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Data Analysis, 1950-2010**

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July 2016

Online at <https://mpra.ub.uni-muenchen.de/72750/>  
MPRA Paper No. 72750, posted 31 Jul 2016 04:45 UTC

# Decentralisation, Regional Autonomy and Ethnic Civil Wars: A Dynamic Panel Data Analysis, 1950-2010

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This draft: July 2016

## **Abstract**

This paper empirically revisits the relationships between decentralisation, regional autonomy and ethnic civil war. On the one hand, decentralisation and autonomy may allow ethnic minorities to directly control their own affairs or to better hold regional rulers to account. On the other hand, decentralisation and autonomy in multi-ethnic countries may foster centrifugal forces and bestow legitimacy and resources to secessionist groups. Current evidence from cross-country or cross-ethnic group econometric studies are limited by crude operationalisation of decentralisation and often questionable treatment of endogeneity. The paper makes three key contributions: i) it builds a new dataset bringing together up-to-date and cutting edge data on decentralisation and autonomy (RAI) and ethnic group violence (EPR), thereby providing new insights on groups exposure to decentralisation in 81 countries between 1945 and 2010; ii) it tests how various facets of decentralisation (autonomy, self-rule, shared-rule, political decentralisation) relate to ethnic violence; and iii) it exploits dynamic panel data techniques, namely the

difference-GMM estimator, to account for reverse causality and unobserved heterogeneity biases. The validity and strength of the estimator are explicitly established. I find that regional autonomy - even when decentralisation is otherwise limited - strongly reduces the incidence of ethnic civil wars. The conflict-mitigating effect of autonomy is maximal when regional governments command substantial powers in terms of policy-setting and when political decentralisation is strong. Political decentralisation is also found to be a strong and consistent factor of ethnic peace in the absence of regional autonomy. In contrast, granting regional governments wide-ranging authorities on policy and fiscal matters does not reduce the incidence of large-scale ethnic conflict on its own. Granting autonomy to regional governments which have no substantial powers of self-rule is weakly correlated with higher chances of onset of civil wars but a combination of autonomy and above-median self-rule and political decentralisation strongly reduces such a likelihood. Regional autonomy appears to be the only effective strategy to stop existing civil wars. Keywords: Decentralisation, autonomy, civil wars, dynamic panel data analysis.

## 1 Introduction

Since the second world war, the bulk of violent conflicts are within countries and often involve ethnic groups. Secessionist wars alone make up about one quarter of all civil wars since the end of WW2 (Wimmer, Cederman & Min 2009). Ethnic civil wars also tend to be protracted. For instance, the Moros have been at war in the Philippines every year bar one since 1970. The Catholics in Northern Ireland have continuously been at war between 1971 and 1998, as have the Mayas in Guatemala between 1975 and 1995. Ethnic minorities that are spatially concentrated and can claim an area of the country as their own are considerably more likely to rebel (Fearon & Laitin 1999).

What role does decentralisation play in the participation of such groups in large-scale

conflict? Does it prevent (or mitigate) the risk of war; or does it fuel it? The question is of interest given the general push towards decentralised governance in international development (Fritzen 2007) and among richer countries (OECD 2013); and because decentralisation is often explicitly called for as a peace-promoting or conflict-mitigating strategy. Decentralisation is also more common in ethnically fragmented countries, which are most likely to harbour secessionist tendencies (Arzaghi & Henderson 2005).

There is an abundant literature discussing the merits and pitfalls of decentralisation (political, fiscal and administrative), regional autonomy and federalism as peace-promoting devices. Proponents of decentralisation tend to stress that ethnic minorities are usually excluded from the political centre, which fuel anger and mobilisation (Lijphart 1977, Gurr 1994, Lustick, Miodownik & Eidelson 2004, Nordquist 1998, Hechter 2000). Shifting power to regional governments allows spatially concentrated minorities to control their own affairs, thereby improving welfare and reducing the relative deprivation of their members. Opponents argue that decentralisation legitimises and freezes sub-national identities (Kymlicka 1998), gives institutional and financial resources to secessionist groups (Bunce 1999, Cornell 2002), strengthen regional parties (Brancati 2006) and generally foster centrifugal forces and ethnic conflict.

Findings of econometric studies tend to suggest a favourable yet conditional role of decentralisation on conflict. Results by Brancati (2006) and Bakke & Wibbels (2006) suggest that countries which are more decentralised and/or federal experience lower risk of civil wars or ethnic rebellion. The effect is however conditional on regional inequalities being not too large and regional parties not too strong. Tranchant (2008) finds that ethnic groups living in fiscally decentralised countries are less likely to engage in rebellion and communal violence but only in countries sufficiently rich and in which state power is not too pronounced. A similar result obtains when one looks at comparisons within a single country. Murshed, Tadjoeeddin & Chowdhury (2009) shows that districts in Java where

fiscal decentralisation had a larger impact are less affected by routine violence, but the effect is limited to wealthy districts. Brown (2009) suggests that administrative regions which enjoy more policy-making authority experience less ethnic protest and rebellion. Regarding regional autonomy, Cederman, Hug, Schadel & Wucherpfennig (2015) show that groups with some degree of territorial autonomy are less likely to participate in civil wars but Christin & Hug (2012) find that countries with a strong ethnofederal structure are more prone to civil wars.

The current empirical literature on the topic has three common flaws. First, most studies do not explicitly address endogeneity concerns and rely on simple pooled estimations or fixed effects.<sup>1</sup> Second, studies either use a group-level analysis but with a nationally defined measure of decentralisation, or are set-up in a cross-country framework which hides relevant heterogeneity within countries. Yet, decentralisation is not uniformly implemented within countries. Third, studies tend to use a blunt measure of decentralisation such as the share of sub-national expenditures and ignore the relationships between different facets of decentralisation and autonomy. Cederman et al. (2015) deal with the first two flaws but leave decentralisation out of their analysis to solely focus on territorial autonomy. Brown (2009) uses the same fine-grained data on decentralisation that I use, but he does not look at large-scale conflict and does not fully address the issue of reverse causality.

