

Inequality and Conflict in Federations^{*}

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Most of the theoretical and empirical literature on regional inequality in federal states suggests that either relatively wealthy or poor regions are prone to experience secessionist conflict. However, these insights are usually limited in scope by the lack of suitable, cross-national data. In fact, we know of no systematic study of regional inequality and secessionist conflict that covers more than a particular world region. To fill this gap, we adopt a spatial approach based on recently geo-coded data on economic wealth, ethnic settlements and administrative units in 31 federal states. Our results indicate that both relatively developed and underdeveloped regions are more likely to be involved in a secessionist conflict than regions close to the country average. This finding remains valid even when we control for ethno-nationalist grievances.

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1 Introduction

Most of the theoretical and empirical literature on regional inequality in federal states suggests that either relatively wealthy or poor regions are prone to experience secessionist conflict. However, these insights are usually limited in scope by the lack of suitable, cross-national data. In fact, we know of no systematic study of regional inequality and secessionist conflict that encompasses more than a particular world region. Moreover, while it is well known that ethnic grievances due to “foreign rule” may also boost the risk of secession, there are few, if any, systematic studies that investigate the separate effects of economic and political inequalities.

To fill these gaps, we adopt a spatial approach based on recently geo-coded data on economic wealth and ethnic settlements. Relying on a panel dataset of GIS-coded administrative units (Deiwick 2010), we use spatial GDP per capita data from Nordhaus (2006) to calculate a measure of interregional inequality in 31 federal countries between 1991 and 2008. These new datasets allow us to arrive at general results that apply to federations around the world. We confirm previous studies (such as Sambanis and Milanovic 2009) that have come to the conclusion that inequality in both directions, that is both those cases involving relatively poor and affluent regions, increases the probability of secessionist conflict.

In federal states, which often host a multitude of nationalities, boundaries of ethnic groups and regions sometimes overlap. In such polities, interregional inequalities may trigger economic grievances, which can contribute to ethno-nationalist struggles, or vice versa, ethno-nationalist grievances can exacerbate conflicts about economic issues. Due to this coincidence of grievances, it is sometimes not even clear what the predominant conflict issue is – cultural or national autonomy or the demand to increase the group’s economic welfare.¹ While some of the literature on regional

¹ See Connor (1994) for a discussion of the relevance of economic factors versus factors relating to the ethnic group in ethno-nationalist wars. Connor rejects the notion that secessions and secession attempts are primarily driven by economic factors. On the other hand, Gourevitch (1979) maintains that “the location of [...] economic activities within each country clearly has something to do with the emergence of peripheral nationalism” (p.319).

inequality takes into account the regional concentration of ethnic groups (e.g. Bakke and Wibbels 2006; Sambanis and Milanovic 2009), few scholars dealing with regional inequality consider ethno-nationalist grievances in their explanatory models. Our findings suggest that ethno-nationalist grievances are indeed positively associated with secessionist conflict even when we control for economic inequality.

The paper is structured as follows: In the next section we review the literature on horizontal and regional inequality and their relation to secessionist conflict. In the third and fourth sections, we discuss ethno-nationalist grievances and regional autonomy as other explanatory factors of secessionist conflict respectively, followed by sections presenting our hypotheses and the statistical analysis. We close with a brief concluding section discussing the significance and limitations of our results.

2 Inequality and conflict

2.1 Individual and group inequality

Inequality plays a prominent role in the literature on the causes of civil wars. Classical contributions include important studies of peasant uprisings, viewed as a response to rural poverty (e.g. Scott 1976; Moore 1966). Other scholars have linked various types of inequality to structural imbalances in society, such as uneven income or land distribution (Russett 1964; Muller 1985; Muller and Seligson 1987). However, as with the grievance perspective more generally, this literature has attracted sustained criticism from scholars who rely on resource mobilization (Snyder and Tilly 1972) and rationalistic models (Weede 1987; see Lichbach 1989, for an overview of the debate).

The skepticism as regards inequality-based explanations has been reinforced by the more recent wave of political economy studies of civil war that was introduced by Paul Collier at the World Bank in the late 1990s. Linking inequalities directly to grievances, these authors use the Gini coefficient to operationalize inequality as the income distribution among individuals or households. For example,

in the absence of statistical evidence of this kind, Collier and Hoeffler (2004) dismiss inequality as a cause of civil wars. In another important study, Fearon and Laitin (2003) also reject both ethnic and political grievances as explanations of civil war. These authors also rely on individual-level statistical measures, including the Gini coefficient and the ethno-linguistic fractionalization index. Based on this operationalization, the authors conclude that neither economic inequality nor ethnic grievances increase the risk of conflict.

Despite these individual-level results, it may be that inequality drives conflict at a higher level of aggregation. In fact, there are good reasons to believe that civil-war violence originates from interaction involving collective actors, such as ethnic groups or political organizations, rather than being a primarily individual-level phenomenon. By distinguishing “vertical” from “horizontal” inequality, Stewart and her colleagues shift the focus away from individual-level measures to a group-level logic that is more readily associated with internal conflict (Stewart 2009). Defining horizontal inequalities as “inequalities in economic, social or political dimensions or cultural status between culturally defined groups,” Stewart (2009) asserts that to a large extent, the political-economy literature overlooks inequality’s conflict-inducing impact due to its tendency to rely on individualist, rather than group-based, indicators of wealth differences:

But the majority of internal conflicts are organized group conflicts—they are neither exclusively nor primarily a matter of individuals committing acts of violence against others. What is most often involved is group mobilization of people with particular shared identities or goals to attack others in the name of the group (Stewart 2009, 11)

While limited data availability continues to bedevil measurement of horizontal inequalities, several case studies confirm that relatively deprived ethnic groups are more likely to engage in violent challenges of governmental authority (Stewart 2009). More recently, statistical evidence based on selective, cross-national samples has been presented (see e.g. Østby 2008, 2009; Østby, Nordås, and

Rød 2009). Yet, to our knowledge, there is no global study that investigates the relationship between inequality and secessionist violence in federations.

