Horizontal Inequality, Cross-cutting Cleavages, and Civil War[i]

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Abstract

In this paper, we bring together research on horizontal inequality, the geographic dispersion of ethnic groups and cross-cutting cleavages to present a more holistic theory of ethnic structure and civil war onset. We argue that rebel leaders are thwarted in their mobilization efforts in highly cross-cutting societies due to a lower probability of potential combatants identifying with nationalist goals, decreased ability to exert social control, and diminished in-group communication. Using cross-national data from over 100 countries, we provide evidence that civil war onset is an average of nearly *twelve times* less probable in societies where ethnicity is cross-cut by socio-economic class, geographic region and religion.

1. The Puzzle

What factors contribute to the onset of civil war? Recent research suggests that ethnicity[iv] plays a defining role in one of the world's most pressing problems. Indeed, "ethnic civil wars"[v] comprise the majority of all civil wars since 1945 (Sambanis, 2001), with the death toll totaling five times the interstate number (Fearon and Laitin 2003). And yet the role of ethnicity in civil war onset remains up for debate. Adding to the plethora of studies on the role of ethnicity in civil war onset (Elbadawi and Sambanis 2000; Sambanis 2001; Collier and Hoeffler 2000, 2004; Fearon and Laitin 2003; Montalvo and Reynal-Querol 2005; Reynal-Querol 2002), we analyze a characteristic of ethnicity known most commonly in the literature as *cross-cutting cleavages*. Building on existing theory that highlights the role of ethnicity in increasing grievances and mobilizing insurgents, and on previous research on the social impact of cross-cutting cleavages, we argue that when ethno-linguistic identity is cross-cut by other salient social cleavages, such as religion, socio-economic class and region of residence, rebel leaders have a harder time recruiting and maintaining the loyalty of combatants. This creates a context unfavorable to civil war onset, decreasing its likelihood even in states with other conditions favorable to onset. While Horowitz (1985) and others (Lipset 1960; Rae and Taylor 1970) have theorized about this in the past, we use new cross-national data on cross-cutting cleavages to present the first quantitative support for this argument.[vi]

Empirically, we build on recent work relating the geographic dispersion of ethnic groups (Toft 2002; Matuszeski et al., 2006; Cederman et al., 2007; Buhaug et. al, 2008; Weidman 2009) and horizontal inequality (Østby 2008) to civil war onset. We interpret these findings as supporting the link between two types of cross-cutting cleavages, ethno-geographic and ethno-income, and civil war. In terms of the geographic cleavage, although the worldwide coverage of our dataset is smaller than previous studies, we importantly report similar findings using a different measure of geographic segregation. Horizontal inequality, on the other hand, has been much less addressed in the literature, no doubt owing to the scarcity of data with which to test the concept.[vii] Here, our

study is more extensive in its coverage than previous studies, with about twice the number of countries than Østby's (2008), the only other cross-country quantitative study to the authors' knowledge. Our results corroborate those of Østby's, however, and give strong support to theories of horizontal inequality and civil war onset. Finally, we analyze a unique measure of ethno-religious cross-cuttingness.[viii]

The paper proceeds as follows. First, we provide a brief overview of research, both theoretical and empirical, on the role of ethnicity in civil war onset. Then, we develop our theory of how cross-cutting cleavages affect ethnicity's rebel mobilization role. We continue with a discussion on measurements of ethnicity before presenting our measure of cross-cuttingness and discussing data issues such as representativeness and coverage. Finally, we present our results and discuss the policy implications of our findings.

2. Ethnicity, Cross-cutting Cleavages and Civil War

2.1 Ethnicity and Civil War

Borrowing from Political Instability Task Force (PITF), we define civil wars as episodes of violent conflict between governments and either politically organized groups (revolutionary wars) or national, ethnic, religious or other communal minorities (ethnic wars). The groups seek either to overthrow the central government, to replace its leaders or seize power in one region (revolutionary wars), or they seek major changes in their status (ethnic wars). Conflicts must include substantial use of violence by one or both parties to qualify as 'wars.'[ix] The role of ethnicity in civil war onset has been an area of heavy focus since the introduction of "large-*n*," quantitative analyses of the topic in the early 1990s. Almost all early studies operationalized ethnicity using single-dimensional measures, such as fractionalization, bipolarization, size of the largest ethnic group, etc. Results were mixed, however, even for studies that used similar measures (Collier and Hoeffler, 1998, 2000, 2004; Fearon

and Laitin, 2003; Reynal-Querol 2002; Posner 2004a; Montalvo and Reynal-Querol 2005; Kalyvas, 2007; Fearon et al., 2007; Wimmer et al., 2009). And while these various studies employed important differences in such things as definition of civil war, control variables, etc., whether and how ethnicity affected civil war remained a puzzle.

Stronger consensus has emerged more recently as the literature has moved away from these uni-dimensional measures of ethnicity. These developments fall generally within two camps, which Chandra and Wilkinson (2008) refer to as "ethnic practice" and "ethnic structure". The first camp includes such work as Cederman and Girardin's (2007) *N** index, which quantifies the patterns of interactions between ethnic groups in power and marginalized ethnic groups; Fearon et al.'s (2007) study on ethnic minority groups holding power; and Wimmer et al.'s (2009) "Ethnic Power Relations" dataset. These three studies highlight the role ethnicity plays at the macro-level to create power structures that generate ethnic grievances, which then serve as the motivation behind the onset of civil war (Wimmer et al. 2009).

The second camp continues the focus of earlier work regarding the structure of ethnicity in engendering grievances, but now reaches down to the micro-level in discussing the facilitation of rebel group mobilization. Overlap between ethnicity and religion (Seul 1999), geographic region (Cederman et al. 2007) and socio-economic class (Stewart 2000) have all been linked to higher grievances that can fuel civil war. In addition, these accounts point to the enhanced mobilization capacities in countries where ethnic groups are regionally clustered (Matuseski and Synder 2006) and horizontally unequal (Østby 2008). We continue in the same vein as this recent ethnic structure literature by providing context conditionality to the standard ethnicity-mobilization theory in much of the literature. We turn now to this standard account.

Our definition of civil war involves two groups: the government and an organized political group. This organized political group seeks one of three goals: overthrow the central government,

replace its leaders, or to seize power in one region. In order to achieve these goals, the organized political group must mobilize a sufficient number of combatants loyal to its cause

All societies contain potential combatants: people with varied grievances resulting from the status quo. What affects these leaders ability to mobilize these grievances? Two frequently cited factors in the literature are a state's ability to put down challengers to its authority (state strength) and the geographic favorability of conditions for insurgency[x], such as mountains, forests and non-contiguous regions of a state (Collier and Hoeffler, 2000, 2004; Fearon and Laitin, 2003; Fearon, 2004, 2005).

Past literature argues that ethnicity also plays a central role in mobilizing these grievances. It highlights several ways in which ethnicity facilitates mobilization; here we discuss three:

1) Identification with nationalist goals

2) Facilitation of social control

3) Enhanced in-group communication

In these accounts, ethnicity plays at least one of these three roles, in some cases more. In what follows we describe the mechanisms relating each of these to civil war onset. Traditional literature argues (either explicitly or implicitly) that the existence of different ethnic groups in a country is sufficient for these processes to occur. However, as we will later show, ethnicity's ability to play any of these roles is strictly conditional on the way in which ethnicity is structured in relation in to other socially salient cleavages.

