – or by the basis of recruitment of rebel fighters.

The lines between these categories are fuzzy. In a large part this is because the lines have normative significance and thus become an object in the struggle. From the state’s perspective they are not “freedom fighters” or even “rebels” but just “criminals,” “bandits,” or “terrorists.” Even for third parties, though, the lines are often hard to draw. Many rebellions coded in the western press as “communist” during the Cold War are being recoded in retrospect as “ethnic insurgencies” on grounds of the basis of recruitment of the fighters. Analysts of self-proclaimed insurgencies are sometimes skeptical as to whether the proclamations are not just a cover for banditry and drug-running. And the line between ordinary crime and a “mafia” is often hard to draw (think of Russia today). We would argue that the fuzziness reflects in part the underlying structural similarities of these phenomena.⁴⁹

The basic model elides the differences between these phenomena in three main ways. First, distinctions as to the nature of the rebels’ activities – for instance, simple theft versus arrogation of local taxing powers – have been folded into the term for the expected benefits of being a rebel, $b(c, \alpha)$. Second, the basic model is agnostic about the nature of the relations among and the internal organization of the rebels. If there are m rebels fighting in an equilibrium, this might represent m independent “criminals,” multiple insurgent groups as in Sudan, a relatively unified insurgent organization like the PLO before Hamas, or a collection of rival insurgent factions fighting under a common banner like the KLA in Kosovo. Though we do not expand the model to capture these distinctions formally in this paper, we do argue in section 7 below that the nature of the internal organization of the rebels strongly conditions the state’s ability and incentive to negotiate a peace agreement.⁵⁰

⁴⁹Cf. Hess (1998), Tong (1988), Hobsbawm (1959).

⁵⁰To an extent, the rebels’ degree of internal organization could be represented in the model by making the expected benefit per rebel depend on the number of others he is coordinating with. Under an assumption of

Third, in the basic model the state has no opportunity to offer financial transfers or policy concessions (like autonomy or independence) to the rebels or the minority group. Remedying this defect – see the discussion in section 7 – goes some way towards making the model speak more directly to the case of insurgencies fought with political demands by the rebels.

6 Explaining the empirical results

The basic game described above has a unique Bayesian Nash equilibrium. In brief, the government will spend an amount c^* on counterinsurgency, while the members of the minority with reservation values r_i below a threshold value \hat{r} will become rebels. In an equilibrium, c^* maximizes the government’s payoffs given the expected number of rebels ($nF(\hat{r})$), and those who choose to fight get a higher payoff from being a rebel than they would from their best alternative job, given c^* (i.e., $\hat{r} = b(c^*, \alpha)$). Formal details are given in Proposition 1 in the appendix.

Proposition 1 also gives conditions under which the unique equilibrium will involve the government spending *nothing* on counterinsurgency, that is, $c^* = 0$. In words, this occurs when either counterinsurgent spending is highly *ineffective* at reducing the benefits available to insurgents, or when the economic alternatives for members of the minority are uniformly very good (so there are very few in the minority with $r_i < b(0, \alpha)$). Thus, zero counterinsurgent effort by the government is consistent with either much rebellious activity, which occurs when the government can do little about it and rebellion has immediate payoffs for many members of the minority, and with very little rebellious activity, which occurs when the minority is very well-off.

Otherwise, however, there will be both rebellion and counterinsurgent warfare in equilibrium. Our next task is to show how varying the model’s exogenous parameters affect the equilibrium amounts of rebellion and government violence.

6.1 Exogenous influences on military prospects: rough terrain, weak states, and international support

Recall that the parameter α can represent any exogenous factor that improves the rebels’ military prospects for a given level of counterinsurgent effort by the government – rough

increasing returns, this modification would create a “tipping game” among the potential rebels – one would want to act as a rebel only if sufficiently many others were expected to as well.

terrain, government administrative incapacity, outside military or financial support, for instance. Proposition 2 (in the appendix) demonstrates that (a) the number of rebels increases with α , and (b) if α is either sufficiently small or sufficiently large, the government's counterinsurgency effort will be close to zero.⁵¹

A typical pattern is illustrated in Figure 2.⁵² Note that while worse terrain or a less competent state always increases the number of insurgents, the effect on the government's counterinsurgent effort is curvilinear. In moving from good terrain (for the government) to bad, or from a strong state to a weaker one, the government's fighting effort increases with increased rebel activity. Violence spirals upward. Ultimately, however, the state reduces its effort. For sufficiently bad terrain, for instance, the government essentially gives up; additional spending on counterinsurgency is costly but has almost no effect on the number of rebels or the damage they cause, so it makes sense to cut back on spending until the marginal benefits increase. In effect, the government increasingly allows the rebels their local rule because attempting to subdue them is too difficult. Examples include the light-to-nonexistent governance of hill people in Burma and Northeast India under the British, similar circumstances in the Andean highlands in the 18th and 19th centuries, UNITA in eastern and southern Angola, and Russia's situation in regard to Chechnya after its bombing campaign failed.

These theoretical results suggest plausible explanations for at least three of the empirical findings of the first part of the paper.

First, it is plausible that rough terrain, like α , increases the expected benefits of a rebel for a given level of counterinsurgent effort by the state, and also lowers the marginal efficacy of state effort. For the comparison of groups living in good terrain (for the government) versus those in bad, the model thus predicts greater violence on both sides in the latter case. Empirically, we suggested that minorities who live in rough terrain and especially in hills or mountains on the perimeter of a state seem more likely to have engaged in significant guerrilla war.⁵³

⁵¹Some innocuous additional conditions on the limits of $b(c, \alpha)$ as α approaches zero and infinity are needed for (b); see the appendix.

⁵²For those interested in the formal details, a specific example may be useful. Let $b(c, \alpha) = b - \sqrt{c}/\alpha$ and assume that the r_i 's are uniformly distributed on the interval $[0, R]$. Using Proposition 1 and algebra,

$$\hat{r} = \frac{b}{1 + \frac{\beta n}{2\alpha^2 R}} \text{ and } c^* = \left[\frac{\alpha \beta n}{\beta n + 2\alpha^2 R} \right]^2.$$

Note that \hat{r} increases in α , while c^* increases from zero when $\alpha = 0$ to a maximum at $\alpha = \sqrt{\beta n / 2R}$ and then declines towards zero.

⁵³There could be other factors involved here. Some would argue that what matters is the typical culture

Second, it is plausible that a government's ability to organize and implement an effective counterinsurgent campaign with a given level of resources will be related to both the GDP per capita of the country and its growth rate, since both are measures of the government's competence and coherence overall. (There are other effects of GDP per capita in the model, to be discussed below.) This is consistent with the empirical findings that low GDP per capita and low GDP per capita growth rates are related to higher levels of violence for all minorities living a country.