2.2 Regional inequality

While the horizontal inequality literature assumes groups as unit of analysis we focus on regions for three reasons. First, in federations, the region has a particularly important status. Federations are characterized by the geographic division of power, which means that economic (as well as ethnic) concerns become political issues on the regional, i.e. administrative unit level (Bakke and Wibbels 2006, 13). In federal states, the central government makes decisions about in which region to invest or which regions to subsidize. Such policy decisions influences how well regions fare economically, and can alleviate or exacerbate economic inequalities between regions (Olzak 1983). Hence, it is primarily regions that are in direct competition with the central government, rather than ethnic groups. In other words, regions constitute the primary locus of agency, although the latter can coincide with the former to a large degree in ethno-federal states. Also, the regional subdivisions of federations can provide rebels with organizational resources to challenge the state.

Second, focusing on regional units rather than on ethnic groups at least to some extent escapes pertinent criticism of group reification that has been directed at such accounts of ethnic conflict (e.g. Brubaker 2004; Kalyvas 2006). One problem with explanations of ethnic conflict based on ethnic groups concerns the endogeneity of groups to conflict. Using ethnic groups as fixed actors of ethnic conflict contradicts a large social constructivism literature (e.g. Gellner 1983; Anderson 1991) arguing that ethnic groups can be molded and formed; particularly violence, often induced by elites (Brass 1991), can construct and harden group identities (Fearon and Laitin 2000; Kaufmann 1996). This observation, however, implies that ethnic identity is “a key part of what we want to explain, not what we want to explain things with; it belongs to our empirical data, not to our analytical toolkit.”

(Brubaker 2004, 165). By focusing on regions rather than ethnic groups we avoid this problem to some extent.² Moreover, this enables us to account for non-ethnic secessionist conflict as well.³

Third, there are pragmatic reasons why we focus on regions, i.e. the administrative units, rather than on ethnic groups. Defining a region is more straightforward than defining an ethnic group. The precise and officially defined delineation of regions' territorial borders facilitates the identification of the relevant population. In contrast, determining the membership of ethnic groups is more difficult, especially in the presence of multiple religious, linguistic and/or caste cleavages, as is the case in India (Laitin and Posner 2001). Furthermore, changes in regional boundaries tend to be officially documented while ethnic group membership is usually more fluid depending on social, economic and political processes.

For these reasons, we investigate inequalities between subnational administrative units. In the empirical literature on interregional inequality, some scholars argue that inter-regional inequality itself is directly linked to conflict. Others analyze the effect of relative economic welfare in relation to the ethnic composition of the region in order to explain nationalist mobilization and secessionist conflict.

Theoretical arguments of why rich regions are likely to mobilize for secession have been proposed by scholars of the Soviet Union, such as Roeder (1991), who claims that secessionist nationalism can be viewed as a reaction to redistributive policies. This view is supported by Hale (2000), also a student of the former Soviet Union, who stresses the fear of exploitation in comparably rich regions.

Conversely, theoretical accounts of why poor regions are likely to mobilize and engage in secessionist conflict follow the logic of Gellner (1969) and Hechter (1975), who suggest that differences in regional economic development to the detriment of peripheral regions fuels nationalism. Hechter's

² While we do use data on ethnic groups in the statistical analysis (see Section 5.1), the ethnic group constellations coded in the data vary in time and space, which is in keeping with constructivist analysis.

³ In fact, the conflict data we use in the empirical analysis includes one non-ethnic secessionist conflict (Dagestan in the USSR in 1999).

(1975) “internal colonialism” thesis asserts that exploitation of peripheral regions breeds secessionist grievances.

Few scholars consider the possibility that both rich and poor regions may have reasons to claim independence. In his analysis of regional economic development, Gourevitch (1979) identifies inequality as an important, though not the only, factor determining the economic wealth of a region, arguing that underdeveloped regions as well as comparably developed, but politically excluded, regions tend to develop nationalism. Sambanis & Milanovic (2009) contend that there are push factors for both rich and poor regions. With increasing interregional inequality, wealthy regions become exposed to more transfer duties, which could prompt them to exit. Poorer regions, on the other hand, might welcome an improvement in their their economic status through secession even if the main reason for secession is unrelated to economic factors. Similarly, Horowitz (1985) stresses that both rich and poor regions can have grievances related to revenue imbalances. According to Horowitz, rich regions are likely to believe they are subsidizing poorer regions, and poor regions may not receive the per capita proportionate spending they would need to catch up economically with the rest of the country. In the words of Bookman, “all regions may claim that they are giving too much or that they are getting too little from the center, so that both relatively low- and relatively high-income states have a basis for complaint.” (Bookman 1992, p.115)