One way to mobilize potential combatants—those with grievances—is to spur them to identify with a nationalist cause.[xi] Though there are clear examples of non-ethnic nationalism (Switzerland, the United States), and clear difficulties in the mobilization process from ethnic group to nation (Hroch 1996; Brubaker 2004), ethnicity provides a strong justification for the creation of a national group (Smith 1986). We do not wish to overstate the relationship between ethnicity and nationalism. The literature clearly distinguishes between the two concepts. However, they do share

some characteristics (Anderson 1991), which explains why we frequently observe ethnic civil wars fought over national issues.[xii]

Consider the costs of mobilizing a combatant force for two rebel leaders, both of who are seeking nationalist goals. The first rebel leader is able to appeal to an ethnic group as comprising this potential nation; he need not fabricate a sense of shared history, nor does he face a collective action problem in convincing a set of individuals that they constitute a group; their self-identification with the ethnic group solves both these problems (Hardin 1997). Rather, the first rebel leader need only convince his potential followers that a politically shared future (under his leadership, of course) is a better future. The second rebel leader appeals to some other cleavage, say class. Both the shared history and political future mechanisms are much harder to achieve for this second rebel leader because group consciousness is not as strong and there is greater mobility among socio-economic classes. Ethnicity, on the other hand, is an ascriptive identity over which individuals have limited choice. In short, ethnicity decreases the costs of group mobilization by providing an easier means with which to identify with nationalist goals.

The ascriptive nature of ethnicity also increases the ease with which a rebel leader can control or neutralize potential opponents. Ethnicity's ascriptive nature sets it apart from other social cleavages: membership in an ethnic group is often marked by skin color, language, familial ties, or cultural heritage. These characteristics are not easily changed or hidden. Thus, movement in and out of an ethnic group is often much more difficult than movement between groups along other social cleavages. Indeed, of all the social cleavages, ethnicity is perhaps the stickiest: individuals rarely choose membership in the first place, and exit from the group is often infeasible (one cannot easily change skin color, language, familial roots, or cultural heritage). This benefits ethnic rebel leaders in a few ways. Perhaps most importantly, it enhances their ability to control co-ethnics who would dissent from or actively oppose the cause by greatly complicating their ability to exercise the

"exit" option from the group. In other words, it increases a rebel leader's "social control" capabilities.

Social control is the process through which individuals are "influenced by the presence, opinion, expectations, and behavior of friends, neighbors, colleagues, and relevant others, when they decide to participate [or not participate] in collective action" (Takacs, 2007: 59). Its role in facilitating civil war onset is well documented. Humphreys and Weinstein (2008) note the power of social control in their recent study on the civil war in Sierra Leone, writing that social control facilitated mobilization as "social pressures…change[d] how individuals evaluate[d] the costs and benefits of joining [the] movement" (439). Some who would not have joined the movement joined; others who would have acted against the movement remained silent. Social control also features prominently as a facilitator of civil war in Kalyvas's (2006) work on this subject. Kalyvas provides a detailed account of how entire communities would be controlled by one side in a civil war—often housing combatants they did not really support—simply through the use of the dense networks that characterize ethnic groups. Citing what Filipino insurgents fighting American soldiers in 1900 described as the "chameleon act", he states: "Either the people do not know who is really an insurgent . . . or more commonly, they refrain from identifying the insurgent combatants who hide among them – out of diverse motivations, including sympathy and fear" (*ibid.,* p.91).[xiii]

Finally, ethnicity facilitates high levels of in-group communication, a necessary precursor to the coordination necessary for group mobilization. Part of this unique ability comes from the dense social networks that characterize most ethnic groups. Members of these networks not only share a common language, which greatly facilitates communication and is not characteristic of other social cleavages (like social class), but they also share a common set of norms and expectations (culture) that facilitate understanding when communication takes place. Hardin (1997) describes in detail how these shared norms provide what he calls the "epistemological comforts of home," and allow for communication and coordination at a high level within each group.

It is little wonder, therefore, that ethnic civil wars dominate the list of civil wars that occurred in the 20th century (Sambanis, 2001). A careful review of the qualitative literature suggests that in many of these cases, ethnicity played a mobilization role, easing a leader's task of mobilizing followers and controlling large segments of the population. However, this is only part of the story, since many ethnically diverse countries do not experience civil wars. We thus turn to an account of how cross-cutting cleavages affect the role of ethnicity in rebel mobilization.

2.2 Cross-cutting Cleavages and Civil War

Cross-cutting theory and its relation to social stability enjoyed wide-spread scholarly popularity in the 1950s and 1960s, focusing mainly on voting behavior (Dahl 1956), political organization (Tingsten 1937; Lazarsfeld et al 1968; Lane 1959; Alford 1963; Allardt and Littunen 1964; Lipset and Rokkan 1967), class conflict (Dahrendorf 1959; Rokkan 1967) and democratic stability (Truman 1951; Lipset 1960).

Analyzing the same three mechanisms—identification with nationalist goals; social control, and in-group communication—we articulate how cross-cutting cleavages can reduce the ability of rebel leaders in mobilizing ethnic populations. Consider again two rebel leaders trying to mobilize combatants, only this time both leaders are able to appeal to ethnic groups. The ethnic group of the first rebel leader is concentrated in some border region of the state, affiliates with a religion different than any other ethnic group in the country, and is markedly poorer than any other ethnic group. In this first scenario, ethnic identity is reinforced by other salient social cleavages. The ethnic group of the second rebel leader, in contrast, is dispersed throughout the country living in close proximity to other ethnic groups. Moreover, the second leader's ethnic group practices the same religion as other ethnic groups and is not noticeably poorer. In this second scenario, ethnicity is cross-cut by other cleavages. Which leader is more likely to be successful in his mobilization efforts?

In terms of convincing his ethnic group to identify with nationalist goals, the first rebel leader is more likely to be successful. The first ethnic group has a specific territory that might facilitate claims to a separate nation. Narratives of shared history might also be enhanced by religious stories and/or beliefs. Lastly, the income disparity will likewise add to accounts of a shared history of grievance. In contrast, the second rebel leader's efforts might be stymied by competing loyalties to other identities, competing shared histories from a broader religious affiliation. In addition, there would no economic grievances to enhance claims to political exclusion and repression.

These cross-cutting cleavages also decrease the second rebel leader's ability to exert social control. Individuals in his society can more readily exercise the option of exit from the group by switching to memberships in groups on other social cleavages, such as class or religion. Although they may still be readily identified, and thus not able to escape punishments involving physical force, they can escape more easily from ostricization than those in the first rebel leader's society by simply associating with individuals on another dimension of identity. Social pressures in general will likely be less as all members of the group experience conflicting loyalties from their memberships in other groups on other cleavages. Cross-cutting cleavages can facilitate the phenomenon of intra-ethnic conflict that we observe in many circumstances of war.[xiv]

Cross-cutting cleavages also lower the degree of in-group communication and enhance communication with members of out-groups. The decreased in-group communication might result from actual linguistic mechanisms, whereby members adopt manners and cues of expression as well as different vocabularies from their other memberships, or it might stem from competing goals, opinions, beliefs, and worldviews that members obtain from their other memberships. Simultaneously, communication with members of out-groups will improve making appeals solely along ethnic lines less understandable and less attractive.