Third, the MAR measure for third-party military support for a minority is powerfully related to level of violence.⁵⁴ Like α , such military support will clearly increase rebel benefits for a given c^* and lower the marginal efficacy of counterinsurgency. As noted, international military support is not a plausibly exogenous variable, since rebellions can cause third-party military support as well (witness Kosovo!). More exogenous, though noisier, indicators of the availability of third party support are the presence of ethnic brethren over a border, or even more, ethnic brethren who dominate a neighboring state (domkin). As noted, these are both positively related to levels of ethnic violence in the data, although the effects are not statistically significant.

6.2 Drugs, diamonds, timber, and the like

Consider any factor that makes rebel attacks simultaneously more profitable for a rebel and more costly for the government, without by itself affecting the marginal impact of counterinsurgent spending by the government.⁵⁵ Land that can produce any kind of *easily appropriable wealth*, such as diamonds, opium, coca, or valuable timber satisfies this condition. Controlling it militarily allows ready profits in hard currency for the rebels, which are thus lost to the government. By contrast, the wealth of an industrial region is harder for an insurgent group to appropriate because rebels can't themselves take over the production process and violent efforts at extortion will disrupt production and cause capital flight.⁵⁶

of hill people – warlike and resistant to state authority – rather than the better prospects for rebellion that rough terrain gives them. Given that examples of the relationship appear in cultures as diverse as Vietnamese Montagnards, Kurds, and Basques, the common “cultural” feature would have to be related somehow to the structural feature of terrain. For instance, perhaps hills tend to poverty, and thus little incentive for lowland states to extend their rule, and thus relative inexperience with state authority, thus resistance as states finally extend their grasp into the hills?

⁵⁴In a regression of REBEL90x on the variables in equation (1) and “ismil90,” a five-level variable coding degree of international military support to the minority, ismil90 is powerfully significant (t -statistic = 7.7).

⁵⁵Formally, consider an expected benefits function $b(c, \gamma)$, where $b_2(c, \gamma) > 0$ and $b_{12}(c, \gamma) = 0$. An example is the parameter b in the case given in footnote 52.

⁵⁶Oil extraction is an interesting intermediate case. Rebels can't normally run the production process themselves, but capital can't flee with the resource. In Nigeria, Colombia, and Venezuela, oil multinationals

It is easy to show (see the Appendix, Proposition 3) that such a factor will always raise both the equilibrium number of rebels *and* the equilibrium level of counterinsurgent effort by the government. So the presence of such resources should be associated with higher levels of violent insurgency on average.⁵⁷

At present we have no measure for easily appropriable wealth in the MAR data. We know that for many cases where highly violent insurgencies exist, resources of this sort are at issue and play a critical role in sustaining and even motivating the insurgency (drugs in several South American insurgencies and in South East Asia, diamonds in Sierra Leone, Angola, Congo (Zaire), and Liberia, timber in Sierra Leone and Liberia, oil in Cabinda and Nigeria – see Keen (1998) for references and discussion). But we do not know if this is significant factor when one looks systematically at areas both with *and* without insurgencies.

A final point about this result: In effect, easily appropriable wealth *raises the stakes* for both potential rebels and for the government. The reason that violence increases with higher stakes is essentially that there is more to be gained relative to the costs of fighting. One might ask, however, why shouldn't higher stakes merely increase the incentives and opportunities for a bargained settlement? This is a good question, to be taken up in section 7 below.

6.3 Wealth of the country and wealth of the minority group

In the model, r_i is intended to summarize the value of individual i 's present and future economic opportunities. Think of it as expected income. The function F characterizes the distribution of income for the minority group. In the appendix, we show that shifting the distribution of minority income upwards always lowers both the equilibrium number of rebels and the government's counterinsurgent effort. This should be intuitive. In the model, members of the minority group are choosing between becoming a rebel and a more ordinary life. The more attractive the latter, the fewer will become rebels for any given level of government counterinsurgency. In turn, fewer rebels means the government will spend less on counterinsurgency, with equilibrium restored at a lower level of fighting on both sides.

An immediate empirical implication is that active rebels will tend to be drawn from the poorest sections of the minority group, or from those lacking the ability and talents

have had to pay protection money to insurgents to be allowed to operate (Keen 1998). (An interesting contrary case is Sri Lankan Muslims in East of country – did oil there help a negotiated solution with state?)

⁵⁷And provided the other necessary conditions hold, regarding α and the economic circumstances of the local population. For instance, if the terrain is good for the government and the government is reasonably strong (low α), then the presence of easily appropriable wealth will be associated with strong government control rather than insurgency.

necessary for conventional economic success. This prediction is broadly consistent with case study evidence from many different insurgencies.⁵⁸

The second implication of this result is that, other things equal, poorer minority groups will have higher levels of insurgency and higher levels of violent response from the state. At least three specific hypotheses follow. First, minorities in countries with lower GDP per capita should see higher average levels of violence. As we saw, this hypothesis is empirically supported in the MAR sample. Second, in so far as higher growth GDP growth rates indicate better economic prospects for individuals in a country, high growth rates in one period of time should be associated with less rebellion from all groups in a country in a subsequent period. This prediction is also consistent with the data. Third, within a given country, violence should be higher for the *relatively* poorer minorities. Using the MAR measure for the relative economic position of the minority and controlling for country GDP per capita, we found above that the relative poverty of the minority is positively associated with insurgent violence, but that the effect is not robustly significant.

These predictions regarding the effect of a minority group's income all implicitly assume that greater income of the minority does not increase "one-for-one" the benefits available from being a rebel. In light of the arguments made above concerning the importance of easily appropriable wealth for rebels, we think this is a plausible assumption, since ease of appropriation by insurgents would seem to decrease with the growth of human and nonhuman capital. If the expected benefits of being a rebel did increase some with the wealth of a region, then an additional prediction follows. Higher economic *inequality* within the minority group should be associated with greater violence due to insurgency, since inequality implies more potential (low r_i) rebels and more for them to gain. We have no systematic data with which to test this hypothesis.

6.4 The size of the minority group

In the appendix (Proposition 4), we show that increasing the size of the minority group increases both the number of rebels and the government's counterinsurgent effort in equilib-

⁵⁸See Keen (1998) for example. Some of the Latin American insurgencies in the Cold War period appear exceptional in this regard; see Wickham-Crowley (1992). The model's prediction that a member of the minority fights if and *only if* he or she has an expected income less than some threshold value is obviously too stark. For instance, the leadership of insurgent groups like the EZLN in Mexico and some of the Tamil rebel factions in Sri Lanka have been occupied by young university-educated nationalists and idealists. A natural modification of the model would add an individual-specific benefit parameter to the benefits function $b(c, \alpha)$. For instance, subscript b in footnote 52 as b_i and assume that b_i is distributed by a c.d.f. G . This would represent unobservable variation in factors like an individual's degree of nationalist convictions, particular family experience with the state or with ethnic others, or political ambition. With this modification, there will still be a correlation between low income and propensity to join the rebels, but it will be less than 1.

rium. Thus, higher levels of violence related to rebellion are predicted for larger minorities, other things equal, which is generally what we found in the MAR data.