There is empirical evidence to support both claims. As indicated before, students of the former Soviet Union point to comparably rich regions such as the Baltic region and parts of the Caucasus, which were contributing disproportionately to the country as a whole. In an attempt to escape these duties, these regions they tried to shift the burdens to local minorities while at the same time pressing their own ethnic agendas. As a result, nationalism and separatism were rife in these parts of the country (Roeder 1991). In the same way, Hale’s (2000) statistical analysis of former Soviet republics provides evidence that regional wealth was negatively correlated with the duration until declaration of independence. In other words, the rich regions tried to break out sooner rather than later. Similarly, he provides additional statistical evidence that the economic development of a

republic is positively correlated with an individual's separatist attitude living in that region. In former Yugoslavia, resentments driven by redistributive issues were felt by many Slovenes with regard to its contributions to the federal budget.⁴ Other regions that are rich in resources, such as Punjab in India and Bougainville in Papua New Guinea, complain that they receive too little from central funds given their contributions to the overall economy (Bookman 1992).

With regard to poor regions, Gourevitch (1979) notes that in the case of Quebec separatism since 1945, banking, manufacturing, resource extraction and agribusiness had moved from Quebec to the neighboring province Ontario. This declining economic investment by Anglophone regions caused – and in Gourevitch's view was not the result of – nationalism accompanied by accusations against the capital as not being interested in developing the province but only extracting resources and profits. Apparently, Quebec's separatist sentiment was largely accompanied by discontent with macroeconomic policies of the central government (Bookman 1992).

More general insights can be gained from a recent statistical study by Østby, Nordås and Rød (2009) on regional inequality in 22 sub-Saharan African states. They find that those regions who are relatively deprived are most likely to experience a civil war onset. On the other hand, Gourevitch (1979) finds that both rich and poor regions in several Western countries have developed strong peripheral nationalism. Finally, Bookman (1991) reports similar results based on a study of 37 secessionist regions.

Common to most of these cases is regions' disagreement with central economic policies that leave them economically worse off than they expect to be. The rich regions feel they contribute too much to the federal budget and the poor feel they receive too little to catch up with the other regions. While those studies provide a first insight into which regions are most conflict prone and why, they only shed light on a few cases and hence potentially select on the dependent variable. While Roeder (1991) and Hale (2000) focus on the former Soviet Union, Hechter (1975) looks at the British Isles –

⁴ This type of resentment is nicely captured by the Basque saying that Spain is a "cow with its muzzle in the Basque country and its udder in Madrid"; likewise Katanga is considered the "milk cow for the whole Congo" (Horowitz 1985, 250, 257)

Scotland, Wales, Ireland and Northern Ireland between 1536 and 1966. Østby, Nordås and Rød (2009) investigate whole sub-Saharan Africa, but their dataset does not include regions that are considerably wealthier than the country average. Due to these data limitations their study cannot determine whether such regions experience a higher risk of conflict. Generally, the relatively selective sample limits the representativeness of the previous literature. It could even be that the answer to whether rich or poor regions are most likely to become involved in separatist violence depends on which world region the study covers. Obviously, this is a serious limitation if the goal is to make general statements of whether rich and/or poor regions are prone to secessionist conflict. Our paper contributes to filling this gap as will be apparent in the following sections.

3 Ethnic regions, ethno-nationalist grievances and regional autonomy

As indicated in the introduction, sometimes it is very difficult to disentangle conflict dynamics and point to the essential conflict issue. In his work on nationalism and secessionism, Hechter (2000) argues that in these types of conflict distinctive economic interests and cultural claims often come together.⁵ Indeed, ethnic nationalism is an inherent part of almost all secessionist conflict processes. Conflict issues tend to coincide if the geographical boundaries of the region overlap with the boundaries of an ethnic group. This is especially the case in ethno-federations, where subnational administrative units are designed to serve as homelands of specific ethnic groups provided these are regionally concentrated.

In fact, much of the theoretical and empirical literature discussed above explicitly or implicitly assumes ethnic regional concentration. This assumption makes sense given that the Soviet Union was an ethno-federal construction, or that in Great Britain the ethnic groups of Scots and Welsh

⁵ Sambanis and Milanovic (2009) analyze the combination between ethnical distinctiveness and intra-regional inequality. However, their dependent variable is the actual level of regional sovereignty and not conflict.

reside in their “own” regions. At a conceptual level Gourevitch (1979) is concerned with the presence or lack of economic growth in “regions with ethnic potential”, i.e. regions with distinct linguistic, institutional or historical traditions, or in other words, ethnic regions. He finds that in the presence of ethnically structured socio-economic inequalities, the affected regions are particularly prone to develop strong nationalism. Along similar lines, Bakke & Wibbels (2006) present statistical evidence for their hypothesis that the co-occurrence of interregional inequality and regionally concentrated ethnic groups in federations increase a country’s risk of armed rebellion.⁶ In their explanation, regional ethnic concentration plays a crucial role, but it is not clear why ethnicity is used by leaders to “structure” the conflict along ethnic lines, and why the process becomes violent in the end.

Demographic measures of ethnic configurations, such as concentration and fractionalization, say little about groups’ access to state power. This is an important oversight, because such explanations ignore the influence of ethno-nationalism. First explicitly introduced by the French Revolution, the principle of nationalism dictates the political legitimacy depends on self determination in the name of the nation. Under such conditions, foreign domination can be expected to generate political grievances as it prevents the dominated groups from expressing their population sovereignty (Gellner 1983, 1). Exclusion from central power on ethnic grounds, then, stresses identity boundaries of the excluded groups through the politicization of ethnicity. Moreover, excluded groups are more likely to resort to arms since legal, non-violent avenues to power are blocked. Thus, the key to such explanations is not ethnicity itself, but the way nationalism politicizes it in ways that tend to produce violence.