The main contribution of the paper is to address all three limitations. To do that, I match information on the authority of regional governments (from the Regional Autonomy Index dataset, RAI) with the Ethno-Power Relations (EPR) dataset to generate a group-level dataset on decentralisation, regional autonomy and civil war. For each ethnic group in the dataset I also identify whether it is a local majority within the boundaries of the regional governments it can lay a claim on. The RAI dataset provides very fine-grained

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<sup>1</sup>Some exceptions are Tranchant (2008), Christin & Hug (2012) and Cederman et al. (2015).

information on the authority of all significant tiers of regional governments in 81 counties between 1950 and 2010. The dataset informs on regional governments' authority in terms of self-rule (how much power do regional governments have in matters of regional policy?), shared-rule (how much power do regional governments have in matters of national policy?) and regional autonomy (is the relationship between the regional government and the centre governed by a bilateral treaty?). Self-rule can even be disaggregated into policy, tax autonomy and representation components. The representation component refers to the ability of individuals to choose their leaders in regional governments; it is thus close in spirit to political decentralisation. To my knowledge, only Brown (2009) has used the dataset to study ethnic conflict, probably because until recently the geographical coverage of dataset was much more limited.

The paper provides a conceptual framework to generate predictions on how self-rule, shared-rule and regional autonomy of regional governments influence the likelihood that ethnic groups participate in civil wars. I then use difference GMM estimations to test these predictions. I claim that the the difference GMM estimator is the most credible one to deal with unobserved heterogeneity, reverse causality and conflict dynamics and to provide consistent estimates of the effect of decentralisation and regional autonomy on ethnic civil wars.

The dynamic panel data analysis yields six main results. First, regional autonomy is significantly associated with a lower risk of ethnic civil war. This is true even when decentralisation is limited, i.e. when the autonomous regional governments have little substantive powers. Second, political decentralisation (measured by the ability of regional voters to choose their leaders) is also a strong and robust factor preventing civil wars. Third, regional autonomy reaches a maximal effect when regional governments command self-rule powers (notably in terms of policy) and when political decentralisation is substantial. Fourth, granting regional governments wide-ranging authority on policy or

taxes does not in itself reduce (or fuel) the risk of conflict. Fifth, shared-rule is never significantly associated with incidence of civil wars. It is worth noting that the effect of regional autonomy is only significantly different from zero once it is instrumented (here through the use of the difference GMM estimator). This is consistent with the view that autonomy is a strategic response used by central governments when faced with risks of ethnic violence. The magnitudes of the impact of decentralisation and regional autonomy on conflict are very substantial. Fifth, the combination of autonomy with above-median self-rule of regional governments (notably in terms of policy-setting and fiscal authority) and political decentralisation strongly reduces the risk of onset of civil wars. Autonomy status without meaningful decentralisation is weakly associated with higher chances of onset. Sixthly, only regional autonomy (irrespective of decentralisation) appears to be a strong and statistically significant factor of conflict termination.

The paper is organised as follows. Section 2 reviews the literature and develops a conceptual framework linking decentralisation and regional autonomy to groups' propensity to engage in conflict. In section 3 I describe how I built the dataset and section 4 lays out the empirical strategy. Sections 5 and 7 present the findings of the estimations of the effect of decentralisation and regional autonomy on incidence and onset/continuation of conflict, respectively. Section 8 discusses the results and concludes.

## **2 Decentralisation and ethnic conflict: A Conceptual framework**

### **2.1 Literature review**

A significant tradition in political science contends that shifting decision-making power to local and regional governments can help prevent or manage ethnic conflicts (Lijphart

1977, Gurr 1994, Lustick, Miodownik & Eidelson 2004, Nordquist 1998, Hechter 2000). Ethnic minorities are often separated from the political centre by a large geographic and social distance. They are also too small to become major members of political coalitions in power. It follows that decisions at the national level seldom reflect the preferences of these minorities. Political exclusion of minorities - which is also often due to systematic discriminations against them - is widely thought to fuel violent mobilisation (Gurr 1970, Lijphart 1977, Lijphart 1996, Horowitz 1985). For instance, Gurr's relative deprivation argument implies that members of an excluded ethnic group are likely to feel aggrieved by their lot and subsequently turn violent. Lijphart and Horowitz call for inclusive governance, or "consociationalism" in the words of the former, to promote peace. The link between exclusion and conflict has found some empirical validation in quantitative studies conducted by Gurr (1994), Wimmer, Cederman & Min (2009) or Cederman, Wimmer & Min (2010).<sup>2</sup>

In this context, shifting part of the decision-making authority to regional governments allows minorities to implement policies that reflect their preferences, and helps overcome exclusion from the centre. Decentralisation is then seen as a form of power-sharing - between national and regional tiers of governments - and as such an avenue to prevent or manage ethnic conflicts. According to this line of argument, the more concentrated and locally dominant ethnic groups are, and the more excluded they are from national-level decision-making, the higher the potential for decentralisation to prevent or reduce ethnic violence.

Applying an economics lens to decentralisation and ethnic conflict leads to similar conclusions. In traditional models of decentralisation, such as in Oates (1972), centralised provision of public goods is uniform and comes at a cost when preferences are hetero-

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<sup>2</sup>Other studies have failed to find a link between overall inequalities, or "grievances", and conflict (e.g. Collier & Hoeffler 2004). However, these studies are typically conducted at the country level and do not directly test the argument that excluded groups are likely to use violence.

geneous across the territory. It is also common in economics to posit that preferences vary across ethnic groups (e.g. Alesina, Baqir & Easterly 1999) or geographical areas (Tiebout 1956, Panizza 1999). By essence, ethnic minorities which are geographically and socially distant from the majority are likely to develop specific preferences over the type and quantity of public goods.<sup>3</sup> Even without preference heterogeneity, however, centralised provision may be costly in the presence of spatially concentrated ethnic minorities. Public goods may hardly reach ethnic minorities if there is a large “spatial decay” in the provision of the public good (Panizza 1999).<sup>4</sup> This may occur if it is difficult for the central authority to monitor the provision of services over long distances (for instance if distance creates opportunities for corruption) or if the implementation of the services needs to be tweaked to account for local specificities (for instance, supplying education in sparsely populated rural communities is a different task than doing so in cities even if preferences for education are the same across the country).