The mechanism behind this result is as follows. Other things equal, larger groups have more individuals willing to rebel for any given level of counterinsurgent spending, and this implies that they produce more damage for the state. In turn, this leads the state to fight harder to limit the damage, with equilibrium restored at higher levels of fighting on both sides.

Interestingly, the model also predicts that because the state fights harder against the rebellions of larger groups, the equilibrium *proportion* of the minority group engaged in fighting will be smaller for larger groups. In other words, small ethnic minorities that sustain a rebellion are predicted to have a higher proportion of their population fighting than are larger ethnic minorities (*ceteris paribus*). We lack the data to test this prediction systematically.

6.5 Government resources and the destructiveness of rebel attacks

The parameter β in the model could be interpreted as a measure of the per rebel cost to the state of rebel attacks. For example, β is large if an attack that yields expected gains worth \$100 per rebel costs the state \$10,000 per rebel. It is difficult to think of compelling measures or correlates of β interpreted in this way, although perhaps one would expect it to be larger for urban guerrilla movements in rich countries (like the I.R.A.) than for rural insurgencies in relatively poor, agricultural areas. Or perhaps one would expect β to be larger when ethnic populations are intermixed in a territory, since then rebels can more easily use violence to cause terror among members of the dominant ethnic group.

In a more fruitful interpretation, β reflects the government's *marginal cost* for counterinsurgent spending, which is plausibly related to the size of the government's budget or its available resources. One would expect that as the government's budget shrinks, the marginal cost of shifting funds into counterinsurgency would increase. By contrast, for very rich states with large state budgets the marginal costs of shifting funds into counterinsurgency or policing will be relatively low. In this interpretation, higher values of β imply *lower* marginal costs of counterinsurgency, as one would expect for relatively rich states.⁵⁹ Lower values of β reflect higher marginal costs of counterinsurgency, which we would expect for poorer states and especially states suffering some shock to government resources (such as Somalia after

⁵⁹To see this formally, consider the government utility function $u_G(c, \hat{r}) = -\beta nF(\hat{r})b(c) - \gamma c$, where γ represents the constant marginal cost to the government of counterinsurgent spending (and α is suppressed for simplicity). This can be renormalized with no loss to $v_G(c, \hat{r}) = -(\beta/\gamma)nF(\hat{r})b(c) - c$ since γ is a constant with respect to the choice variables. Redefine β/γ as β and the argument in the text follows.

losing its Cold War support from the U.S.; Laitin (1999)).

Proposition 5 in the appendix shows that, not too surprisingly, increasing the marginal costs of counterinsurgency for the state implies lower equilibrium levels of effort by the government and *increased* rebel activity. Thus, poorer governments and governments with sudden resource shocks should see upsurges in rebellion, while rich governments can deter all but a very small amount of rebel activity.⁶⁰ This prediction is consistent with the empirical findings regarding GDP per capita and GDP growth. The result is also consistent with the common observation that political transitions that cause a weakening of the state are often associated with increased ethnic violence, at least when these are associated with a shock to state resources.⁶¹

6.6 The indiscriminateness of counterinsurgency

Counterinsurgent operations generally impose significant costs on *nonrebels*. Because the insurgents cannot match the state in a conventional military battle, they must blend in with the population. The central tactical problem of counterinsurgency is to discriminate between rebels and nonrebels, and governments vary markedly in how well they perform this task. Much evidence from case studies suggests that the more indiscriminate is counterinsurgency, the more angry the minority population, with higher levels of violence all around as the result (e.g., see Kennedy-Pipe (1997)).

In the basic model, the payoff for not rebelling was for simplicity made independent of c . In this and the next two subsections we consider minor variations on the basic model that yield additional hypotheses and, we hope, more insight into insurgency as a strategic problem.

A natural way to formalize the effect of indiscriminate counterinsurgency is to have the basic economic payoff for nonrebels, r_i , reduced by a factor that depends on the how much the government is spending on counterinsurgency.⁶² It is straightforward to show that the

⁶⁰The result also implies that richer states will spend more (in absolute terms per capita) on materials and men relevant to counterinsurgent warfare than will poorer states, even though they will face much less rebel activity. Since defense budgets would certainly count here, this seems empirically plausible.

⁶¹Keen (1998) makes the interesting observation that poor governments strapped for resources can have an incentive to maintain or increase their “counterinsurgent” effort by condoning looting by state forces or by substituting paramilitaries, local vigilante groups, and other irregulars. Thus, those fighting the rebels are in effect “paid” by their own efforts rather than the government. This has the unfortunate effect of greatly increasing levels of violence on the government side, since the irregulars use force to get paid and face few if any sanctions for brutality.

⁶²Formally, let the factor by which r_i is reduced be $k(c) \in [0, 1]$, where $k(0) = 1$ and $k'(c) < 0$. The new

effect is exactly the same as increasing α in the basic model. That is, more indiscriminate counterinsurgency by the government will always increase the equilibrium level of rebellion, and it will increase the government’s counterinsurgent effort up to a point, after which the government will ease off.⁶³

In words, indiscriminate counterinsurgency lowers the relative value of ordinary life for all members of the minority, which effectively “tips” more minority group members into the rebel group for any given level of counterinsurgency. The government then escalates to deal with the greater costs of the rebellion, provided that doing so does not tip so many more into rebellion that it is not worthwhile.

Note that in the model, if the government can *choose* how indiscriminate its counterinsurgent campaign is, it would (if rational) make it as discriminating as it could, given “technological” constraints (which may vary with the terrain, the distribution of the minority population, and the resources and perhaps knowledge available to the government). We often observe counterinsurgent campaigns that seem so brutal and indiscriminate as to be counterproductive.⁶⁴ It is unclear, and an important question, whether this is due to (a) bad theories of counterinsurgency held by the government, (b) the belief that punishing nonrebels will lessen their support for the rebels (see the section below on social support), (c) corruption and/or ineptitude of the state’s military (cf. footnote 60 above), or (d) all of the above or something else.

6.7 Taxes, discrimination, and democracy

A plausible and extremely common argument holds that the more economic, political, and cultural discrimination faced by an ethnic minority, the greater the odds that some of its members will engage in a violent rebellion against the state, perhaps for secession, as in Kosovo.⁶⁵ Journalists’ accounts almost invariably report discriminatory policies and cultural attitudes as causes of the ethnic insurgencies they cover. As noted above, however, the measures of discrimination in the Phase III MAR dataset are not statistically associated

equilibrium condition is then $k(c^*)\hat{r} = b(c^*, \alpha)$.

⁶³To see the formal parallel with α , rewrite the new equilibrium condition $\hat{r} = b(c^*, \alpha)/k(c^*)$, and define the function $B(c, \alpha) = b(c, \alpha)/k(c)$. $B(c, \alpha) > b(c, \alpha)$ for all $c > 0$, and differentiation reveals that $B_1(c, \alpha) > b_1(c, \alpha)$. These are exactly the same marginal effects that increasing α has ($b_2(c, \alpha) > 0$, $b_{12}(c, \alpha) > 0$).

⁶⁴Possible examples are Indonesia in East Timor and Aceh, Britain in N. Ireland in 1970s, Northern Sudanese in Southern Sudan.