As such, cross-cutting cleavages make mobilization and social control much more difficult. This only happens, however, when the cleavages that cross-cut are socially salient. In this analysis, we focus on three social cleavages that are salient in most societies over time and space: *geography, socio-economic status, and religion.* It should be of little surprise the each of these cleavages has been identified by previous research as affecting civil war onset.

Most geographic arguments on civil war relate to the favorability of terrain to insurgency, a major form of civil war. However, Matuseski and Snyder (2006) argue that it also makes a safe, "home base" for rebel activists as it is easier to hide and raise resources within a densely populated ethnic region. Matuseski and Snyder also concur that when ethnic groups are geographically concentrated, social control is easier. We add that geographic concentration boosts identification with nationalist causes by providing a potential ethnic homeland (Horowitz 1985), and that communication is also enhanced when members of a group are spatially proximate.

Socio-economic status is also commonly identified in quantitative studies as individual motivation for participation in civil war (Collier and Hoeffler 2004). Even wealthy individuals will support a cause if they perceive their group to be of lower economic status (Humphreys and Weinstein 2008). As noted earlier, ethno-income cross-cuttingness is elsewhere referred to in the literature as *horizontal inequality* (Stewart 2000, 2008; Bredel 2003; Murshed and Gates 2006; Østby 2008; Macours 2009; Reagan 2009). Stewart (2000) argues that horizontal inequalities make group mobilization more likely by increasing inter-group animosity. Østby (2008) argues that when socio-economic status reinforces ethnicity that group cohesion is amplified. Such group cohesion enhances identification with a nationalist cause, makes social control easier, and increases communication as opinions, goals and worldviews accord.

Lastly, religion is often subsumed in the definition of ethnicity, and in many parts of the world acts like an ascriptive cleavage. Religion takes on this ethnic form, however, most strongly when it is reinforced by a racial or linguistic identity. Religion can provide justifications for ethnic

homelands and economic superiority (Seul 1999). Religious beliefs can also enhance rebel leader social control by appealing to spiritual consequences of an individual's choice. Lastly, a religion's unique terminology and worldviews can also increase in-group communication.

When these cleavages reinforce ethnicity (i.e. ethnic cross-cuttingness is low), they create a social context unfavorable to civil war onset. Moreover, we should expect that the relationship between these three forms of ethnic cross-cuttingness is additive: rebel leaders will have an easier time mobilizing potential combatants in a society in where ethnicity, socio-economic status, geography, and religion all reinforce each other. We thus test four hypotheses in this article[xv]:

> *Hypothesis 1*. Lower levels of ethnic-income cross-cuttingness (EIC) are associated with a higher likelihood of civil war onset.

> *Hypothesis 2*. Lower levels of ethno-religious cross-cuttingness (ERC) are associated with a higher likelihood of civil war onset.

> *Hypothesis 3*. Lower levels of ethno-geographic cross-cuttingness (EGC) are associated with a higher likelihood of civil war onset.

> *Hypothesis 4*. Lower levels of overall *cross-cuttingness* (*ComboCC*)[xvi] are associated with a higher likelihood of civil war onset.

Though we are adamant that the proxies used for ethnic diversity (ethnic and religious fractionalization or polarization) in previous studies are inadequate, to better connect with the existing literature, we include them as controls in some of the models estimated in this paper. Nor does our theory suggest interactions between ethnic fractionalization (polarization) and cross-

cuttingness. Sensitive to some of these alternative models (and by implication theories), we include them in the supplementary appendix, but note here that, as in previous studies, none of them are significant. This is not even the case at low levels of cross-cuttingness, which is the largest justification for such a multiplicative specification.

3. Data and Estimation Strategy

3.1 Cross-cutting Cleavages

In the past, scholars have loosely referred to the concept of how two cleavages relate to each other as cross-cutting cleavages. We use the term *cross-cuttingness* to reflect a scaled variable that varies from 0-1, which we now describe. We begin with a simple scenario: if ethnic groups in a given society each belong to their own unique religion, then there is no *cross-cuttingness*, or rather there is complete *reinforcingness* of social cleavages along those ethno-religious lines. Formally, following Selway (2011) we define cross-cuttingness as the degree group *I* on cleavage *x* is identically distributed amongst groups on cleavage *y* with all other groups on cleavage *x*. Put differently, cross-cuttingness is basically the concept of statistical independence, which tells us whether knowing to what group an individual belongs on *x* tells us anything about which group she belongs to on *y*. If knowing what group on *x* an individual belongs to tells us nothing what group on *y* she belongs to, then we have perfect cross-cuttingness. In the language of probability, statistical independence means $P(A|B) = P(A)$. Alternatively, we can think of independence as meaning that it does not matter what the distribution of members of x_i is amongst groups on *y,* as long as they are distributed identically on *y* as all other groups x_{-i} (*x* "not-*i*").

FIGURE 1 ABOUT HERE

To provide some intuition for what cross-cutting societies look like, consider the three hypothetical societies in Figure 1. In each society, there are two cleavages: ethnicity and religion. On the ethnicity cleavage, there are two groups: Black and White. On the religious cleavage, the two societies at the top of Figure 1 have two groups—Muslim and Christian—while the third has an additional group: Hindus. The bottom row in each table gives the proportion of society in each sub-group, e.g. Black Muslims. Despite the differences in relative group size and number of groups, each society has the same cross-cuttingness score, 1.0, or perfect cross-cuttingness. In each society, it is impossible to guess an individual's religious affiliation *given* that we know his or her ethnicity. In other words, ethnic groups are distributed identically among religious groups, and vice-versa.

We follow Selway (2011) in using Cramer's normalization of the Chi-Square test statistic for independence from basic cross-tabular analysis. This enables cross-country comparison *regardless of the number of groups* on each cleavage. So that higher values of *C* imply higher cross-cuttingness, Selway's subtracts Cramer's V from unity, as follows:

$$C \equiv 1 - \sqrt{\left[\sum \frac{(O-E)^2}{E}\right] / nm} \qquad (1)$$

where *n* is the sample size and *m* is the smaller of either the number of columns minus one or the number of rows minus one. Cramer's normalization is the appropriate chi-square measure where at least one of the variables is nominal in nature, and the other is either nominal or ordinal. We use *C* for all three of our two-dimensional characteristics of ethnic structure since the data used to compile the indices rely on nominal or ordinal (in the case of income groups) group categories.

To create our measures of ethnic social structure (ERC, EIC and EGC) we use Selway's (2011) new cross-national dataset that contains cross-cuttingness measures for each of the three pairs of cleavages: ethno-geographic, ethno-income, and ethno-religious cross-cuttingness. The information for this dataset comes from several nationally representative surveys: The World Values

Survey (WVS), The Eurobarometer (EB), the Afrobarometer (AFB), the Latin American Public Opinion Project (LAPOP), the Asian Barometer (AB), the Comparative Study of Electoral Systems (CSES), and a survey conducted by the World Health Organization (WHO).

The surveys allow individuals to identify themselves as belonging to an ethnic, linguistic, racial, or religious group, as living in a certain region, and as having a certain income.[xvii] We are then able to generate cross-tabulations for each country, exactly what is needed to generate chi-square values that form the basis of our cross-cuttingness measure. These cross-tabulations provide such information as how many individuals of a certain ethnic group live in a certain region, or how many individuals from a certain religious group have such and such an income, and the like.