Seabright (1996) proposes a framework in which the advantage of decentralisation is not to tailor specific policies across the national territory, but to raise accountability. In centralisation, the welfare of a minority group does not strongly influence the re-election prospects of the ruler as the vote is national. In decentralisation, the welfare of minority groups can directly influence the re-election prospect of the ruler as the vote is regional. As minority groups can hold regional government accountable, and provided that a significant share of policy-making is assumed by regional governments, the quality of government should improve. Similar to Oates (1972), the main drawback of decentralisation is the loss of policy coordination.

The limits of decentralisation are both economic and political. Economists stress the risks of loss of coordination and efficiency in providing the public good through local

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<sup>3</sup>Lieberman & McClendon (2013) show that indeed preferences are systematically related to ethnicity in Africa.

<sup>4</sup>Habyarimana, Humphreys, Posner & Weinstein (2007) suggest that preferences do not vary with ethnicity within slums of Kampala.

governments. Some public goods are characterised by economies of scale, so that the larger the provision of the good, the cheaper its unit cost. Decentralisation imposes a cost by breaking up the provision of public goods into multiple suppliers. This justifies the central provision of goods for which economies of scale are important, such as defence (Musgrave 1959, Gordon 1983). Bardhan & Mookherjee (2000, 2005) note that local governments are vulnerable to elite capture as powerful local elites have more influence on local governments than national elites have on central governments. It may be that the costs due to the capture of local governments (to which decentralisation is vulnerable) dominate the costs due to bureaucratic corruption (to which centralisation is vulnerable).

Some political scientists argue that decentralisation across ethnic lines, in the form of ethnofederalism, where some regions dominated by specific ethnic groups are granted a large degree of autonomy, cannot contain ethnic conflict. For instance, Kymlicka (1998) contends that ethnofederalism might reinforce ethnic identities and undermine nation-building. Hale (2004) argues that ethnofederal systems with a dominant core are unstable. Regional autonomy can also foster the legitimacy of separatist demands and provide institutional resources for minorities to continue secessionist conflict (Bunce 1999, Cornell 2002). Brancati (2006) argues that decentralisation strengthen regional parties which, in turn, fosters centrifugal forces.

## **2.2 Ethnic minorities, decentralisation and the threat of secession**

I now use the arguments discussed above to generate predictions on the relationships between decentralisation and ethnic conflict at the level of the ethnic group. Following Buchanan & Faith (1987), Panizza (1999), Arzaghi & Henderson (2005) and Sambanis & Milanovic (2014), I start by asking whether regionally concentrated minorities prefer union or separation, i.e. to stay in a polity alongside a majority region or to seek in-

dependence. As Fearon & Laitin (1999) indicate, a large proportion of ethnic conflicts involve regionally concentrated minorities, precisely because these groups can credibly seek exit from the country.<sup>5</sup> If members of the minority group assess that their expected welfare in the union is lower than their expected welfare under separation (accounting for the cost and benefits of conflict), then conflict will prevail. Groups most likely to engage in violent conflict are thus those for which exit is viable, i.e. large, concentrated and locally dominant groups which can credibly set up a separate country; and those for which welfare in the union is low, i.e. groups very distant from the central government and/or groups living in very centralised countries.<sup>6</sup>

Ethnic groups can also engage in ethnic violence even if secession is not their goal or is infeasible. In this case, rebellion will aim to influence policy, towards less political exclusion and more decentralisation/autonomy. Groups that are excluded from the centre and live in centralised countries are therefore likely to engage in violence (to obtain regional autonomy) even if they are too small or not locally dominant enough to successfully secede.

Central governments value territorial integrity and are unwilling to let minorities secede. Many governments are wary of granting autonomy to minority groups out of fear it will be perceived as a step towards independence or a means to legitimate nationalist demands from other groups (Cornell 2002, Toft 2003). In keeping with the public choice school, central governments also value concentrating decision-making power into their own hands. An unrestrained public Leviathan will then try to maintain the territorial integrity of the polity while centralising spending as much as possible. However, the threat (or cost) of secessionist conflict can become so large that central governments will be willing to

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<sup>5</sup>Wimmer, Cederman & Min (2009) calculate that 53% of ethnic conflicts worldwide since the second world war were secessionist

<sup>6</sup>Perez-Sebastian & Raveh (2014) also suggest that separation can be costly as smaller geographical areas are vulnerable to shocks. Perhaps contrary to common wisdom, their model suggests that resource-rich regions may find it beneficial to remain in a larger union in order to mitigate the costs of price volatility.

decentralise/grant autonomy status to minorities to prevent or stop the conflict. Flamand (2015) theoretically shows that under a range of parameters, decentralisation can deter secessionist conflict and that the level of decentralisation actually implemented by the central government is related to the chance that secessionist conflicts succeed.

### **2.3 Shared rule and conflict**

The arguments I have just presented pertain to the self-rule features of decentralisation. Self-rule refers to the degree of autonomy from the centre that regional governments enjoy in fiscal matters and the design of policy. Elazar (1987) and Rodden (2004), among others, have stressed that decentralisation can also be characterised by the extent of shared-rule enjoyed by subunits. Shared-rule refers to the extent to which regional governments have a say in the making of national-level legislation and policy. The Regional Autonomy Index (RAI) that will be used in the empirical section documents the extent of shared-rule enjoyed by regional governments, and Brown (2009) found that shared-rule features of decentralisation explain patterns of ethnopolitical protest.