⁶⁵See, for example, Gurr (1993a). All “modernization” theories of nationalism (e.g., Deutsch (1953), Gellner (1983), Anderson (1983)) are based on the idea that nationalist movements are a response to economic discrimination along cultural lines.

with rebellion, although the relationships tend to be in the predicted direction. This could well be due to poor measures. Or perhaps discrimination matters only in specific contexts, the nature of which remains to be discovered.

A natural way to bring political and economic discrimination into the basic model is to allow the government to influence the minority group's distribution of expected incomes. For instance, suppose that the government chooses a tax rate $t \in [0, 1]$ on the minority prior to the play of the rebellion and counterinsurgency game. Thus, if a member of the minority chooses not to rebel, he or she will now receive $(1 - t)r_i$ instead of r_i . The "tax rate" should be interpreted broadly. This could capture the economic impact of ethnic quotas in the university system, language laws, workplace discrimination, regional investment biased in favor of majority-group-owned businesses, and so on.

Rather obviously, a higher tax rate will have the same effect as shifting the distribution of minority incomes downward: The equilibrium level of both rebellion and counterinsurgency will increase (see 6.3 above). This is consistent with the common claim that discrimination against a minority group fosters rebellion and violence. But if the tax rate or level of discrimination against the minority is endogenous – chosen by the government – then we also need to ask about the government's incentives in setting t .

Suppose that the government is trying to maximize revenue net of the costs of rebellion and counterinsurgency.⁶⁶ Then the government faces a tradeoff. Raising taxes on the minority implies more revenue from those who do not rebel, but at the same (1) drives more to rebel, lowering the tax base, and (2) increases both the damage from rebellion and the costs of counterinsurgency. In this spare model where other influences on tax rates are not considered, "optimal exploitation" by the government would involve a tax rate such that the marginal revenue from exploitation equals the marginal costs of rebellion and counterinsurgency.

One implication is that this optimal tax rate could be positive. Thus, a government hungry for revenue or jobs to offer supporters in the majority group might well choose some exploitation *even knowing that this caused some insurgency*.⁶⁷ Whether it would choose to do so would depend on how sensitive the number and impact of rebels was to the degree of exploitation. Quite possibly, poorer groups and groups in the hills (or, in general, with higher α 's) might face *lower* equilibrium levels of discrimination than richer minority groups

⁶⁶Formally, the government collects revenue $T(t) = nt \int_{\hat{r}}^R r f(r) dr$ when types $r > \hat{r}$ choose not to rebel. Thus, the government chooses t to maximize $T(t) - \beta n F(\hat{r}) b(c^*, \alpha) - c^*$, where \hat{r} and c^* are determined in the equilibrium of the basic model and depend on t .

⁶⁷There is still the question of why the government couldn't do better than fighting, to be taken up in the next section – "optimal exploitation" is only second-best optimal.

in the lowlands, even while they had higher equilibrium levels of rebellion.⁶⁸ If so, this would suggest a reason why we do not find a stronger correlation in the data between measures of discrimination and levels of rebellion: *States may tend to discriminate more against relatively helpless minorities.*⁶⁹

The government's decision about how much to exploit a minority will certainly depend on factors outside the present model, and it is worth commenting on these. First, to some extent the degree of discrimination and exploitation may be outside the government's immediate control, if the discrimination is based on cultural attitudes of the majority that manifest themselves in the workplace. If so, then we would expect greater discrimination and bias to be associated with more rebellion, other things equal.

Second, for the government to set an effective tax rate on the minority that is higher than for others in the state, the minority must clearly lack effective political representation or consideration at the center. Note that *political democracy* could either cause such exclusion or prevent it. In the former Soviet Union and Yugoslavia, the collapse of communist rule ended systems in which ethnic minorities were guaranteed some measure of economic status. The electoral democracy that followed raised the possibility of political and economic eclipse by majorities newly empowered with the vote.⁷⁰ But this is by no means a necessary implication of democracy. Depending on the play of intra-majority politics, ethnic minorities may also act as "swing voters," in which case state-led discrimination is unlikely. For example, Wilkinson (1999) shows that Hindu-Muslim riots in India have been much less common in states where Muslims have acted as swing voters between competing Hindu-dominated parties. The insignificance of political democracy in the empirical analysis probably reflects multiple, divergent mechanisms linking democracy to levels of exploitation and violence.

Third, the optimal level of exploitation of a minority will also depend on the attractiveness of the minority's *exit option*, and the damage caused to the state's economy by their departure. Members of the minority can flee as well as fight. This is generally much harder for farmers whose livelihood is bound up with the land than for urban traders and professionals (cf. Fearon (1998)). Thus, we might expect more constraints on the political exploitation of "trader minorities" like the Chinese in Indonesia Asia than on indigenous minorities who are predominantly farmers.

Fourth, one might expect that the greater the ethnic heterogeneity of a country, the

⁶⁸I would like to show this formally but so far have found it too messy.

⁶⁹Brustein and Levi (1987) note that tax rates in early modern Castille exceeded those in the more peripheral regions of Spain, while rebellion was more common farther away from Madrid. Cite also Gerry Rosenberg, *The Hollow Hope*, on how U.S. government does big things for blacks only when they protest.

⁷⁰On ethnic violence as a result of anticipation of political exclusion and discrimination in a new democracy, see Fearon (1994), Fearon (1998).

lower the probability that a group's members will be permanently excluded from a share of political power. In a state with many small ethnic groups – Tanzania, for instance – rulers will need to form coalitions across groups in order to govern. This increases the odds of future inclusion and at the same time limits the incentive of the present winning coalition to harshly exploit those excluded, since they may be partners in the future.⁷¹ If so, then we would expect that levels of exploitation to be lower across groups in highly heterogeneous states. This is consistent with the empirical finding above that greater heterogeneity is associated (albeit tenuously) with lower rebellion scores.

6.8 Social support from nonrebels

Without exception, students of guerrilla war argue that the support of the local population is critical for the success of the guerrillas. Guerrillas need places to hide, to meet, and to store weapons; they need information about the security forces and government personnel; and they can always use food and financial support.

In the model, the effect of social support is captured by the parameter α . As with rough terrain, incompetent government, and international support, support of the local population will increase a rebel's expected benefits for any given level of counterinsurgent effort and reduce the marginal impact of counterinsurgency. However, it makes less sense to treat support from the local population as an exogenous factor, especially when the members of the local population are players in the game being analyzed. Some very interesting strategic and political issues arise when we modify the model to endogenize social support.

In equilibrium, individuals will correctly anticipate the amount of social support they would receive from the population were they to become active rebels. A simple way to implement this in a variant of the basic model is to have all members of the minority initially choose whether they would offer support to a rebel, and next to have individuals choose whether to become rebels.⁷² Assume that members of the minority observe the strength of support for would-be rebels (the first choice) prior to making the choice of whether to become a rebel. If s nonrebels choose to support the insurgency, then the rebel's military prospects will now be $\alpha(s)$, where $\alpha(s)$ increases in s . More social support, more effective insurgency.