Once properly conceptualized and measured, ethnic nationalism can be shown to generate collective violence. In particular, recent statistical studies indicate that if groups are deprived of access to state

⁶ Unfortunately, from their work it is impossible to judge whether the poor and/or the rich regions are most prone to conflict since the unit of analysis is a country-year and the variable of interest is inequality rather than relative deprivation and relative wealth.

power, conflict becomes increasingly likely (Cederman and Girardin 2007; Buhaug, Cederman, and Rød 2008; Cederman, Wimmer, and Min 2010). By confirming similar findings in the qualitative literature on nationalism (e.g. Mann 2005; Brass 1991), these studies go a long way toward rectifying the pervasive bias against ethnic grievances in the political-economy literature on civil wars. Moreover, these results add credence to Stewart's (2009) multi-dimensional notion of horizontal inequality. Indeed, political exclusion of ethnic groups can be equated with political horizontal inequality.

Ethnic regions in ethno-federal states are often equipped with substantial regional power. However, regional autonomy enjoyed by concentrated ethnic groups is considered by some scholars to have a detrimental effect on the integrity of the state (e.g. Hale 2000). Regional autonomy – as implied by the concept – is a matter of regions, not of groups, meaning that these territories with clearly defined boundaries are equipped with decision-making institutions that can be used to challenge the government's authority.

Thus, regional autonomy is a condition which facilitates collective action such as civil war and secession in particular. A large literature on ethnofederalism argues that such institutional arrangements can lead to secessionism in the long-term by providing necessary resources to fight a civil war (Roeder 2007; Bunce 2003; McGarry and O'Leary 2003) and increasing the region's bargaining position vis-à-vis the government (Treisman 1997). Also, regional autonomy arrangements short of partitioning may not only leave identity incompatibilities in place (Chapman and Roeder 2007) but will also 'harden' them. This is so because the administrative setting enhances a group's claims to its own state, ethnic identities are being forged and 'politicized', and growing demands and secessionist conflict thus become more likely (Nordlinger 1972; Snyder 2000; Brubaker 1996). Also, Horowitz (1985) suggests that political control of a region determines whether secessionism is attempted by a group. To sum up, access to resources and identity-strengthening conditions provided by regional autonomy arrangements are likely to increase the risk for secessionist conflict.

4 Hypotheses about economic and political grievances

The previous sections have shown that the empirical literature on interregional inequality fails to provide an unambiguous answer to the question if poor regions or rich regions are the most likely candidates for secession in federal states. There is hardly any study on regional inequality and conflict that encompasses more than a few countries or at most a continent. In this paper we seek to improve on data limitations apparent in other empirical studies to investigate the relationship between regional inequality and secessionist conflict in federal states around the world. Moreover, as opposed to previous studies, we consider economic and political grievances as well as regional autonomy as explanatory factors for secessionist conflict.

Our theoretical assumptions are as follows. Along with Gourevitch (1979), and for reasons stated above, we assume regions to be the main actors and unitary with the exception of ethnicity. We also follow Gourevitch with regard to his conception of the interplay between “political leadership and economic dynamism.” He discusses “political leadership” (the presence of central institutions) and “economic dynamism” in a region, and concludes that where in a region one of the two is missing *and* the region has ethnic potential, the likelihood of strong nationalism is especially high.

Interregional inequality. First, we consider interregional inequality separately from political inequality. We assume regions to expect asymmetric (“fair”) distributional policies, implying that relatively wealthy regions expect to keep their wealth, or at least receive as much from the central ‘cake’ as they contribute. Relatively underdeveloped regions expect intergovernmental transfers to compensate for their lack of wealth in relation to their population size. However, these expectations add up to asymmetric federalism, which may be unacceptable to central elites (Horowitz 1985; Kymlicka 1998). As a consequence, relatively rich regions may have to contribute disproportionately to the whole state while relatively poor regions fail to overcome their relative backwardness (Horowitz 1985; Bookman 1992).

The resulting economic grievances that stem from perceptions of economic injustice are likely to be attributed to federal economic (e.g. redistributive) policies, which are coordinated at the central level. Secession is a way to avoid an untenable situation. Hence, we hypothesize the following:

H1: Interregional inequality compared to the country average increases the likelihood of secessionist conflict

In this hypothesis we assume a symmetrical effect of both relatively rich and poor regions. In order to relax this assumption we subject the following two hypotheses to testing:

H1a: Regions that are relatively rich are more likely to experience secessionist conflict than those regions that are closer to the country average

H1b: Regions that are relatively poor are more likely to experience secessionist conflict than those regions that are closer to the country average

Political grievances in ethnic regions. Viewed as a case of political horizontal inequality, political exclusion tends to produce ethno-nationalist grievances, which may in turn spill over into political violence. Above we presented arguments and evidence connecting such situations with the outbreak of internal conflict. Indeed, where ethnic groups are exposed to alien rule, fundamental norms of political legitimacy are violated. Such violations tend to trigger emotional reactions that facilitate the organization of challenges to the political status quo. Wherever foreign domination implies discrimination and humiliation, political entrepreneurs claiming to represent the excluded groups are prone to advance political claims to overcome the perceived injustice. Where the incumbent government resists such claims and denies the nationalist opposition the right to express them through orderly and peaceful channels, the probability of violence becomes especially acute.