Conceptually, the role of shared-rule in managing ethnic conflict is very distinct from that of self-rule. Instead of alleviating the risk of violence by empowering regional governments with policy and fiscal authority (which is the avenue of self-rule), shared rule operates by giving regional government power over the *national* policy-making process. If regional governments have the capacity to block harmful policies from the centre, then political exclusion from the centre is less likely to translate into secessionist conflict. Posen (1993) contends that in multi-ethnic countries, each ethnic group sees the others as potential threats to its security. In situations where an overarching authority is weak or absent, or when the balance of forces between groups is unclear, every groups fear that it will be attacked and it can be rational to strike first. This is the “ethnic security dilemma”. Ethnic minorities facing a weak or a predatory state are in acute security

dilemma, which may trigger secessionist conflict. Shared-rule, by giving, say, veto power to autonomous regional governments, is a potential solution to the security dilemma. More generally, shared-rule is at the heart of the idea of ethnofederalism as a peace-preserving mechanisms as it is meant to both protect regional minorities from security threats and encourage decentralised subunits to contribute to national policy-making and build a sense of overarching national identity (Horowitz 1985, Hale 2004, Brown 2010).

## 2.4 Decentralisation and regional autonomy

So far I have mentioned both decentralisation and regional autonomy and used the terms almost interchangeably. Although decentralisation and autonomy tend to go hand in hand, some regional governments enjoy wide authority on say, policy and taxes, but do not have special autonomy status (e.g. the States in the USA or the cantons in Switzerland). Conversely, some regional governments have a special status but enjoy relatively limited degree of control (e.g. Tobago in Trinidad and Tobago and the Region Autonoma del Sur and Region Autonoma del Norte in Nicaragua).

In addition, regional autonomy implies the notion of asymmetry. By definition, autonomous regions have a special status with the centre which sets them apart from other regions in a country. Decentralisation need not be uniformly implemented and the authority of some regional governments may be higher than others (even within the same tier of regional government) but the degree of asymmetry is clearly lower when one refers to decentralisation than to autonomy.

It is clear that increasing the authority of *all* regional governments (decentralisation) need not have the same effect on conflict than increasing the autonomy of *one* particular regional government (regional autonomy). The argument of Cornell (2002) that regional autonomy fails to contain ethnic violence is applicable to the concept of regional autonomy (whose implementation is asymmetric) but not to the concept of decentralisation (whose

implementation within a given tier of regional government is symmetric). In the empirical section, I will therefore estimate the effect on conflict of both decentralisation and regional autonomy, as well as the interaction between the two.

## **2.5 Summary and research hypotheses**

The conceptual discussion can be summarised through the following five testable hypotheses. First, I expect decentralisation to be related to the potential of secessionist conflict (and to the likelihood of such conflict to succeed). This will have important implications for the empirical strategy as I will need to account for the fact that decentralisation and conflict are simultaneously determined. Second, I expect territorially concentrated, locally dominant ethnic groups to be more often involved in conflict. Third, I expect these groups to enjoy wider autonomy than other groups as central governments will resort to decentralisation/autonomy to appease secessionist tendencies. Fourth, the relationship between regional autonomy, self-rule and shared-rule and civil war is not clear from the summary of the literature. Arguments for both a negative or positive relationship have been developed above and the purpose of the empirical section will be to provide evidence on which are consistent with the data. Fifth, provided that decentralisation/autonomy dampens conflict, I expect that this impact is stronger for groups that are locally dominant than for others.

## **3 Data**

To explore whether decentralisation prevent or mitigate ethnic conflict, past quantitative studies have used two strategies. The first one is to treat ethnic groups as the unit of analysis and to estimate how decentralisation or federalism measured at the country-level influences conflict (Cohen 1997, Saideman, Lanoue, Campenni & Stanton 2002, Tranchant

2008). Historically, the most comprehensive source of information on ethnic groups was the “Minorities At Risk” database (Minorities at Risk Project 2009). In its latest version, this dataset covers 284 ethnic groups worldwide and annually between 1985 and 2006. The main problem associated with the use of this dataset is that it selects groups on the basis on past violence and/or discriminations. As argued by Hug (2013), this casts doubts on the external and internal validity of studies of conflict based on MAR data.

The second strategy is to take countries as the level of analysis and pool information from all ethnic groups in a country together (Bakke & Wibbels 2006, Brancati 2006, Christin & Hug 2012). This circumvents the sample selection issue but it also obscures vital within-country heterogeneity in terms of conflict. For instance, the protracted conflict in Aceh caused Indonesia to be coded as in civil war in 1989 and 1990 and between 1999 and 2005, yet Aceh only represents about 2% of the country population. In addition, the process of aggregation obscures the mechanisms at work as the analysis is not directly informative of actors’ behaviours.

Papers based on both strategies ignore that decentralisation is not uniformly implemented within countries. Datasets of decentralisation or federalism commonly used in the literature only characterise countries as a whole. Recently Cederman et al. (2015) improved on the state of the art by providing information on territorial autonomy enjoyed by every groups listed in the Ethno-Power Relations dataset (EPR). The EPR dataset aims to cover all politically relevant ethnic groups in the world to avoid sample selection bias. Thus, by merging information on territorial autonomy with the EPR dataset they are able to provide a group-level analysis of territorial autonomy and conflict that does not suffer from issues of selection selection bias.

In this paper I intend to add to the group-level analysis of conflict by merging information from the EPR dataset with information from the Regional Authority Index dataset (RAI). The RAI dataset provides a wide array of information on decentralisa-

tion between 1950 and 2010 for every regional governments in 81 countries. The RAI dataset provides a richer and more nuanced picture of decentralisation than the territorial autonomy variable proposed by Cederman et al. (2015). In particular, it allows me to distinguish between regional autonomy, self-rule and shared-rule as well as between regional governments' authority on policy, representation and taxation.<sup>7</sup> In the next section I will give more information on the EPR and RAI datasets and on the variables I will use in the analysis.