Most countries' final score is composed of an average of cross-cutting scores from two or more surveys. A few are drawn from a single survey. These surveys were rigorously analyzed for issues of representation, and any surveys that seriously compromised representation on any one cleavage were left out of the final averaged score. In creating these measures, Selway did not undertake extensive coding or transformation of the data, using the ethnic and religious group categories either chosen for inclusion by the survey designers, or as self-identified by respondents. To enhance comparability, surveys were only included in the final averaged score if the income categories were given as deciles. This was not always possible, however, since some countries had only one survey. To ensure that entire ethnic groups in geographically-concentrated countries were not omitted by the random sampling methods used in a particular survey, the size of groups were compared to existing sources such as Alesina et al. (2003). Fractionalization scores were also calculated using the survey data and correlated with fractionalization scores from existing datasets. Selway's fractionalization scores correlate highly (average 0.727) with Reynal-Querol's (2002) racial-linguistic index, Fearon's (2003) ethno-linguistic fractionalization index, and Alesina et al. (2003) language, race and religion indices. Both the detailed comparison of included ethnic and religious

groups and these correlations give us a high degree of confidence that the cross-cutting measures are representative of the populations.[xviii]

Of the 168 countries with populations over 400,000 (IMF 2007), Selway compiles scores for between 91 and 102 current countries (depending on the index), or 54-61% of all countries, plus an additional 15 "extinct" countries. In general the indices have good regional coverage. Sub-Saharan Africa and the Middle East / North Africa are notably underrepresented, with only 40% and 45% of countries included in the sample, respectively. The Asia-Pacific has 71% coverage, Latin America 84%, East Europe / Former Soviet 85%, and Western Europe / North America 92%. Countries missing from the indices, however, are not notably poorer than countries in Selway's dataset, except in Asia-Pacific. While the difference in per-capita income between in- and out-sample countries is almost $5,000 overall, this disparity is not seriously pronounced in the regions most underrepresented in the indices. Indeed, in the Middle East and West Africa, out-sample countries actually have a higher GDP per capita. In the rest of Sub-Saharan Africa, the GDP per capita of out-sample countries is only $500 higher on average. The biggest difference between in- and out-sample countries occurs in the Asia Pacific region with an approximately $7,400 difference in per-capita GDP. These differences in both regional coverage and average GDP per capita should be accounted for when evaluating results used with these indices.

For ethno-religious cross-cuttingness, the lowest score is for Israel, which gets 0.054 – nearly all ethnic Jews identify with Judaism and nearly all Palestinians identify with Islam. Bosnia and Iraq also score low on this index. Latin American countries (Bolivia, Brazil, Uruguay) and Islamic-dominant countries (Egypt, Pakistan) tend to have the highest ERC scores because most ethnic groups within their borders identify with the Catholic and Islamic religions, respectively. On the ethno-geographic cross-cuttingness index, Israel is again the lowest joint with Switzerland. Bosnia, Iraq, Pakistan Philippines and Ukraine also score low, whereas the United States, Canada and Brazil are at the high-end of the EGC index. Finally, South Africa scores by far the lowest on the ethnic-

income cross-cuttingness index. Israel is also low at 0.736, since the mean of EIC is higher and the standard deviation is much smaller than the other two cross-cuttingness indices. Bosnia, India, Iraq and Mexico are also on the lower end of the scale, while Canada, Britain, Saudi Arabia and Russia are all on the high end. In general, more advanced industrial countries score high on the EIC index.

How different are our cross-cutting measures from other measures of diversity, specifically the traditional single-dimension fractionalization measures like ethno-linguistic fractionalization? In the online appendix, we present scatterplots between each of the cross-cutting measures and ethnic fractionalization. In general, only slight patterns emerge. More ethnically fractionalized societies tend to be slightly more geographically concentrated and slightly more horizontally unequal, though not more ethno-religiously cross-cutting (the regression line is virtually flat). There may be a reasonable explanation behind these patterns, though we do not dedicate any space to that discussion here. Instead, in the regression analysis, we control for ethnic and religious fractionalization to see if our measure is capturing something unique from traditional fractionalization measures.

The ethnic structure variables are constructed using data from the late 1990s or early 2000s. Thus, we have a single measure for each country, regardless of the year. This raises two potential problems (common to all other studies of this type: Fearon and Laitin 2003, Collier and Hoeffler, 2004, etc.) when conducting longitudinal analysis. The first is the possibility that there have been significant changes in cross-cuttingness in some of the countries in our dataset during the last 50 years. This would make our use of a constant value over this time-period incorrect, and our results possibly invalid. Posner and Laitin (2001) cite Somalia and Yugoslavia as cases where ethnic groups have changed significantly over time. However, in most countries, ethnicity is more resilient to change. Fedderke, Luiz and de Kadt (2007) conduct a detailed study of ethnicity in South Africa from 1936 to the present, finding that *aggregate* measures of social structure, such as ethnic fractionalization, remain fairly stationary over time despite changes at the micro level. Inglehart and

Welzel (2005) lend more systematic support for the slow rate of change in social structure generally experienced by countries around the world. Moreover, studies that include multiple indices of social structure for robustness often find no significant difference in findings. For example, Stoll (2008) looked at seven different proxies for ethnic fractionalization in her study on the number of political parties. These proxies ranged in time from the 1960's (ELF and Roeder) to the 1980's (Roeder) to the late 1990's/early 2000's (Alesina et al., Annet and Fearon). The effect of ethnic fractionalization on the number of parties (as modified by mean district magnitude) did not differ significantly amongst these seven measures. As such, we feel confident that this is not a problem for our analysis.

The second potential problem with our social structure variables has to do with endogeneity. What if the values of cross-cuttingness that we ascribe as facilitating conditions for civil war are actually the effects of civil war, i.e. a civil war erupts, and large population or wealth transfers between ethnic groups occur? To explore this possibility, we undertook a careful reading of all the cases of civil war onset in our dataset looking for changes in religious affiliation, socio-economic status, and geographic concentration of ethnic groups as a result of the civil war. We found just one case among the 66 in which this happened—Azerbaijan, from which the ethnically-Armenian territory of Nagorno-Karabakh actually seceded and became part of Armenia—and removed it from the dataset. In addition, we deleted several years from Pakistan prior to the breaking away of East Pakistan and the formation of an independent nation (Bangladesh). We do not have measures for Cyprus prior to 1974, so the scores for Greek Cyprus and Turkish Cyprus are not problematic from this respect.

3.2 Civil War Onset

We test our hypotheses using three different sources of civil war onset data: Political Instability Task Force (PITF) State Failure Problem Set (Bates et al. 2003), UCDP/PRIO Armed Conflict Dataset (Gleditsch et al. 2002), and Major Episodes of Political Violence (MEPV)

(Marshall 2005).[xix] These three datasets differ primarily in the threshold of *intensity* that qualifies conflicts for inclusion as a civil war. PITF's thresholds are at least 1000 direct conflict-related deaths over the full course of the armed conflict and at least one year when the annual conflict-related death toll exceeds 100 fatalities. PITF imposes no other yearly minimum, and hence has the most episodes of civil war in its dataset. For the UCDP/PRIO data, we follow Urdal's (2002) coding, which defines a civil war as a violent episode that results in at least 25 annual deaths and a minimum of 1,000 conflict-related deaths during the course of the civil war. MEPV has the lowest overall minimum of at least 500 directly-related deaths over the course of the episode with no yearly minimum.[xx]

Due to the geographic coverage of Selway's cross-cuttingness variables, our test of Hypothesis 4, wherein all three cross-cutting measures must be present, focuses on just 80 of the 159 countries in the full PITF dataset, approximately 50%. As Table 1 illustrates, however, these 80 countries provide a fairly representative sample of the 159 countries in terms of the dependent variable, with similar means and standard deviations. Our sample contains approximately 54% (59) of the total number of PITF civil wars (110), in 55% of the countries experiencing civil war. The other two datasets we use contain slightly lower percentages on these two criteria, but again means and standard deviations are similar. A full list of countries included in the analysis is found in Table 3.