What happens in this modified game will of course depend on the incentives facing

⁷¹For this argument see Wilkinson (1999), Horowitz (1985, xx). In structural terms, an extremely heterogeneous country is much like an ethnically homogeneous country!

⁷²For simplicity we make supporting or not supporting the rebels a binary, yes-or-no choice. None of the arguments here depend on this. See Petersen (1992) for an empirically derived typology of five different forms (and levels) of support for an insurgency.

nonrebels. How are they affected by rebellion and counterinsurgency, and why would they want to support would-be rebels?

Let's begin simply, supposing that the only effect of rebellion and counterinsurgency on the nonrebels is that counterinsurgency imposes costs, as in section 6.6 above. In this case, individual nonrebels clearly have no incentive to help any insurgents. They get no benefits out of it, and by withholding support they reduce the number of rebels and in consequence the level of counterinsurgency (which is bad for them). Thus, in equilibrium, the expectation that no support will be provided keeps the number of rebels and the amount of counterinsurgency to a minimum.

But nonrebels often do provide support to rebels. Why? There are several possibilities here.

1. One might support and help the rebels because one hopes that rebellion will put pressure on the government to make valuable concessions on public policy, such as autonomy, independence, or better treatment within the state.
2. One might support and help the rebels because, *independent of the consequences*, doing so provides an immediate sense of gratification for acting in support of one's ideals or against a disliked state.
3. One might support and help the rebels because if one does not, they or others in the community will impose sanctions. Though not much reported in the press, ethnic and other insurgencies quite commonly kill many of their "own" who are perceived as insufficiently supportive.⁷³

Regarding (1), we consider what happens if the government can make various transfers to the minority in the next section, arguing that problems of private information and credible commitment will often block deals that would eliminate (or even significantly reduce) rebellion. So, for now, we consider motivations (2) and (3).

Beginning with (2), suppose that nonrebels in the minority group get some fixed positive payoff for supporting the rebels, say, an immediate feeling of gratification for supporting "the cause." Then in choosing whether to help the rebels, an individual nonrebel is comparing the value of this immediate gratification with the added costs of counterinsurgency that result from his *individual* support to the rebels. In a large population, these are likely to be very small. My family's support will have only a small impact on the rebels' efficacy, and thus a very small impact on the level of counterinsurgency. It is possible that I would not even consider this "second order" effect when making a decision about offering support.

⁷³cites ... Kalyvas (1999), KLA, LTTE e.g., ...

The third motivation for supporting an insurgency – fear of sanctions from the rebels – works the same way and probably much more powerfully. By helping the rebels I avoid a very immediate and personal cost (possibly death) that is independent of the level of counterinsurgency. Comparing the immediate costs of the wrath of the rebels with the indirect and marginal effects of my individual support for the rebels on the level of counterinsurgency, I am much more likely to support the rebels.⁷⁴

Thus, the analysis suggests that minority groups may face a *prisoners' dilemma problem* in deciding whether to support an insurgent faction: Helping the rebels may be individually rational but collectively disastrous, as it brings down the heavy hand of the state. Individuals or families might be better off if they could somehow collectively commit to resist the pressure of rebels, their own nationalist urges, or their anger at the state.⁷⁵

Notice that this turns on its head the conventional theory, which sees rebellions and insurgencies as evidence that a group has *solved* a difficult collective action problem. In the standard story, a rebellion is assumed to be a public good for some set of people, but because participation is individually costly, there is a potentially crippling free-rider problem (Mancur Olson 1965; Taylor 1988; Lichbach 1994). In our analysis (to this point), rebellion is a *private good* for the rebels and a *public bad* for the nonrebels, since it yields the latter only costly, indiscriminate counterinsurgency from the state. In contrast to the conventional story, in our account rebels and nonrebels within the minority or oppressed group can have very important conflicting interests. While the active rebels derive benefits from insurgency (in expected terms, and relative to their best alternative), their activity can bring about significant costs for the nonrebels. This is consistent with the observations of many close studies of the attitudes of ordinary peasants living through rebellions. These often find that they just want to be left alone to farm.⁷⁶

How could a model of the strategic interaction involved in revolution or rebellion *not* see it as a grand collective action problem? This is a radical departure from past work in this area, and it is worth dwelling on the comparison. There are two major differences. First, we do not assume that public benefits proceed *automatically* from the activity of the rebels. In the conventional approach, more rebellion automatically yields a higher probability of public goods. The nature of the interaction between rebels and government that brings this about goes untheorized, along with the rebels' decision to press for public goods rather than to act

⁷⁴Governments can threaten sanctions for supporting the rebels as well, and they always do. Indeed, Kalyvas (1999) shows that much violence in the Greek and Algerian civil wars was connected with government and rebel attacks against potential or actual “defectors.” However, especially in ethnic insurgencies, the rebels begin with much better knowledge of who is supportive and who is not in rural communities, which gives locals powerful immediate incentives to support them.

⁷⁵Formal example ...

⁷⁶See for example Popkin (1979), Stoll (1998), Kalyvas (1999), and Swamy (1994).

as mere bandits. We take up the issue of government-rebel bargains and public goods below.

The second major difference from the conventional account is that we do not assume that either being or supporting a rebel must be individually costly. In contrast to the conventional approach, our model distinguishes between active participation as a guerrilla and less active participation in providing aid, status, and information to the guerrillas. In the case of the active guerrillas, the life of a rebel has immediate benefits that make it more attractive than the individual's best alternative, despite the various costs.⁷⁷ In the case of the nonrebels, we should not assume that providing support must be costly. Yes, there can be the danger of getting in trouble with the state's forces, but there is the same danger from the rebels, who are closer at hand and typically better informed about village politics. And, as suggested above, the minor material costs of sheltering or feeding a fighter, or of providing information when asked, might easily be compensated by the immediate gratification of nationalist or anti-state feelings. The costs of rebelling *do* matter in our basic model – they determine how many in the minority group choose active rebellion. But there need be no collective action problem in the usual sense. Neither the active rebels nor the nonrebels who support them are necessarily taking actions whose private cost exceeds some marginal public benefit.

To summarize, giving nonrebels in the model a choice of whether to support the guerrillas suggests that their support – and the greater rebellion that results – may reflect not a success but a *failure* of collective action by a majority of the minority group. Loosely, this will be the case if policy concessions from the government that would justify the costs of the war are unlikely, and individual nonrebels either derive some small emotional satisfaction or avoid rebel sanctions by offering support.⁷⁸ Both journalists and scholars commonly explain long-running, intensely devastating, and politically dead-locked civil wars such as those in Sudan, Sri Lanka, and Turkey as wars of attrition between groups that are, to a man, committed and uncompromising nationalists. Our analysis suggests a very different interpretation, which sees deadlocked civil wars *not as a bargaining strategy of unified groups but rather as a product of divergent interests and failed collective action within groups.*

A number of empirical implications follow, particularly concerning rebel tactics and the decision to press for public goods like autonomy rather than engage in mere banditry. In brief, *if* social support from nonrebels is important for rebel success, then would-be rebels

⁷⁷In the rebellion-as-collective-action paradigm, efforts to resolve the “paradox of participation” have often stressed what Olson called “selective incentives,” or private benefits from an activity that also produces public goods (Lichbach 1994; Popkin 1988). If the rebels push for and ultimately receive public policy concessions from the government, then one could describe our expected benefits function $b(c, \alpha)$ as “selective incentives,” although to do so is take the vantage point of the rebel leaders.