### 3.1 Information on ethnic groups and civil war

The Ethno-Power Relations (EPR) database compiled by Vogt, Bormann, Rügger, Cederman, Hunziker & Girardin (2015) circumvents issues of sample selection bias by collecting data on *all* politically relevant ethnic groups in the world - irrespective of whether these groups have a history of violence and/or discriminations. The latest version of the dataset (the EPR Core Dataset 2014) covers 856 groups and provides yearly information between 1946 and 2013 on groups' demography, spatial characteristics, or access to power. Moreover, the EPR dataset matches each ethnic group to the UCDP Actor Dataset (Uppsala Conflict Data Program 2014) and to the Uppsala/PRIO Armed Conflict Database (ACD) (Gleditsch, Wallensteen, Eriksson, Sollenberg & Strand 2002) which allows me to know whether rebel groups linked to a given ethnic group in the EPR dataset, through ethnic claim or ethnic recruitment, are involved in armed conflict. The EPR has been used in numerous studies since its publication.

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<sup>7</sup>This dataset has seldom be used in conflict studies, probably due its initial modest coverage of 42 - mainly OECD - countries. An exception is Brown (2009). In recent years the dataset has expanded its geographical focus.

## 3.2 Information on decentralisation and regional autonomy

Decentralisation data for countries outside of the OECD are patchy. Most datasets are only available for a limited number of countries and/or points of time; as such they do not allow the use of panel data methods. The IMF provides decentralisation data (through the Government Financial Statistics) on an annual basis between 1972 and 2001 but it is available only for 40-50 countries each year. The main limitation of the GFS data is that they do not distinguish between genuine and apparent decentralisation. Countries in which an important share of state expenditures are managed by local governments seem to be very decentralised even if the autonomy of local governments is low (through, e.g. the use of conditional grants). Although the data provide some information on the extent of “vertical imbalance”, it is not obvious how best to combine the information. Furthermore, collection of these data have been discontinued after 2001.

Instead I use the Regional Autonomy Index (RAI) database compiled by Hooghe, Marks, Schakel, Osterkatz, Niedzwiecki & Shair-Rosenfield (2016). The dataset covers 81 countries in all regions of the world except Sub-Saharan Africa and South Asia between 1950 and 2010. Apart from its wide temporal and geographic coverage, the RAI dataset has two useful features for this analysis. First, it uses regional governments as the unit of data collection.<sup>8</sup> RAI reviews up to five tiers of regional governments in each country<sup>9</sup>. This approach accommodates the fact that decentralisation levels often vary within countries. Insofar as ethnic groups are territorially concentrated RAI can be used to precisely document the level of decentralisation they enjoy through regional and local governments.

Second, the RAI dataset provides an array of variables describing the degree of autonomy, self-rule and shared-rule of regional governments. This is an improvement over data

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<sup>8</sup>Country scores are available, but they are a weighted average of regional governments scores.

<sup>9</sup>Regional governments with less than 150,000 people on average are not included.

sources that reduce decentralisation to a single number. Regional autonomy is described by a binary variable which takes the value 1 if the region is “exempt from the country-wide constitutional framework and receives special treatment” (Hooghe et al. 2016). Self-rule is measured as the sum of five indicators: institutional depth, policy scope, fiscal autonomy, borrowing autonomy and representation. Institutional depth (which ranges between 0 and 3) measures the degree of institutional autonomy of regional government from the centre. Policy scope (0-4) measures the authority of regional governments in terms of policy-making. Fiscal autonomy (0-4) measures the authority of regional governments in terms of revenue (i.e. tax rates and tax bases). Borrowing autonomy measures the extent to which regional governments (0-3) can borrow. Representation (0-4) measures the capacity of regional actors to select regional office holders in the executive and legislative assemblies.

As discussed above, arguments in favour of decentralisation tend to revolve around the mechanisms of preference-matching (captured by self-rule) and accountability or political decentralisation (captured by representation). The distinction between authority in policy matters (i.e. institutional depth and policy scope) and authority in taxation matters (fiscal and borrowing autonomy) can also be made in the data. Arguments revolving around the idea of ethnic security dilemma can be tested by looking at the degree of shared-rule. Shared-rule is measured as the sum of five indicators. Law making (0-2) measures the capacity of regions to influence law making process. Executive control (0-2) measures to which extent central and regional governments share authority. Fiscal control (0-2) and borrowing control (0-2) measures whether regions have authority over fiscal and borrowing policies of the centre, respectively. Constitutional reform (0-3) measures the degree to which the assent of regional actors is needed to make constitutional changes.

### 3.3 Matching information on ethnic groups with information on decentralisation

For each spatially concentrated ethnic group in countries covered by both EPR and RAI, I identified the regional tiers of government corresponding to the area it lives in.<sup>10</sup> For instance, for the Basque group in Spain, I use the decentralisation scores associated with the *provincias* which were the unique tier of regional government in Spain until 1978. From 1979 to 2010, I assign to the Basques the decentralisation score associated with the autonomous region of *Euskadi/País Vasco*, where a majority of the Basque people live. RAI documents more than one regional tier. Thus, from 1979 onwards, I also assign to the Basque group the decentralisation score associated with the second tier of regional government, for which there are three in the autonomous Basque country region: *Araba/Álava*, *Gipuzkoa/Guipúzcoa* and *Bizkaia/Vizcaya*<sup>11</sup>.

For each ethnic group in the dataset, I also identify whether it is a local majority within the boundaries of each relevant regional government. The arguments in favour of decentralisation hinge on the ability of ethnic groups to control or be heard from regional governments. Groups that are spatially concentrated but which are small even at the regional level might not benefit from decentralisation as much (Tranchant 2008). I have used several general and country-specific sources (censuses, academic works, online encyclopaedia, the “ethnologue” etc) to find out whether each group was a local majority (or the largest group) within the regional governments identified by RAI, for every years. Overall a group is considered to be a local majority if it is a majority within the boundaries of at least one tier of regional government.