TABLE 1 ABOUT HERE

Because our sample is missing many countries in Sub-Saharan Africa, we are arguably missing out not only on a region of the world where civil war is most rampant, but also where ethnic diversity is the highest. We recognize this limitation of our sample, but try to assuage some fears by presenting mean scores of ethnic and religion fractionalization scores for our sample and the full

sample. Mean fractionalization scores are similar for all three dependent variables in the full dataset, at 0.42 for ethnic fractionalization and 0.46 for religious fractionalization. Not surprisingly, our sample is less diverse by these traditional measures, only slightly so for religious fractionalization, but more so for ethnic fractionalization. All these data limitations should be taken into consideration when assessing our results.

3.3 Control Variables

Building on past research on this subject, we include the following control variables in models testing our hypotheses.[xxi] First, we include three variables traditionally used to capture state strength: the log of per capita income lagged one year (*Income*), which proxies for police and counterinsurgent strength; a dummy variable (*Oil*) indicating whether state revenues are derived primarily from oil exports, proxying for the less structured bureaucratic systems oil producing states usually possess; and the log of a country's population size (*Population*). Next, we include the log of the proportion of the country that is mountainous (*Mountains*) to capture the degree to which geographic conditions are favorable to insurgency. Finally, we include an additional measure of state strength: a measure of political instability measured by whether the country had a three-or greater change on the Polity IV regime index in any of the three years prior to the country-year in question (*Instability*). We present the summary statistics for these variables as well as our ethnic social structure variables in Table 2.

TABLE 2 ABOUT HERE

3.4 Estimation Strategy

Since the dependent variable consists of Binary Time-Series Cross-Sectional (BTSCS) data, we estimate a logit model.[xxii] As suggested by Beck et al. (1998), we model temporal inter-

dependence by controlling for peace spells and using natural splines.[xxiii] We also employ robust standard errors clustered by country to control for within-country effects. Our dataset includes 80 countries and covers the period 1945-1999.

4. Results and Analysis

Before we turn to the statistical analysis, we begin the presentation of our findings with a simple 2x2x2 table. In Table 3, we divide each of the three ethnic cross-cutting variables at the mean into high and low, producing eight cells into which we place all the countries from the PITF dataset. Countries that have experienced a civil war are underscored, with the total number of civil wars in parenthesis following the country's name. This table clearly elucidates several patterns in the data that support our hypotheses before conducting any regression analysis. First, note that only thirteen of the thirty-five countries that experienced civil war appear in the top half of the graph where ethno-geographic cross-cuttingness (EGC) is high. The remaining twenty-two countries that experienced civil war are all in the bottom half of the table where EGC is low. The table presents a similar pattern for ethno-income cross-cuttingness (EIC): only 13 countries that experienced civil war have high EIC. As our theory would suggest, the majority of the countries that experienced civil war (22 out of 35) had low EIC. The table also suggests an interaction between EGC and EIC: 54% of all countries that experienced civil wars during this time period fall in the bottom-right two cells, where both EIC and EGC are low. This provides strong initial support for the role of EIC and EGC in civil war onset hypothesized by our theory.

The results are less clear regarding the role of ethno-religious cross-cuttingness (ERC) in civil war onset. As our theory would suggest, of the nineteen countries just referenced (in the bottom-right two cells of the table), twelve (64%) fall in the cell where ERC is low. However, a close look at the entire table shows that the number of countries that experienced civil war with low

ERC (17) does not differ from the number of countries that experienced civil war with high ERC (18). These mixed results will be explored later using regression analysis.

TABLE 3 ABOUT HERE

The results are stronger when one realizes that of the ten countries that seem to contradict our theory (i.e. those in the upper left-hand side of the table), five are coded by PITF and verified by the authors as non-ethnic civil wars—i.e. wars in which ethnic grievances and mobilization did not play a role. We italicize these in the table. As such, just *five of the thirty-five countries that experienced civil war* in this dataset fall clearly outside the pattern our theory suggests, with the remainder largely falling into line. Moreover, Table 3 does not control for the other relevant variables suggested by previous research as predictors of civil war onset (e.g. state strength and insurgency favorability). To be clear, these other factors also play a role in civil war onset, especially in countries that do not have the types of social structures that we emphasize in this paper. However, it is striking that so many cases of civil war fall into the pattern predicted by our theory. In addition, since our dataset ends in 1999, this analysis fails to capture the civil war that broke out in 2004 in Pakistan where the government was fighting against Pashtuns in Federally Administered Tribal Areas, the 2005 civil war in the Central African Republic, and some other conflicts that could possibly be categorized as civil wars in the near future all of which fall in the bottom-right quadrant. We now turn to regression analysis to provide a more complete test of our theory.

Table 4 displays the results of regression analysis to test our hypotheses. As in Table 3, we use PITF civil war data for the main analysis. However, we show here that these findings are robust to the use of UCDP/PRIO and MEPV data as well (models 8 and 9). We begin by noting that in all models the coefficients for *Income* and *Oil* take on the expected sign and are highly significant (as in most past studies on civil war), except for *Income* in the MEPV estimation. The coefficients on

Instability and *Mountains* also take on the expected sign in all our models, though they are not always statistically significant. In Models 1-3, we enter EIC, ERC and EGC into the model separately. In all three models, EIC, EGC, and ERC take on a negative sign, as expected. EIC and EGC are highly statistically significant predictors of Civil War Onset, while ERC falls just outside the boundaries of traditional significance (p-value = 0.11), a finding not too surprising given the patterns highlighted in Table 3.[xxiv] To illustrate the magnitude of the effects of these variables on civil war onset—e.g. their substantive significance—we calculate risk ratios for each of EIC, EGC, and ERC (which are more easily interpretable than first differences or odds ratios). A risk ratio is calculated as follows:

$$RiskRatio = P(Y=1|X1)/P(Y=1/X) \quad (2)$$

The ratio quantifies the difference in the probability of civil war onset (Y=1) as a result of a defined change (X1-X) in the variable of interest (in our case, ethnic social structure), holding all other variables at their means. For each of EIC, EGC, and ERC, we assign X1 to be the maximum observed value of the variable in our dataset and X to be the minimum observed value (see table 2 for a list of these values). We then employ the simulation method developed by Kosuke Imai, Gary King, and Olivia Lau (2009), running 1000 simulations to obtain the mean P(Y=1) for each of X and X1 as well as 95% confidence intervals. Finally, we divide the two quantities as described in equation eight.[xxv] The picture these risk ratios paint of the *substantive effect* of these variables on civil war onset is striking. In our simulations, EIC has a mean risk ratio of 6.48, meaning that civil war onset in countries with the minimum level of EIC in our dataset (i.e. low ethno-income cross-cuttingness) is *on average over 6 times more probable* than in countries with maximum EIC. The magnitude of the effects of EGC and ERC is significant as well: EGC has a mean risk ratio of 2.33; ERC's mean risk ratio is 1.71. These results provide strong evidence that ethnic social structure is both a statistically and substantively important predictor of civil war onset.