As one of the rare works that combines economic and group grievances as explanations for secessionist conflict is Horowitz (1985), who analyses the relation between backward and advanced groups and regions. His conceptualization of regions and groups assumes that regions often resent economic imbalances while groups tend to complain about imbalances with regard to proportionality

in relation to population. We adopt a similar stance: while we hypothesize that it is the (lack of) economic welfare of *regions* that affects the risk for secessionist conflict, assuming that political grievances of *groups* make conflict more likely. Thus, ethnic groups that are barred from access to central power typically seek to improve their status by seceding:

H2: Regions with excluded ethnic groups are more likely to experience secessionist conflict than those regions inhabited by included groups

Regional autonomy. Drawing on arguments advanced in Section 4 above, we contend that the risk of secessionist conflict is particularly high if an ethnic group is excluded from state power but enjoys autonomy at the regional level. We assume that regional autonomy makes secession more likely, because group identities become entrenched in regional institutions (e.g. Nordlinger 1972). Furthermore, it can be assumed that resources to fight a secessionist war are more available if the ethnic group controls a regional subunit (e.g. Bunce 2003). Finally, an administrative unit already constitutes a latent state; it has clearly defined boundaries, decision-making institutions, and – in the case of ethnic regions – a relatively homogenous population. These conditions make administrative units readily available candidates for secessionism (Hale 2008). Hence, we hypothesize:

H3: Regions where the largest excluded group enjoys regional autonomy are more likely to experience secessionist conflict than those regions where this is not the case

5 Analysis

5.1 Data

Our empirical analysis relies on a logistic regression framework with secessionist conflict onset as dependent variable. We use a panel dataset consisting of first-level administrative units from 1991

through 2008, which contains data on the lifetime and geographical extension of administrative units in 31 countries (Deiwiks 2010).⁷

Dependent variable . The dependent variable is the dichotomous variable 'onset of secessionist conflict'. Drawing on the coding presented in Deiwiks (2010), we determined secessionist conflicts by selecting from all internal conflicts coded in the Uppsala Armed Conflict Data (Gleditsch et al. 2002). For the analysis, a unit-year is coded as experiencing a conflict onset if the secessionist region was that particular administrative unit. Whether or not this was the case we determined by screening conflict narratives mostly from the UCDP Database.⁸ For all other years, conflict onset is coded 0. Years of ongoing conflict were dropped from the dataset. Since there might be years where the number of battle deaths did not exceed the threshold of 25 battle deaths, it is possible that there are several onsets per administrative unit.

Independent variables. The main independent variables concern (1) regional inequality and (2) the political status of ethnic groups. (1) We measure regional inequality by relying on G-Econ, a global geophysically based data set on economic activity (Nordhaus 2006). This data is available as raster data of 1 degree grid cell resolution, unfortunately only for 1990, which is why we have to restrict our analysis to the period starting in 1990 and ending in 2005 assuming that relative inequalities do not change quickly over time. To arrive at regional inequality measures, we overlay the geographical administrative unit dataset with the raster data on economic activity and sum up the Nordhaus cells covered by an administrative unit. We measure regional inequality in two ways: First, if g is a region's wealth and G is the average wealth of all regions in a country, then

$$lineq2 = [\log(g/G)]^2$$

⁷ The dataset covers Argentina, Australia, Austria, Belgium, Bosnia and Herzegovina, Brazil, Cameroon, Canada, Czechoslovakia, Ethiopia, Germany, India, Italy, Malaysia, Mali, Mexico, Myanmar, Nigeria, Pakistan, South Africa, Spain, Sudan, Switzerland, Tanzania, Ukraine, United Arab Emirates, United Kingdom, United States of America, USSR/Russia, Venezuela, and Yugoslavia/Serbia and Montenegro

⁸ <http://www.pcr.uu.se/gpdatabase/search.php>

This measure is positive if the region's wealth deviates from the country's average wealth level in either direction, and 0 for regions with average wealth. Figures 1 and 2 illustrate inequality measured by g/G for regions in Yugoslavia and the United Kingdom in 1990. In Yugoslavia, Slovenia, Croatia, and Macedonia are relatively wealthy, while Bosnia & Herzegovina, Montenegro and Serbia are relatively poor. In the United Kingdom, only England is above the country average, while Scotland, Wales and Northern Ireland – the poorest region – are below the country average.

(Figures 1,2 about here)

While *lineq2* assumes a symmetric effect of poor and rich regions on conflict onset risk and is therefore an adequate inequality indicator to test H1, we also need indicators allowing for an asymmetrical effect as expressed by H1a and H1b. Hence, we split up *ineq2* into two variables measuring the wealth of poor and rich regions separately:

$$low = \begin{cases} G/g & \text{if } g < G, \\ 0 & \text{otherwise} \end{cases}$$

$$high = \begin{cases} g/G & \text{if } g > G, \\ 0 & \text{otherwise} \end{cases}$$

low and *high* measure the deviation of a region in terms of wealth compared to the country's average independently of each other. E.g. if a region is three times poorer than the country's average, its *low* value is 3, while its *high* value is 0. Conversely, if a region is twice as rich as the country's average its *low* value is 0 while its *high* value is 2.