To obtain the overall decentralization score, I follow the instructions of Hooghe et al.

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<sup>10</sup>For groups that are territorially concentrated but have a minority of their members living elsewhere, I used the region in which the majority of the group is.

<sup>11</sup>As each of these divisions have the same decentralisation score, it did not matter which was chosen nor did I need to create a composite index. Cases where several second or third tiers of regional government exist are actually virtually non-existent in the dataset.

(2016) and add up decentralisation indicators across all tiers of governments.<sup>12</sup> This means that, *ceteris paribus*, the more tiers of regional governments there are, the higher the decentralisation score. To account for this, I will control for the number of tiers of regional governments in all regressions. Looking at the effect of the number of tiers of governments is also interesting in its own right as one argument in favour of decentralisation is that it spreads power over multiple centres, thus reducing the intensity of contest for the control of each of these. In contrast, one drawback of decentralisation is the potential lack of coordination between centres of decision-making, which arguably grows worse as the number of tiers of governments increase.

In the analysis I will use the following variables: *self-rule* and *shared-rule*, which sums the score for self-rule and shared rule, respectively, across all tiers of regional government. I will also look at *policy*, which sums the score for institutional depth and policy scope across all regional governments; and *fiscal autonomy*, which sums the score for fiscal autonomy and borrowing autonomy across all tiers of regional governments. I will also look at *representation* which adds up representation scores for each tier of regional government and can be used to test whether decentralisation operates through the accountability mechanism. Finally I use the variable *autonomy* which takes the value 1 if at least one tier of regional government has an autonomous status, according to RAI.

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<sup>12</sup>Adding up decentralisation scores across tiers ensures that international comparisons are valid. For instance, Russia introduced in 2000 a new first tier of regional government: the *Federalnyye okruga*. Those are mostly statistical entities with very little power (they score 1 for self-rule and 0 for shared-rule). The erstwhile first tier of regional governments, i.e. the *Republics* and the *Federal subjects*, still exist and enjoy quite substantial autonomy (the score for self-rule is about 14, that for shared-rule is about 8, with variation across republics and over the years) but are now a second tier of regional government. If I were to look at the first tier of governments in isolation, I would mistakenly conclude that decentralisation drastically decreased in 2000 in Russia, where in fact it remained largely constant.

### 3.4 External validity

Although RAI has a wider geographic coverage than other datasets on decentralisation, it unfortunately still leaves out Sub-Saharan Africa and South Asia. As a result, the sample used in the analysis includes 289 ethnic groups out of the 856 that are listed in the full EPR dataset. Groups in the analysis sample are less affected by civil war than all groups in the EPR dataset: out of 45,223 group-years in total in the full dataset, 1,444 group-years are classified as in civil war (corresponding to an incidence rate of conflict of 3.1%). In the analysis sample I use for the estimations, out of the total of 11,211 group-years, 204 are classified as in civil war (corresponding to an incidence rate of 1.9%). Although the absolute numbers of group-years in conflict in the sub-sample are still large enough to justify an econometric analysis, it is important to characterise how the analysis sample differs from the full sample in order to keep an eye on external validity.

Table 1 provides descriptive statistics on ethnic groups' status for the full EPR sample and for the analysis sample used in the paper. Columns (1) and (2) show that ethnic groups in the analysis sample are much more likely to have a monopoly or dominant access to power. They are also less likely to be senior or junior partners in the central government and are a lot bigger. The proportion of self-excluded, powerless and discriminated groups, however, is roughly comparable across the two samples.

The subsequent analysis will exclude monopoly and dominant groups (which are not concerned by decentralisation as a conflict-mitigation tool). The comparison of sample characteristics on excluded groups only (columns 3-4) show that most differences seen in columns (1-2) dramatically decrease.<sup>13</sup> Importantly, the proportion of self-excluded, powerless or discriminated groups (which together form most of the groups in conflict) and the relative size of groups are very similar across the two samples.

The incidence of civil war is about 60% lower in the analysis sample than in the

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<sup>13</sup>However, they remain statistically significant due to the very large sample size.

full EPR sample (2.8% against 4.4% based on excluded groups). EPR distinguishes between civil wars fought for territorial reasons and civil wars fought for the control of the government. In the analysis sample, the proportion of the former is much higher than in the full sample. As a result, looking at the incidence of territorial civil wars alone, the difference between the two samples becomes smaller (2.2% against 2.9%).

The analysis sample is more distinct from the full sample in terms of country characteristics. Table 2 shows that countries in the analysis sample are significantly larger, more populous, more democratic and more wealthy in countries than countries in the full sample. They are also clearly less diverse, with almost one less politically relevant group on average than in countries of the full sample. The most striking difference is on democracy. Whereas countries in the analysis sample are much more democratic than autocratic (average polity 2 score of 5.4), countries in the full sample have more autocratic features than democratic ones (average polity 2 score of -1.9). Given these differences, it is plausible that any conflict-mitigating effect of decentralisation found in the analysis sample may not translate for groups out-of-sample, which are located in countries where conditions are less favourable. Indeed, whether decentralisation could help achieving in peace in poor, autocratic and fragmented countries is debatable given the findings of the empirical literature reviewed in sections 1 and 2.

### **3.5 Summary statistics**

Summary statistics are displayed in table 3. The evolution of civil wars and territorial civil wars in the analysis sample over the period 1950-2010 is depicted in figure 1. The incidence rate of civil wars strongly increases during the 1960s and until the latter part of the 1970s. From then on, the incidence rate of civil wars continues to increase but at a lower rate and incidence reaches a peak in 1984-1987 (5.1%). The rate of incidence then quickly stabilises at about half its peak level (2%) in the early to mid-1990s. In

the period following 1997, the incidence rate of civil wars between 1.5% and 2%. The pattern is similar for territorial civil wars albeit with slightly lower rates.