Next, we briefly address which of these three variables have the biggest effect. This can be somewhat observed in Table 3 by simply comparing difference in the numbers of civil wars between high and low scoring countries on each cross-cutting variable. This simple method would lead us to conclude that ethno-geographic and ethno-income cross-cuttingness matter the most, and perhaps that ethno-religious cross-cuttingness does not matter so much. A second method would be to include all three in a regression together, allowing us to control for the other cross-cuttingness variables as well as other variables common in civil war analyses. These results are given in the supplementary appendix, but indicate that ethno-geographic cross-cuttingness is the only significant variable. Even so, it would be premature to simply discard the other two cross-cutting variables, especially since there is a moderate to high correlation among them.

Principal component analysis (PCA) allows us to extract some underlying essence common to these three variables. This common essence, or principal component, is what we refer to as cross-cuttingness. What PCA does is essentially eliminate any extraneous information not related to cross-cuttingness. The analysis indicates that there is just one common component to all three (eigenfactor >1), and that all three variables have a high factor loading with this component. These high factor loadings are easily interpreted (in the case of a single component) as correlations between the original variables and the newly generate cross-cuttingness component. As expected, both ethno-geographic and ethno-income cross-cuttingness exhibit high correlation (by traditional PCA standards) with this component (0.61). Importantly, ethno-religious cross-cuttingness also exhibits high correlation with the cross-cuttingness component (.50). If the cross-cuttingness component is now a significant predictor of civil war onset when included in our regression, we can conclude that all three cross-cutting variables are significant. To do this we generate a factor score for this component, which we refer to as *cross-cuttingness*. Estimating our model with this as the main measure of ethnic diversity shows that cross-cuttingness significantly reduces the likelihood of civil war onset. Not only does this provide strong support for including all three cross-cuttingn variables

in our analysis, but this is also strong support for Hypothesis 4. These results are given in the supplementary appendix in greater detail.

Here however, we offer a more simple test of Hypothesis 4 by collapsing the three cross-cuttingness indices into a single measure, *ComboCC*, and estimating Models 4-9.[xxvi] *ComboCC* and the principal component generate by the PCA method are highly correlated at about 0.89, so we are confident that this is an equivalent and appropriate test. In Models 4 and 8, with PITF and UCDP/PRIO as the dependent variable, *ComboCC* is both negative and statistically significant as our theory suggests. Using the MEPV dataset in Model 9, we again obtain a negative coefficient, although it is not quite significant at traditional levels.[xxvii] In Model 5 we control for ethnic fractionalization, and *ComboCC* is again significant. Ethnic fractionalization, however, is not significant and even takes on the wrong (positive) sign. The same is true for religious fractionalization in Model 6; and in Model 7 we control for both simultaneously with similar results. For robustness, we substituted fractionalization measures from Fearon (2003), Reynal-Querol (2002) and Alesina et. Al. (2003). In all nine alternative models, *ComboCC* took on a similar coefficient in terms of direction, significance and magnitude. In contrast, none of the Alesina et. al fractionalization measures were significant, nor the Reynal-Querol ethnic measure. The Reynal-Querol religious measure, however, was significant, as was Fearon's fractionalization measure, which also includes religion in its definition of ethnicity. We also run an additional 12 models substituting measures of ethnic and religious polarization. Again, *ComboCC* is significant in all models, while only Reynal-Querol's religious polarization was significant, taking on a positive sign as per the findings of Montalvo and Reynal-Querol (2002).[xxviii] In short, *ComboCC* is a robust factor in reducing the likelihood of civil war onset.

ComboCC is also substantively significant: using the same method described above, but this time for *ComboCC* using the PITF data, we obtain a risk ratio of 11.64, suggesting that civil war onset is on average *nearly 12 times more probable* in countries with the lowest combined levels of cross-cuttingness than in countries with the highest. This result should not be surprising after viewing

Table 3 (our simple 2x2x2), where 46% of all civil wars in the sample fall in countries where religion, socio-economic class (income group) and geographic region reinforce ethnicity, however it lends additional support to our theory.

TABLE 4 ABOUT HERE

Importantly, risk ratios also highlight that the mean substantive effect of cross-cuttingnes, as measured by *ComboCC* using PITF data (Model 4), on the probability of civil onset is larger than the effect of *any* of the traditional state strength and insurgency favorability measures in our model, with the exception of *Income*. We calculate mean risk ratios for each of these variables using the min and max values listed in Table 2, and present these risk ratios and 95% confidence intervals in Table 5.

TABLE 5 ABOUT HERE

To conclude this section, we remind the readers of the preliminary nature of these findings. The results rest on only slightly more than half of the countries in the civil war datasets and exclude many countries in Sub-Saharan Africa due to absent survey data. Although this does not bias the number of civil wars in our sample, since most civil wars in Africa are of an ethnic nature we may be missing an important part of the relationship between ethnicity, cross-cutting cleavages and civil war. As the number of countries in the cross-cutting cleavages dataset expands, we look forward to a re-evaluation of these results, as well as a fruitful theoretical discourse on the impact of social cleavage structures on civil unrest more generally.

5. Conclusion

Fifty years ago, Lipset (1960) and a host of other scholars discussed the dangers of reinforcing cleavages for general social stability. They argued that in cross-cutting societies, individuals would be pulled amongst their various memberships such that loyalty to any one group would be minimized. We argue that this same dynamic has a direct effect on the costs of rebel mobilization, and thus on civil war. Ethnicity, when it is reinforced by other salient social cleavages, can make it easier for rebel leaders to mobilize. Not only can they appeal to economic and other grievances, but they can make a clearer justification for their nationalistic goals. In-group communication is enhanced and leaders can also exert greater social control if necessary. In sum, when ethnicity is reinforced by religion, socio-economic class and geographic region, rebel leaders have the highest likelihood of being successful in their mobilization efforts.

Using cross-national indices that capture the degree of cross-cutting cleavages, we provide strong evidence for this argument. Clearly, civil war onset is as much a function of a state's social terrain as its physical terrain. Indeed, in our dataset the probability of civil war onset is an average of *nearly twelve times greater* in societies with low ethnic cross-cuttingness than in societies with high ethnic cross-cuttingness, even when accounting for the impact of other common factors linked to civil war.

In conclusion, we note that these results stem from analysis conducted on just slightly more than half of the countries in the current civil war datasets, excluding many countries in Sub-Saharan Africa due to absent survey data. As such, we may be missing an important part of the relationship between ethnicity, cross-cutting cleavages and civil war. As the number of countries in the cross-cutting cleavages dataset expands, we look forward to a re-evaluation of these results, as well as to a fruitful theoretical discourse on the impact of social cleavage structures on civil unrest more generally.