(2) To test H2 and H3, we use data on ethnic groups in the EPR dataset (Min et al., 2008) and its extension GeoEPR (Wucherpfennig et al. 2010). EPR identifies politically relevant ethnic groups in 155 sovereign states between 1946 and 2005, and in particular lists their level of access to central

state power.⁹ GeoEPR adds the geographical dimension by providing the location of settlements. We first determined which ethnic groups reside in a given administrative unit by overlapping group settlement areas and the territory of administrative units. Then, for all those groups within a region, we found out whether or not any of them is politically excluded (cf. H2).

In our evaluation of H3, we selected the largest of all excluded groups in a given administrative unit. The population figures per group section in an administrative unit were computed by aggregating raster cells containing population data at a resolution of 2.5 arcminutes (Gridded Population of the World¹⁰). For the largest group in an administrative unit we then determined whether or not it enjoys 'regional autonomy' or is a 'separatist autonomy', two subcategories of the exclusion variable in the EPR dataset.¹¹ Both regional autonomy and separatist autonomy indicate that group leaders control their own regional authorities, through central authorization or through group-led, unilateral measures respectively.

Control variables. Among regional level controls, we use a dummy variable for *War history* to indicate whether an administrative unit experienced prior secessionist conflict onset. As country level controls we include logged *GDP per capita* lagged by one year since a generally low level of wealth is a fairly robust predictor of civil war onset (Hegre and Sambanis 2006) and logged *Population density* (Hegre and Raleigh 2007). Finally, we control for temporal dependence as proposed by Beck, Katz and Tucker (1998).

5.2 Results

Our final dataset consists of 10,895 region-years with as few as 39 conflict onset for the time period from 1991 through 2005, which is the reason why we rely on rare-events logit regression. We cluster the standard errors by country to compensate for country-level dependencies. The results of the statistical regression are given in table 1.

⁹ The EPR dataset differs from MAR dataset by not only encompassing 'at-risk' groups but also majority groups.

¹⁰ <http://sedac.ciesin.columbia.edu/gpw/>

¹¹ The other two are 'powerless' and 'discriminated'.

(Table 1 about here)

Together, the symmetric models (1-3) and the asymmetric model (4) provide robust support for all of our three hypotheses. First, *lineq2* as well as the *high* and *low* indicators are positive as expected and statistically significant at the 0.1% level for all four models. This suggests that regional inequality is indeed related to secessionist conflict onset. Furthermore, the findings indicate that the effect of a comparably rich region on conflict risk is stronger than the one of a comparably poor region, even though the difference is not very large.

With regard to H2, the results suggest that the presence of an excluded group in a region increases considerably its risk for being involved in a secessionist conflict (see models 2-4). The coefficient is both positive and statistically significant. Also H3 receives support, as revealed by models 3 and 4. The results suggest that if the largest excluded group controls of the region through an autonomy arrangement, the likelihood for secessionist conflict increases.

All the control variables behave as expected, the richer the whole country and the more dense the population, the higher the likelihood for secessionist conflict. If an administrative unit experienced prior conflict, the risk increases that it will experience another one.

5.3 Sensitivity analysis

In order to increase the confidence in our results, this section presents a series of robustness checks based on model 4 in table 1.

(Table 2 about here)

First, since we are only dealing with a comparably small number of onsets we need to make sure that the results are not driven by a small number of conflict cases. We hence exclude both the poorest region that experienced conflict (Chechnya in Russia) and richest conflict regions (Bayelsa, Delta, Rivers, Ondo in the Niger Delta, which are listed as wealthy thanks to the presence of oil fields in this

region) from the analysis (see models 5 and 6 respectively). The results do not substantially change in magnitude or with regard to statistical significance.

We also ran a test extending the analysis from the post-Cold War period to the entire post-World War II period under the somewhat risky assumption that regional inequality remained stable throughout the period from 1946 through 2005. As can be seen in model 7 the statistical significance of the variables does not change but the coefficients for *high* and *low* drop slightly.

In model 8, we include a country dummy indicating whether or not the country has experienced previous conflict. Most importantly, the coefficients of the main independent variables as well as the regional *Previous conflict* dummy stay statistically significant and do not change in size, except *Regional autonomy*, which roughly doubles in size possibly indicating that governments are more likely to grant autonomy to groups that have launched violent secessionist bids in the past. Also, the statistically significant, negative coefficient of *Previous conflict (country)* shows that if a country has experienced secessionist conflict before, another onset in any region of the country becomes less likely. This is in line with Walter's (2006) reputation argument, which states that central governments have an incentive to prevent separatists from seceding because otherwise they might face similar challenges by other regions. Indeed, if the government demonstrates resolve by decisively countering a previous secession attempt, the likelihood decreases that another region will try the same.

Another robustness check concerns our measures of wealth. Nordhaus' spatial GDP data includes all economic activity including revenues generated by natural resources. However, it is possible that a region is rich in oil, and hence is measured as being relatively wealthy, without the regional population benefiting from oil revenues. As suggested by the conflict in the oil-rich Niger delta, this situation is likely to be conflict-inducing as well, but it should be noted that it follows a different causal path than the primary one stated by our theory. In an attempt to measure regional wealth as experienced by the population more adequately, we subtract from the GDP per capita data the

revenues generated by oil in a region also available from the Nordhaus data. Model 9 include the asymmetrical inequality indicators using this wealth measure, and the robustness of the inequality indicators suggests that revenues generated by oil do not seem to be an important factor. Indeed, the insignificance of the oil revenue indicator in model 9 supports this interpretation.