⁷⁸Given the result above that larger minorities will have larger absolute and relative numbers of nonrebels, one might also expect the collective action problem enabling rebellion to be harder to solve in larger minorities.

have stronger incentives to cultivate the sympathies or fears of nonrebels as well as their animosity to the state. By doing so, they try to shift the balance of individual feelings and incentives in their favor, engaging the collective action problem and social support despite its costs for nonrebels.

Thus, when substantial social support is necessary for rebels to thrive, their incentive to adopt idealistic and public goods objectives like autonomy, secession, or equal treatment for the minority is higher. Nonrebels will derive no immediate gratification from helping the rebels if they think the rebels seek nothing more than their own enrichment. And if the rebels threaten coercion against those who do not support them, nonrebels are almost sure to see this as criminal terrorism if it is not justified by an appeal to a higher collective good.⁷⁹ This is not to claim that rebel leaders are all just political opportunists who strike a nationalist pose to fulfill other goals, like personal ambition and power within the minority group. Rather, when the environment makes social support an important determinant of rebel success, it will select for rebel movements that credibly espouse a commitment to obtaining public goods for the minority.

When will this be the case? Some of the most important factors have already been discussed. Social support will be less important for rebels when (1) the terrain is bad for the government, enabling them to hide and subsist with less local help, (2) the central government is incompetent and underfinanced, and (3) there is easily appropriable wealth at hand, making rebels more independent of local or international financial support. When these conditions obtain, rebels will have less incentive to push for public goods in their declared objectives and policies. That is, they will be more likely to act and look like mere bandits. Empirical examples that appear broadly consistent with this prediction include the FARC in Colombia, the RUF in Sierra Leone, UNITA in Angola, various rebel/government-sponsored groups in Southern Sudan, and various rebel groups in northeast Uganda.⁸⁰

By contrast, with good terrain, a stronger government, and no easily appropriable

⁷⁹Compare the RUF in Sierra Leone, or the interahamwe in Eastern Congo, with the LTTE in Sri Lanka. Despite a common opposition to the banyarwanda, the local population in Eastern Congo has been increasingly alienated by the interahamwe's brutality. See Ian Fisher, "Brutal Bands of Rwandans Bar Way to Peace in Congo," *New York Times*, August 4, 1999 (national edition), A1. On the LTTE, see Swamy (1994), whose evidence suggests that a great many Tamils despise the LTTE for its strong arm tactics within the group, but that many others nonetheless see this as potentially justified by the LTTE's unwavering nationalism.

⁸⁰International support can also make active rebels relatively independent of local social support, and this can produce rebellion-without-public-goods when the international actor's ends diverge from those of the local population. To some degree, this was the case in Krajina in 1991, as Belgrade's support allowed local thugs to push a line much farther from the local median than they otherwise could have. During the Cold War, the ideological competition of the superpowers gave would-be rebel leaders an incentive to advertise their movements as communist or anti-communist even when ideology was hardly an immediate concern of the local population.

sources of wealth, rebel movements are more likely to require significant social support to derive the immediate benefits necessary to recruit guerrillas. This will favor rebel commitment to nationalist or other ideological agendas. The I.R.A. is a case in point. More broadly, we might expect that nationalist appeals for the protection of language, religion, or other cultural dimensions will be stronger when social support is relatively more important for rebels' success.

A second implication of high dependence on local support is that would-be rebels may have an incentive to cultivate the minority group's animosity to the state by *intentionally* provoking harsh counterinsurgent measures from the government. By doing so they increase the number in the minority who will be inclined to offer support to the rebels despite the collective costs.⁸¹ This is what ETA in the Basque region called "the action-reaction cycle" – ETA's attacks on the state would produce counterattacks that would increase support for ETA among the Basques. The tactic has been used, with apparent success, by the LTTE (especially in 1983) and more recently by the KLA in Kosovo.

7 Government-rebel bargaining

Violence in the basic model will frequently be inefficient. There will be transfer schemes that could make all parties at least as well as off, and some strictly better off, than in the unique equilibrium of the game considered in the last section. The intuition for such schemes is straightforward. The government would make policy or monetary transfers to members of the minority conditional on "good behavior" by the minority. If it could do this, then it might be able to "pay" potential rebels just enough that they would prefer the nonrebel life.

For example, assume potential rebels and the government are both risk neutral in money, and let $b(c)$ be the expected "loot" for a rebel who has reservation value r_i . This person would need a transfer worth $t \geq b(c) - r_i$ to prefer not to become a rebel. Let $\beta b(c)$ be the state's monetary equivalent for the per rebel damage of an attack. In addition, the state is spending c/m per rebel when there are m rebels. Thus, any transfer worth more than $b(c) - r_i$ to the rebel and less than $\beta b(c) + c/m$ to the state will make both better off. As long as the state cares sufficiently about the costs of rebel attacks (β not too small), such transfers will exist. (A sufficient condition is $\beta \geq 1$.) Assuming risk-aversion on either or both sides will expand the range of mutually feasible deals further.

⁸¹This assumes that I will get mad at the government for indiscriminate counterinsurgency that inconveniences or injures me, rather than at the rebels. The psychological mechanism may be that identified by social identity theory (Tajfel 1982), or may involve rational updating the absence of information about who is to blame for the violence (deFigueiredo and Weingast 1999).

Until we have explained what prevents such Pareto-improving “peace agreements” from being struck, we have not really presented a theoretically coherent explanation. While a full discussion of the strategic issues involved in using the model to explore government-rebel bargaining is beyond the scope of this paper, we should briefly indicate some of the main lines of argument.

In fact, the discussion of endogenous social support above has already suggested a possible answer. Suppose the local population will not support rebels unless they demand public goods for the minority (such as autonomy). Then the rebels may be content to make demands the state will never grant (since the state prefers to low-level counterinsurgent war to these demands), so as to obtain public support that makes the rebel life more profitable and fulfilling. The puzzle in this case is why the local population would support the rebels despite their making hopeless demands and bringing on an endless war. We argued that there is likely to be a collective action problem among the *nonrebels* – nonrebels can’t coordinate to police the rebels or themselves against offering support to gratify nationalist sentiments.