The evolution of decentralisation is depicted in figures 2, 3 and 4. Figure 2 displays the evolution of the average number of tiers of regional governments. It shows that the trend has been upwards for almost the entire period of the study, starting with an average number of 1.2 tiers in 1950 and reaching a peak of 1.45 in 2004. Between 2004 and 2010, the average slightly decreased to 1.42. Figure 3 displays the evolution of *self-rule* which is the aggregate score for self-rule across all regional governments in a country. The figure also displays the evolution of the five indicators making up the self-rule score (i.e. institutional depth, policy scope, fiscal autonomy, borrowing autonomy and representation). Whereas *self-rule* score was mostly stable between 1950 and 1970 (between 7 and 8), it trended upwards between 1982 and 2004 where it eventually reached a score of 11.1. Since 2004, *self-rule* has slightly decreased to 10.3 in 2010. All individual components of self-rule have experienced a rise over the period that mirrors that of the index as a whole. One exception is *representation* which started at a high level (more than 3) in the 1950s, went down until the early 1980s and then rose until 2010 to finish at 3.3 in 2010. Figure 4 shows that the score for *shared-rule* slightly decreased between 1950 and 1966 (where it went from 2 to 1.7). Shared-rule then increased steadily and reached a maximum value of 3.3 in 2004. Between 2004 and 2010, *shared-rule* slightly decreased to 3.1 in 2010. *Law making* and *Constitutional reform* followed a similar evolution over the period. These two components put together also represent most of the shared-rule aggregate score. *Fiscal control* and *Executive control* have steadily risen from the early 1980s on, albeit from a slow base. *Borrowing control* remained mostly flat, and close to 0, for the entire period.

When one looks at the co-evolution of decentralisation and civil wars, the relationship is not obvious. Until the 1980s, it looks as if the increase of decentralisation matches

the rise of civil wars. After this point, however, civil wars incidence goes down while decentralisation scores keep getting higher.

Coming back to the five hypotheses of section 2, I expected locally dominant groups to be more involved in civil wars and to be more likely to live in autonomous regions than others. Indeed, the incidence rate of civil wars for local majorities, which stands as 2.9%, is significantly higher than the corresponding rate for local minorities (0.8%). Likewise 14.1% of local majorities live in an autonomous region against 5.8% of local minorities. These stark differences justify looking at whether decentralisation and regional autonomy exert similar effects on both types of groups. They also underscore that regional autonomy and decentralisation are used by central governments strategically, based on the potential for groups to secede or rebel. Bivariate associations between decentralisation and civil war are displayed graphically in figures 5-9. They show that incidence of civil war seems strongly related to all measures of decentralisation, albeit in a non-linear way. There always is a threshold above which any increase in decentralisation is associated with more risk of civil war. I will then include in the regressions some specifications where decentralisation and conflict are allowed to be related through a quadratic function.

Regional autonomy, however, does not appear to be related to civil war. The incidence rate of civil wars for groups with access to an autonomous region is 3.3%, which is not statistically different from that of the other groups (2.8%). This can signal a lack of association between the two variables but it is also consistent with the observation that central governments are more likely to grant autonomy status to groups with the highest potential of violence. The following section turns to multivariate regressions.

## 4 Empirical strategy

### 4.1 Decentralisation and conflict incidence

I start by estimating the effect of decentralisation on the incidence of ethnic conflict. Following Elbadawi & Sambanis (2002), I define incidence of conflict to include both onset of new conflicts and continuation of existing conflicts.<sup>14</sup> For the estimations to yield a causal impact of decentralisation on conflict, three threats to the identification must be dealt with. The first one stems from unobserved heterogeneity. Important factors determining the choice of ethnic groups to mobilise through violent means are not well measured, such as the coherence of the group, the expectations of group leaders on their chance of success through conflict or the feasibility of rebellion. Some of these can be proxied by, say, measures of group size, roughness of terrain or GDP per capita, but it is dubious that all relevant factors can be accounted for. In case they are not, they will be in the error term of the equation to be estimated, and cause a correlation between the covariates and the error term (omitted variable bias). The second threat is reverse causality. This is due to the fact that states do not decentralise at random. Panizza (1999) and Arzaghi & Henderson (2005) show that countries predicted to be confronted by separatist demands (i.e. mostly large and diverse countries) tend to be more fiscally decentralised. This indicates that states which are confronted by separatist demands strategically respond by increasing decentralisation. The third threat is due to conflict dynamics. Insofar as past conflict influences the likelihood of conflict in the future, then one must include the past levels of conflict in the estimation. Ignoring conflict dynamics is likely to cause omitted variable bias as past conflict (which would be in the error term) is correlated with contemporaneous conflict (and other covariates). Including lags of the dependent variable in the estimation is also problematic as, by construction, such

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<sup>14</sup>Elbadawi & Sambanis (2002) refers to prevalence and not to incidence but the definition of the variable of interest is the same.

variables are correlated with the error term.

I will use the difference GMM estimator, which yields consistent estimates even in the presence of all three threats. I will also allow decentralisation to exert a curvilinear impact on conflict, as suggested by figures 5-9, through the inclusion of a squared term.

## 4.2 Identification strategy

I model the prevalence of conflict as the probability of group  $i$  in country  $j$  at time  $t$  to engage in conflict ( $C_{ijt} = 1$ ) conditional on the lagged conflict status ( $C_{ijt-1}$ ), decentralisation level enjoyed by group  $i$  in the area it primarily resides in ( $D_{ij-1t}$ ), a vector of group characteristics ( $X_{ijt-1}$ ), a vector of country characteristics ( $S_{jt-1}$ ), the number of continuous years of peace ( $P_{ijt-1}$ ), a set of group-specific effects ( $\mu_{ij}$ ) and a linear time trend ( $\eta_t$ ). The regression to be estimated is:

$$C_{ijt} = \beta_1 C_{ijt-1} + \beta_2 D_{ij-1t} + \beta_3 X_{ijt-1} + \beta_4 S_{jt-1} + \beta_5 P_{ijt-1} + \mu_{ij} + \eta_t + u_{ijt} \quad (1)$$

Where  $u_{ijt}$  is an error term and  $\beta_2$  the parameter of interest. All covariates are lagged by one year to alleviate concerns of simultaneity bias.