Finally, model 10 allows us to consider the problem of reverse causation. It is very plausible that not only poor regions have a higher likelihood for secessionist conflict but also that conflict destroys infrastructure, e.g. necessary for trade, and hence may substantively diminish a region's wealth. In order to minimize such endogeneity bias, we exclude all those regions that were experiencing conflict in 1990, the year of wealth measurement. These regions are Northern Ireland in the United Kingdom, Eritrea in Ethiopia, and Kachin State and Kayin in Myanmar. The results in model 10 show that when excluding those regions, the main findings do not change indicating that they are not driven by those cases where endogeneity might be a concern.¹²

6 Conclusion

This statistical study provides strong evidence that both relatively rich and poor regions in federations experience an increased risk of secessionist conflict compared to regions that are closer to the country's wealth average. Also, ethno-nationalist grievances due to exclusion from central state power contribute to secessionist conflict onset. Moreover, our findings indicate that political control over autonomous institutions at the regional level has a positive effect on the outbreak of secessionist conflict. Despite the hope that regional autonomy would appease ethnic groups in their demands for self-determination, it seems that autonomous institutions fuel secessionism and hence increase the probability of secessionist conflict.

¹² As further robustness checks we included geographical variables such as minimal distance to an international border and minimal capital distance as control variables (data source:PRIO-GRID http://folk.ntnu.no/andretol/PRIO_GRID/). These variables failed to show a significant effect, while the main results did not change. Also, the number of administrative units in a country does not seem to have an effect on secessionist conflict.

Our analysis improves on existing approaches by using first-level administrative units as observations and relying on a more comprehensible dataset of 31 federations around the globe between 1946 and 2008 as well as a systematic measure of regional inequality. While case heterogeneity across different parts of the world cannot be excluded, any analysis of a general effect of regional inequality on secessionist conflict requires a global and non-biased sample of countries and regions. Based on such a systematic comparison, we conclude that regional inequality appears to be detrimental to peace *both* if regions are much poorer or much wealthier than the country average.

However, one should keep in mind that our study is limited to violent secessionist conflict. Thus, we do not attempt to explore the causes of non-violent separatism and peaceful state break-ups, such as the dissolution of Czechoslovakia. Furthermore, the Baltic and Caucasus regions that seceded from the Soviet Union did not become violent enough to be listed as secessionist conflict in the Armed Conflict Dataset.

Theorizing about the effect of economic factors on conflict onset, we implicitly assume that secessionist conflicts are fought as attempts to improve regions' economic situation. Yet, some secessionists fight despite expected deterioration of the economic situation in case of success. This is less of a contradiction in cases where the benefits of self-determination outweigh material considerations. Further research will be necessary to disentangle the effect of political and economic horizontal inequality, but for now we conclude that separatist conflict appears to be driven by both dimensions. Given the general skepticism as regards the role of any type of grievances in contemporary explanations of civil wars, this in itself is an important finding.

7 Tables and Figures

	(1)	(2)	(3)	(4)
Inequality	1.370*** (0.230)	1.305*** (0.166)	1.324*** (0.171)	
Inequality (<i>high</i>)				1.057*** (0.189)
Inequality (<i>low</i>)				0.796*** (0.110)
Excluded		2.287** (0.728)	2.059** (0.717)	1.939* (0.783)
Reg. Autonomy			0.570* (0.273)	0.773** (0.286)
Previous conflict	2.752*** (0.468)	2.035*** (0.496)	1.772*** (0.517)	1.914*** (0.567)
GDP per capita (country, logged)	-0.670** (0.238)	-0.539** (0.197)	-0.579** (0.186)	-0.548** (0.167)
Population density (country, logged)	1.109*** (0.229)	1.177*** (0.192)	1.181*** (0.210)	1.116*** (0.182)
Peace years	-0.000197 (0.116)	0.0208 (0.124)	0.0258 (0.124)	0.0181 (0.124)
Spline 1	0.000526 (0.000732)	0.000807 (0.000699)	0.000718 (0.000676)	0.000537 (0.000696)
Spline 2	-0.000813 (0.000647)	-0.00122* (0.000556)	-0.00108* (0.000500)	-0.000863 (0.000527)
Spline 3	0.000640 (0.000338)	0.000934** (0.000298)	0.000828*** (0.000242)	0.000694** (0.000256)
Constant	-2.007*** (0.436)	-3.560*** (0.854)	-3.538*** (0.858)	-4.809*** (0.731)
Observations	8,080	8,080	8,080	8,080

Table 1: Rare-events logit regression results. Country-clustered standard errors are given in parentheses. *** p<0.001, ** p<0.01, * p<0.05. Dependent variable: Secessionist conflict onset