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Black		White	
0.5		0.5	
Muslim	Christian	Muslim	Christian
0.5	0.5	0.5	0.5
0.25	0.25	0.25	0.25

Black		White	
0.4		0.6	
Muslim	Christian	Muslim	Christian
0.2	0.8	0.2	0.8
0.08	0.32	0.12	0.48

Black			White		
0.5	0.5	0.5	0.5	0.5	0.5
Muslim	Christian	Hindu	Muslim	Christian	Hindu
1/3	1/3	1/3	1/3	1/3	1/3
1/6	1/6	1/6	1/6	1/6	1/6

Figure 1. Three perfectly cross-cutting societies

Authors' Dataset

	Total # Countries	Mean	Std. Dev.	# Countries experiencing civil war	# Civil Wars	Mean Eth. Frac.	Mean Rel. Frac.
PITF	80	0.02	0.13	35	59	0.42	0.46
UCDP/PRIO	80	0.01	0.10	19	31	0.42	0.47
MEPV	80	0.01	0.10	22	31	0.42	0.46

Full dataset

	Total # Countries	Mean	Std. Dev.	# Countries experiencing civil war	# Civil Wars	Mean Eth. Frac.	Mean Rel. Frac.
PITF	159	0.02	0.13	64	110	0.36	0.44
UCDP/PRIO	157	0.01	0.11	49	72	0.37	0.44
MEPV	156	0.01	0.11	55	81	0.36	0.44

Table 1. Summary Statistics of Countries in our dataset compared to full datasets

Variable	Mean	Std. Dev.	Min	Max
EIC	0.87	0.07	0.54	1.00
ERC	0.75	0.20	0.05	1.00
EGC	0.69	0.24	0.00	1.00
ComboCC	0.77	0.14	0.37	1.00
Income	7.67	1.05	3.87	11.11
Oil	0.13	0.34	0.00	1.00
Population	9.05	1.46	5.40	14.03
Mountains	2.17	1.41	0.00	4.56
Instability	0.14	0.35	0.00	1.00

Table 2. Summary Statistics

Ethno-Geographic Cross-cuttingness	Ethnic-Income Cross-cuttingness: High / Ethno-Religious Cross-cuttingness: High	Ethnic-Income Cross-cuttingness: High / Ethno-Religious Cross-cuttingness: Low	Ethnic-Income Cross-cuttingness: Low / Ethno-Religious Cross-cuttingness: High	Ethnic-Income Cross-cuttingness: Low / Ethno-Religious Cross-cuttingness: Low
High	ALBANIA(1), BELARUS BOLIVIA, BOTSWANA CHILE, COSTA RICA CZECH REPUBLIC, ECUADOR EL SALVADOR (1) HAITI, ITALY JAMAICA, JORDAN(1) S. KOREA, LESOTHO(1) MONGOLIA, NETHERLANDS PORTUGAL, SLOVAKIA URUGUAY, VENEZUELA VIETNAM, S. VIETNAM (1) Country N: 23 # Countries CW: 5 % Countries CW: 5 % Total Countries CW: 14	ARMENIA, AUSTRALIA BANGLADESH (1) CANADA, FINLAND IRELAND, LATVIA MOROCCO (1) NEW ZEALAND ROMANIA (1), RUSSIA (2) TAIWAN UK (1), USA Country N: 14 # Countries CW: 5 % Countries CW: 36 % Total Countries CW: 14	BRAZIL DOMINICAN REPUBLIC (1) MEXICO PERU (1) ZIMBABWE (2) Country N: 5 # Countries CW: 3 % Countries CW: 60 % Total Countries CW: 9	BULGARIA MACEDONIA SAUDI ARABIA SINGAPORE Country N: 4 # Countries CW: 0 % Countries CW: 0 % Total Countries CW: 0
Low	HONDURAS IRAN (3) MOLDOVA (1) NICARAGUA (2) Country N: 4 # Countries CW: 3 % Countries CW: 75 % Total Countries CW: 9	ESTONIA LITHUANIA SWITZERLAND Country N: 3 # Countries CW: 0 % Countries CW: 0 % Total Countries CW: 0	COLOMBIA (2) EGYPT (1) GUATEMALA (2) GUYANA MALI (1) PAKISTAN (2) PANAMA SENEGAL (1) SPAIN UGANDA (2) Country N: 10 # Countries CW: 7 % Countries CW: 70 % Total Countries CW: 20	BOSNIA (1), GHANA INDIA (3), INDONESIA (7) IRAQ (5), ISRAEL (1) KENYA (2) KYRGYZSTAN MALAWI, MOZAMBIQUE (1) NAMIBIA, NIGERIA (2) PHILIPPINES (1) SOUTH AFRICA (2) THAILAND (1) UKRAINE, ZAMBIA (1) Country N: 17 # Countries CW: 12 % Countries CW: 71 % Total Countries CW: 34

Table 3. Civil war onset along three types of ethnic cross-cuttingness

"Country N" refers to the number of countries in the dataset with the social-structure combination indicated in that cell. "# Countries CW" is the total number of countries in the cell which experienced civil war. "% Countries CW" is the percentage of the countries in each cell which experienced civil war. "% Total Countries CW" indicates the percentage of all civil wars (35) that come from countries within each cell. Underlined countries experienced civil war; the number indicates the number of onsets during the time period under study (1945-1999) according to PITF data.

	(1) PITF	(2) PITF	(3) PITF	(4) PITF	(5) PITF	(6) PITF	(7) PITF	(8) UCDP/PRIO	(9) MEPV
EIC	-3.83***								
	(0.00)								
EGC		-1.78***							
		(0.00)							
ERC			-1.10						
			(0.11)						
ComboCC				-3.63***	-3.66***	-3.58***	-3.48***	-2.96**	-1/83
				(0.00)	(0.00)	(0.00)	(0.01)	(0.03)	(0.22)
EthFrac					-0.03		0.13		
					(0.96)		(0.88)		
RelFrac						-0.39	-0.42		
						(0.53)	(0.54)		
Peace Years	-0.20	-0.12	-0.25	-0.14	-0.14	-0.14	-0.14	-0.18*	0.14
	(0.18)	(0.44)	(0.13)	(0.37)	(0.37)	(0.37)	(0.37)	(0.07)	(0.66)
Spline 1[a]	-0.01	-0.00	-0.01	-0.00	-0.00	-0.00	-0.00	-0.00	0.03
	(0.55)	(0.94)	(0.40)	(0.91)	(0.91)	(0.91)	(0.92)	(0.82)	(0.17)
Spline 2[a]	0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.00	-0.01*
	(0.88)	(0.74)	(0.68)	(0.75)	(0.75)	(0.74)	(0.74)	(0.70)	(0.07)
Spline 3[a]	0.00	0.00	-0.00	0.00	0.00	0.00	0.00	0.00	0.00**
	(0.36)	(0.23)	(0.46)	(0.24)	(0.24)	(0.23)	(0.23)	(0.41)	(0.00)
Income	-0.39**	-0.36**	-0.37***	-0.30*	-0.30*	-0.31*	-0.30*	-0.29*	-0.24
	(0.02)	(0.02)	(0.01)	(0.07)	(0.06)	(0.05)	(0.08)	(0.17)	(0.22)
Oil	1.02***	0.86***	1.03***	0.86***	0.86***	0.75**	0.74*	0.45*	0.63**
	(0.00)	(0.01)	(0.00)	(0.01)	(0.01)	(0.04)	(0.08)	(0.19)	(0.04)
Population	0.34***	0.29***	0.28***	0.26***	0.26***	0.26***	0.25***	0.31***	0.35***
	(0.00)	(0.00)	(0.00)	(0.01)	(0.01)	(0.01)	(0.01)	(0.01)	(0.00)
Mountains	0.01	0.03	0.09	0.01	0.01	0.01	0.01	0.30**	0.23*
	(0.92)	(0.75)	(0.29)	(0.94)	(0.94)	(0.90)	(0.90)	(0.03)	(0.07)
Instability	0.28	0.17	0.19	0.28	0.28	0.29	0.29	0.58*	0.46
	(0.33)	(0.59)	(0.48)	(0.38)	(0.38)	(0.37)	(0.37)	(0.05)	(0.28)
Constant	-0.81	-2.89**	-2.87***	-1.41	-1.37	-1.20	-1.36	-3.17	-4.86
	(0.62)	(0.04)	(0.02)	(0.41)	(0.48)	(0.49)	(0.49)	(0.20)	(0.11)
N	3559	3905	4431	3252	3252	3252	3252	3009	3199