Even without assuming a collective action problem among nonrebels, however, the obstacles to a deal between government and rebels may be formidable. Four other problems emerge from consideration of a repeated version of the basic model in which transfers by the government are allowed.⁸²

First, it is natural to suppose that the government cannot directly observe individuals’ reservation values for life as a nonrebel, which are private information for the most part. If so, then neither can the government condition monetary or equivalent transfers on reservation values. This means that the government can’t make transfers that would specifically target the people who are the potential problem. Instead, the best the government can do is to make *generalized transfers* – for example, in the form of policy changes – that indifferently affect all or large segments of the minority. This effectively raises the cost of concessions to the government, relative to their impact on reducing incentives for violence from potential rebels. If we modify the basic model to allow the government to commit to a transfer t to be given to *every* member of the minority if violence stays below a threshold value, then it is straightforward to show that the government will not in general choose to “buy” zero violence. The inefficiency of a generalized transfer makes the government unwilling to go that far.

Second, the bargaining power of a rebel or rebel group depends on it being difficult for the government to find and destroy. If receiving a transfer means revealing information about who is rebel and where the group can be found, and if the government can’t commit not to take advantage of this information, then this would be second obstacle to Pareto-improving bargains. This is the kidnapper’s dilemma, a closely parallel situation where bargaining

⁸²We leave the formal analysis to another paper.

power also depends on invisibility: How to receive the money without being captured?

For rebellion, however, there is a common and often feasible solution to this problem. The development of *an on-going rebel organization* allows the use of intermediaries to deliver payoffs and make deals with the government, without greatly risking the rebel's base or central command. The Sudanese government makes such deals with rebel factions quite often. What is referred to as "government corruption" in the case of payoffs from FARC in Colombia or rebel/government-agent collusion in Sierra Leone over diamond smuggling are really cases of Pareto-improving deals that avoid violence for mutual profit of the individuals involved. One might also cite the role of Sinn Fein as an intermediary for the IRA, or HB for ETA in Spain.

Importantly, a coherent rebel organization can also moderate the first problem noted above, the government's inability to discriminate between potential rebels and nonrebels. Inability to discriminate implies a need for generalized transfers. If the rebels are under a unified command that has demonstrated a capacity for violence *and* an ability to "in-group police" its own (Fearon and Laitin 1996), then government may be able to bargain with this entity over more focused transfers.⁸³

Even so, a third problem arises in how to *monitor* any deal that is struck. To this point, the idea has been that to support a peace agreement, the government will revoke transfers if members of the minority go back to rebellion. But how to decide how much violence or rebel attacks constitute a violation of the agreement? How many terrorist bombings? How to measure an "acceptable" security effort by the Palestinian Authority? If there is no "bright line" the crossing of which ends a peace deal, then why shouldn't potential rebels try to enjoy both the immediate benefits of being a rebel and any policy concessions from the government?

If the minority group has a unified and internally strong rebel organization, this problem would appear relatively easier to solve. If there are multiple competing rebel groups, then anything less than a comprehensive settlement will produce a moral hazard problem: Groups included in the settlement can blame any post-settlement violence on groups not involved in the settlement, so that no group has an incentive to abide by a settlement. Anticipation of this will limit the ability to make deals in the first place.⁸⁴

The fourth problem concerns the nature of the transfers that are the subject of bargaining. For an agreement to work, transfers from the government must be *revokable* – it must be possible for the government to suspend them in the event of renegeing by rebels.

⁸³Although there is still the problem of support to the rebels being conditioned on demands for generalized transfers.

⁸⁴One has to be able to distinguish, for example, between the IRA and the "Real IRA."

Otherwise, rebels have an incentive to pocket the transfer and go back to the immediate benefits of the rebel life. For example, if the rebels demand greater infrastructural investment in their region, then what would prevent them from returning to the rebel life after the dams, roads, or oil refineries are built?⁸⁵

Significantly, one of the most common and difficult demands of the leaders of ethnic rebellions – measures of political autonomy or full independence – may be difficult to revoke once granted. The reason is that autonomy and independence are defined not only by institutional arrangements, but are also constituted by a speech act conferring recognition (Searle 1969). Speech acts, such as promises, can be rendered partially nonrevokable by their effects on how others coordinate their actions in response. For example, if I publicly promise to do X and subsequently renege, then others may respond and act differently than if I had never promised to do X. Likewise, if a state grants a measure of autonomy to a rebellious region, it can never really revoke the fact that it made such a promise. By some accounts, Milosevic preferred losing Kosovo by a fight to losing it at Rambouillet for just this reason.⁸⁶

8 Conclusion

In the post-World War II period, large-scale ethnic violence has taken two major forms – separatist wars and contests between groups to control an internationally authorized “state.” Such wars have been much more likely the poorer and more slow growing the country’s economy in the years prior to onset of violence. Minorities appear more likely to experience such wars if they have some regional base, are not primarily urban, are relatively large groups, live in rough terrain, and have ethnic brethren who dominate a neighboring state. Cultural differences from the dominant group, such as language and religion, are not associated with higher probabilities of rebellion. Nor is the level of democracy of the state (after controlling for wealth), or measures of economic and cultural discrimination.

Most of these findings can be explained in a model that focuses on the interaction between the state’s choice of counterinsurgent effort, and the choice of individual members of a minority whether to become active rebels. In this model, the main determinants of the scale of civil violence are structural factors that influence rebels’ military prospects for any given level of counterinsurgent effort, such as rough terrain, a weak and poor central government, or the availability of support from neighboring groups or states. Because such

⁸⁵Of course, these might lower incentives to rebel for economic reasons, but this is a separate issue, one of generalized transfers.

⁸⁶In the end this is really an argument about incomplete contracts: There would be no problem if government and rebels could write an agreement that would allow third parties and their own heirs to distinguish cleanly between “revoking” and “reneging” in all future contingencies.

factors lower the marginal efficacy of counterinsurgent spending, the state prefers to fight on-going wars with “rough terrain” (e.g.) groups rather than continuously spend enough to keep such rebellions at a really minimal level.

Exploring and expanding the dynamics of the basic model yields a range of additional hypotheses, the most interesting of which probably concern the role of social support for would-be rebels. We argued that deadlocked, intensely destructive civil conflicts may often arise from a collective action problem among the *non*rebels of the minority group, for whom the private benefits of supporting rebels exceed the collectively disastrous social costs. This is the exact opposite of the conventional theoretical wisdom about rebellions and revolutions, which tends to treat rebelling populations as having common interests and sees rebellions as evidence that a debilitating collective action problem has been *solved*. We intend to explore these and the various other hypotheses in work in progress.

9 Appendix

Proposition 1: (a) In the unique Bayesian Nash equilibrium of the basic model, the government G spends an amount c^* on counterinsurgency, and members of the minority group choose to fight if and only if $r_i < \hat{r}$. c^* and \hat{r} are defined implicitly by

$$\hat{r} = b(c^*, \alpha), \quad (1)$$

$$c^* = \arg \max_c \{-\beta n F(\hat{r}) b(c, \alpha) - c\}. \quad (2)$$

(b) If

$$-b_1(0, \alpha) < \frac{1}{\beta n F(b(0, \alpha))}, \quad (3)$$

then $c^* = 0$ and $\hat{r} = b(0, \alpha)$. If condition (3) does not hold, then c^* solves the first-order condition of (2), namely

$$-b_1(c, \alpha) = \frac{1}{\beta n F(\hat{r})}. \quad (4)$$

Proof of Proposition 1. (a) c^* is by definition a best response for the government. A member of the minority maximizes her payoff by choosing $\max\{r_i, b(c^*, \alpha)\}$, and thus the strategies given in the proposition form mutual best replies (a Nash equilibrium). To show uniqueness, note that the first order condition for the government (4) has at most one solution, since the left-hand side is strictly decreasing in c , while the right-hand side is constant. (4) has no

solution in the event that (3) holds; in this case $c^* = 0$ maximizes the government's objective function, and this uniquely determines \hat{r} . Q.E.D.