	(5)	(6)	(7)	(8)	(9)	(10)
Inequality (<i>high</i>)	1.183*** (0.283)	1.469** (0.454)	0.809*** (0.154)	1.086*** (0.229)		1.056*** (0.189)
Inequality (<i>low</i>)	0.954** (0.340)	0.903*** (0.160)	0.575*** (0.0638)	0.847*** (0.143)		0.793*** (0.115)
Excluded	1.835* (0.799)	2.139*** (0.646)	1.928** (0.653)	1.873* (0.802)	2.159** (0.694)	2.019** (0.765)
Reg. Autonomy	0.778* (0.325)	0.646* (0.290)	0.641* (0.263)	1.247*** (0.334)	0.663* (0.278)	0.654* (0.263)
Previous conflict	2.228*** (0.384)	1.725** (0.573)	1.531*** (0.368)	2.846** (0.950)	1.786** (0.576)	1.918** (0.607)
GDP per capita (country, logged)	-0.567** (0.183)	-0.618*** (0.172)	-0.464** (0.145)	-0.612** (0.216)	-0.602*** (0.173)	-0.485* (0.210)
Population density (country, logged)	1.075*** (0.181)	1.234*** (0.279)	0.724*** (0.126)	1.210*** (0.224)	1.237*** (0.275)	1.133*** (0.190)
Post-Cold War			0.861** (0.334)			
Previous conflict (country)				-1.543** (0.578)		
Inequality excl. oil (<i>high</i>)					1.360** (0.419)	
Inequality excl. oil (<i>low</i>)					0.897*** (0.158)	
Oil revenue					0.000249 (0.000132)	
Peace years	0.0395 (0.135)	-0.0344 (0.0869)	-0.0921 (0.111)	0.0233 (0.119)	0.0180 (0.122)	0.0156 (0.138)
Spline 1	0.000604 (0.000790)	0.000185 (0.000535)	7.13e-05 (0.000705)	0.000557 (0.000770)	0.000603 (0.000704)	0.000529 (0.000785)
Spline 2	-0.000893 (0.000599)	-0.000519 (0.000431)	-0.000534 (0.000585)	-0.00102 (0.000689)	-0.000908 (0.000541)	-0.000867 (0.000605)
Spline 3	0.000696* (0.000279)	0.000497* (0.000228)	0.000559* (0.000277)	0.000870* (0.000385)	0.000699** (0.000271)	0.000704* (0.000294)
Constant	-5.286*** (0.699)	-4.473*** (0.749)	-5.474*** (0.676)	-4.432*** (0.891)	-4.691*** (0.755)	-4.810*** (0.717)
Observations	8,068	8,029	26,592	8,080	8,080	8,047

Table 2 Sensitivity analysis. Country-clustered standard errors in parenthesis. * p<0.001, ** p<0.01, * p<0.05. Dependent variable: Secessionist conflict onset**

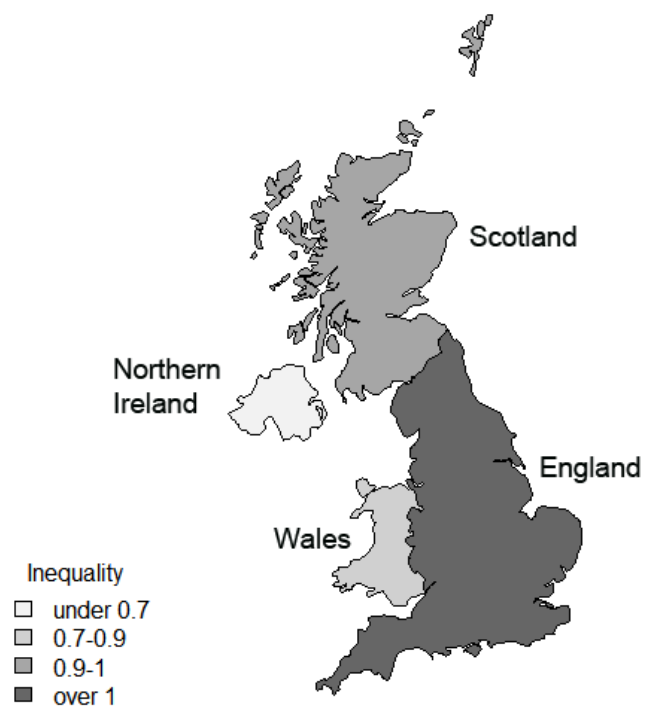


Figure 1 Inequality measures for regions in the UK in 1990

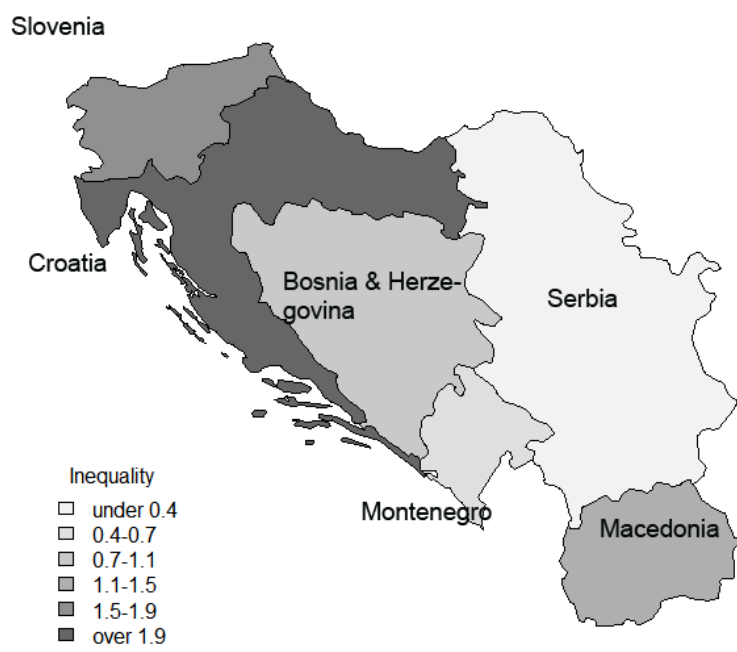


Figure 2 Inequality measures for regions in Yugoslavia in 1990

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