Table 4. Regressing Civil War Onset on EIC, ERC, EGC and ComboCC

*Pr > | z |, from robust standard errors, in parentheses, *** p<0.01, ** p<0.05, * p<0.1*

[a]Coefficients of Peace Years natural spline segments

Variable	Mean Risk Ratio	2.5% c.i.	97.5% c.i.
ComboCC	12.90	2.98	32.40
Income	16.52	0.93	88.59
Oil	0.45	0.23	0.78
Population	0.15	0.02	0.53
Mountains	1.11	0.42	2.34
Instability	0.80	0.41	1.42

Table 5. Mean Risk Ratios of Civil War Onset
Based on Model 4; min and max values

Endnotes

[i] The authors thank participants in the Conference on "Rethinking Ethnicity and Ethnic Strife: Multidisciplinary Perspectives" in Budapest, September 25-27, 2008, as well as participants in the NIS at the University of Michigan for their constructive comments. Particular thanks to Ashutosh Varshney, Abe Gong, David Laitin, Andreas Wimmer, the editors of the Journal, and two anonymous reviewers for help compiling this paper. Replication materials are available alongside the electronic version of their article at the Journal's site maintained by the publisher at http://jcr.sagepub.com/ and at the authors' websites: http://sites.google.com/site/joelsawatselway (Selway) and http://joshuagubler.wordpress.com/ (Gubler).

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[iv] For clarity, in this article we use the term ethnicity in its narrower sense, to refer to racial or linguistic groups. This is not to ignore the increasingly prevalent broader definition of ethnicity in the literature, which encompasses any sense of collective belonging, based on common descent, language, history, culture, race, or religion (or some combination of these) (Horowitz 1985; Varshney 2007). However, our focus on cross-cutting cleavages requires us to distinguish between dimensions of identity. We could just as well use the term ethno-linguistic identity to be precise.

[v] Sambanis (2001, p.261) defines "ethnic civil war" as: "War among communities (ethnicities) that are in conflict over the power relationship that exists between those communities and the state."

[vi] The classic works on cross-cutting cleavages, for example Lipset (1960) and Rae and Taylor (1970), argue that cross-cutting cleavages reduce conflict more generally. Horowitz's (1985) insights on ranked and unranked ethnic systems, and what he refers to as "cumulative cleavages", more closely address civil war.

[vii] An important exception is Frances Stewart's (2008) edited volume on horizontal inequalities.

[viii] Collier and Hoeffler (2004) recognize the need for such a measure, but in the absence of information on ethno-religious sub-group sizes compute a multi-dimensional measure using single-dimension fractionalization indices.

[ix] Borrowing from Political Instability Task Force (PITF), we define civil wars as episodes of violent conflict between governments and either politically organized groups [revolutionary wars] or national, ethnic religious or other communal minorities [ethnic wars] that seek either to overthrow the central government, to replace its leaders, or to seize power in one region [revolutionary wars] and/or major changes in their status [ethnic wars]. Conflicts must include substantial use of violence by one or both parties to qualify as 'wars.' See: Political Instability Task Force. Codebook for Dataset of Internal Wars and Failures of Governance, 1955-2008. Accessed online at: http://globalpolicy.gmu.edu/pitf/pitfcode.htm.

[x] Note: by our definition, not all civil wars are insurgencies. However, because many civil wars are insurgencies, these geographic conditions increase the overall likelihood of civil war.

[xi] We borrow Smith's (1993) definition of nationalism as the belief that an ethnic group has the right to control over a state.

[xii] The most extreme form of this argument is that the only distinction between an "ethnic group" and a "nation" is that an ethnic group has yet to demand a "political roof over its head" (Berlin, 2001). While we do not fully ascribe to this view, it does highlight the ability of ethnic demands to transform into nationalistic demands.

[xiii] Kalyvas (2006) highlights that social control does not require co-ethnicity. However, he provides examples, such as the one given in the main text, which nicely illustrate the role of ethnicity in social control.

[xiv] We note that intra-group conflict can occur even in reinforcing ethnic groups—Christia (2008) describes intra-Muslim fighting in Bosnia—but assert that this is more likely in cross-cutting ethnic groups.

[xv] These hypotheses are at the country level of analysis. We note that an alternative approach to test the theory would be to use group-level data. Buhaug et al. (2008) take such an approach when considering a group's distance from the capital and the geographic terrain of the group's region. Group-level information on relative income levels and religious identity are contained in the Minorities at Risk (MAR) dataset, which will make for fruitful analysis in the future.

[xvi] $ComboCC = (EIC + EGC + ERC)/3$

[xvii] Incomes are already categorized by the surveyors into income groups. The majority are categorized as deciles, though some are quintiles, and a few something else.

[xviii] The supplementary appendix to Selway (2011) explains issues of representation of the population in detail. The main dataset also contains detailed information on representation drawn directly from the technical notes of each survey.

[xix] For robustness, we also estimate the various models with the dependent variable restricted to ethnic wars. The coefficients on our cross-cutting measures are even stronger, and more robust.

[xx] Data are for the years 1945-1999.

[xxi] The control variable data come from Fearon and Laitin (2003).

[xxii] The results using a rare-events logit or time-series logit model do not substantively alter the results of the paper. Similar to previous studies using proxies for ethnicity, e.g. fractionalization and polarization, we are unable to run a fixed effects model due to the stationary nature of the cross-cuttingness measures.

[xxiii] Since we have a large N in this study, we also run estimations using time dummies. The results are not appreciably different and are in our online appendix.

[xxiv] Given these results, and the strength of ERC in our principle component analysis, we still include it in our ComboCC variable.

[xxv] In the interest of space, we do not provide the specification of the simulation model here. The model's full implementation is described in Imai et. al (2009), pages 93-95 and 289. We employ the Zelig implementation of R to conduct these analyses (Imai et al., 2008).

[xxvi] *ComboCC = (EIC + EGC + ERC)/3*

[xxvii] MEPV differs from the other two datasets in the size of event it counts as an "incident," being much smaller than the others in its death count minimum (500 individuals rather than 1000). As our theory is about rebel mobilization, it should not be surprising that it does not explain smaller events as well as the larger events that comprise PITF and UCDP/PRIO.

[xxviii] All regression tables are available in an online appendix on the authors' websites. When the individual components of ComboCC were estimated with ethnic and religious fractionalization/ polarization as controls, the results on the respective cross-cuttingness measures were more sensitive to model specifications. These results are also in the online appendix.