Proposition 2. (a) \hat{r} strictly increases with α . (b) Assume that $\lim_{\alpha \rightarrow \infty} b_1(0, \alpha) = 0$. (In words, for large enough α , additional counterinsurgency has almost no marginal impact.) Then c^* approaches zero as α approaches infinity. (c) Assume that r_i has a lower bound \underline{r} , and that the function $\hat{c}(\alpha)$ that solves $b(\hat{c}(\alpha), \alpha) = \underline{r}$ approaches zero as α approaches zero. (In words, for small enough α , the government can spend very little and still deter all members of the minority from rebellion.) Then c^* approaches zero as α approaches zero.

Proof of Proposition 2. (a) At a “corner solution” $\hat{r} = b(0, \alpha)$, so the claim follows from $b_2(c, \alpha) > 0$. At an interior solution, the first-order condition (4) can be rewritten as

$$b_1(b^{-1}(\hat{r}, \alpha), \alpha) = -1/\beta n F(\hat{r}), \quad (5)$$

where b^{-1} is the inverse of $b(c, \alpha)$ in c . Implicitly differentiating both sides with respect to the exogenous parameter α yields

$$b_{11}(b^{-1}(\hat{r}, \alpha), \alpha)[b_1^{-1}(\hat{r}, \alpha) \frac{\partial \hat{r}}{\partial \alpha} + b_2^{-1}(\hat{r}, \alpha)] + b_{12}(b^{-1}(\hat{r}, \alpha), \alpha) = \frac{f(\hat{r}) \frac{\partial \hat{r}}{\partial \alpha}}{\beta n F(\hat{r})^2}.$$

Using the facts that $b_{11} > 0$, $b_1^{-1} < 0$, $b_2^{-1} > 0$, and $b_{12} > 0$, it follows that if $\frac{\partial \hat{r}}{\partial \alpha} \leq 0$ then the left hand side would be strictly positive while the right hand side would have to be strictly negative, an impossibility. Thus $\frac{\partial \hat{r}}{\partial \alpha} > 0$.

(b) If $\lim_{\alpha \rightarrow \infty} b_1(0, \alpha) = 0$ then condition (3) must be satisfied for large enough α .

(c) If $F(b(0, \alpha)) = 0$ (no one wants to rebel even if $c = 0$), then $c^* = 0$ for all α . If $F(b(0, \alpha)) > 0$ then c^* must be less than $\hat{c}(\alpha)$. If not, then the right-hand side of the first order condition (4) would be greater than the left-hand side, so that the government would want to reduce its effort. Thus, $\lim_{\alpha \rightarrow 0} \hat{c}(\alpha) = 0$ implies $\lim_{\alpha \rightarrow 0} c^* = 0$. Q.E.D.

Remark. The proof technique in (a) – differentiating an equilibrium identity in an exogenous variable – is used to establish virtually all of the results below. To save space we will often simply describe the procedure.

Proposition 3. Consider an exogenous factor that influences the value of an attack for both rebel and government, but which does not influence the marginal efficacy of counterinsurgent spending – formally, an α such that $b_2(c, \alpha) > 0$ but $b_{12}(c, \alpha) = 0$. Then $\frac{\partial \hat{r}}{\partial \alpha} > 0$ and $\frac{\partial c^*}{\partial \alpha} > 0$.

Sketch of proof. For $\frac{\partial \hat{r}}{\partial \alpha} > 0$, simply check that the condition used to establish this in

Proposition 2 still holds when $b_{12}(c, \alpha) = 0$. For $\frac{\partial c^*}{\partial \alpha} > 0$, write the equilibrium condition as $b_1(c^*, \alpha) = -1/\beta n F(b(c^*, \alpha))$ and differentiate both sides in α . When $b_{12}(c, \alpha) = 0$, $\frac{\partial c^*}{\partial \alpha}$ can be signed as strictly positive.

Proposition 4. Let s be a shift parameter that moves the distribution of minority incomes upward. Thus, we have $F(r, s)$ with $\partial F/\partial s < 0$. It must be the case that $\frac{\partial c^*}{\partial s} > 0$.

Sketch of proof. Write the equilibrium condition as $b_1(c^*) = -1/\beta n F(b(c^*), s)$ (dropping the needless α here), and differentiate both sides with respect to s . It is then possible to sign $\frac{\partial c^*}{\partial s} > 0$. $\frac{\partial \hat{r}}{\partial s} > 0$ follows immediately through condition (1).

Proposition 5. Increasing n implies that c^* strictly increases, the proportion of rebels in the group (\hat{r}) falls, while the number of rebels, $nF(\hat{r})$, increases.

Proof. Writing the equilibrium condition as $b_1(b^{-1}(\hat{r})) = -1/\beta n F(\hat{r})$ and differentiating implicitly with respect n , we have

$$b_{11}(b^{-1}(\hat{r}))b_1^{-1}(\hat{r})\frac{\partial \hat{r}}{\partial n} = \frac{1}{\beta}[nF(\hat{r})]^{-2}[F(\hat{r}) + nf(\hat{r})\frac{\partial \hat{r}}{\partial n}].$$

Signing the derivatives yields the conclusion that $\frac{\partial \hat{r}}{\partial n} < 0$, which establishes that the proportion of the group fighting falls with the size of the group in equilibrium. Since in equilibrium $\hat{r} = b(c^*)$ and $b(c)$ is strictly decreasing, it follows that $\frac{\partial c^*}{\partial n} > 0$. To show that the equilibrium number of rebels, $nF(\hat{r})$, increases with n , note that the second expression in brackets on the right-hand side above is the derivative of $nF(\hat{r})$ with respect to n . Since $\frac{\partial \hat{r}}{\partial n} < 0$, the left-hand side is positive, which implies that $\partial nF(\hat{r})/\partial n$ must be positive as well. Q.E.D.

Proposition 6. Increasing the relative value the government puts on the destruction caused by rebel attacks (β) strictly increases equilibrium counterinsurgency and strictly decreases the proportion of rebels.

Sketch of proof. Write the equilibrium condition as $b_1(c^*) = -1/\beta n F(b(c^*))$ and differentiate both sides implicitly in β . It is then possible to sign $\partial c^*/\partial \beta > 0$ which implies $\partial \hat{r}/\partial \beta < 0$ through $\hat{r} = b(c^*)$.

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