The conflict variable  $C_{ijt}$  is a binary variable that typically calls for the use of a non-linear estimator (logit or probit). However, I choose to resort to linear estimators throughout the empirical analysis as I intend to implement an instrumental variables approach as the favourite specification, namely the difference system GMM estimator. As I alluded to above, this estimator is the only one that can credibly deal with all three threats to identification. However, this estimator is linear and corresponding non-linear models are either non-existent or difficult to implement. The downside of fitting linear models to limited dependent variable is that expectations of the dependent variable are

not constrained within the  $[0, 1]$  interval. However Hyslop (1999) shows that dynamic linear models with fixed effects produce very similar results than the corresponding non-linear models.

To deal with all three threats to identification, I use the difference GMM estimator proposed by Arellano & Bond (1991). The estimator removes the unobserved heterogeneity by first-differencing every variables in equation (1) :

$$\Delta C_{ijt} = \beta_1 \Delta C_{ijt-1} + \beta_2 \Delta D_{ijt-1} + \beta_3 \Delta X_{ijt-1} + \beta_4 \Delta S_{jt-1} + \beta_5 \Delta P_{ijt-1} + \Delta \eta_t + \Delta u_{ijt} \quad (2)$$

Considering that  $D_{ijt} - 1$  is endogenous in equation (2), Arellano & Bond (1991) show that one can use the second and higher lags of the endogenous regressor (i.e.  $D_{ijt-3}$ ,  $D_{ijt-4}$ ...) as instruments for  $\Delta D_{ijt-1}$ . These instruments are valid as long as the errors  $u_{ijt}$  are not serially correlated. In case the errors are serially correlated through an AR(2) process but not an AR(3) process, then using the third and higher lags as instruments would still be valid (Roodman 2009).

The downside of the difference GMM estimator is that it often yields relatively weak instruments. However, this is not the case here. For each decentralisation variable that will be considered later, the second to fifth lags of the level of decentralisation taken together are very strongly correlated with the subsequent changes in decentralisation. To see that, I run a series of instrumental variables regressions in a first-difference framework (IV-FD) that reproduce the difference GMM estimations.<sup>15</sup> This allows me to check the strength of the instruments. For each decentralisation variable, I find that the F statistic associated with the first stage regressions is between 20 and 50, much higher than the rule-of-thumb value of 10 (Stock, Wright & Yogo 2002). The AP chi-squared test of

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<sup>15</sup>The difference between the two is that the GMM estimator builds instruments following the procedure proposed by Holtz-Eakin, Newey & Rosen (1988) to increase sample size. See Roodman (2009) for further details.

underidentification is also emphatically rejected. The same is true for GDP per capita which I will also consider to be endogenous in equation (2).<sup>16</sup>

To increase efficiency Arellano & Bover (1995) proposes to use the difference of the endogenous regressors as an additional set of instruments (which yields the so-called system GMM estimator). However,  $\Delta D_{it-1}$  is a valid instrument only if  $Cov(\Delta D_{ijt-1} \times u_{ijt}) = 0$ . As Roodman (2009) notes, this is similar to a stationarity assumption; and this assumption is not warranted in this sample. A Hadri LM test of stationarity rejects the null hypothesis that decentralisation is stationary in many countries where civil wars happened, such as Spain, the Philippines or Russia. Although the test does not reject the null in countries that did not experience civil wars since WW2, such as the United States or France, the upshot of the stationarity tests is that the identifying assumption of the system GMM is not met in this sample.<sup>17</sup> I will then only use the difference GMM estimator.

### 4.3 Control variables

Vectors  $X_{ijt}$  and  $S_{jt}$  control for time-varying group- and country-level controls, respectively. The size of ethnic groups is often assumed to be an indicator for the group's mobilisation capacities (Wimmer, Cederman & Min 2009). I follow Christin & Hug (2012) and enter group size in a quadratic manner in the regression to account for the fact that medium-sized groups are the most likely to rebel. Small groups lack the capacity to sustain a rebellion and large groups are unlikely to be excluded and/or need to engage in large-scale violence to obtain satisfaction. I control for groups' access to power as excluded groups are more likely to be involved in conflict and be the recipient of special autonomy status. The variables of access to power provided by EPR are: *senior partner*,

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<sup>16</sup>Results on all first-stage regressions are available upon request.

<sup>17</sup>I cannot provide the result of the Hadri LR test for the entire sample as the panel dataset is not balanced; I then ran the Hadri LR test separately within countries.

*junior partner, self-excluded, powerless and discriminated.*

Decentralisation tends to be more common in democracies. To avoid conflating the effect of decentralisation with the one of democracy, I use the polity2 score provided by the Polity IV dataset (Marshall, Jaggers & Gurr 2011). The polity2 score consists of the sum of the democracy score (on a scale of 0-10) and the autocracy score (-10 for full autocracy features, 0 for complete absence of autocracy feature). The overall polity score thus ranges from -10 (pure autocracy) to +10 (pure democracy).

Panizza (1999) and Arzaghi & Henderson (2005) suggest that GDP per capita and the size and heterogeneity of countries are correlated with fiscal decentralisation. Since these factors arguably predict conflict as well, they must be controlled for. From the World Bank's World Development Indicators 2014 , I extract the GDP per capita in constant 2005 US dollars, the population size and the land area of the country (in miles). To proxy for ethnic heterogeneity, I use the number of politically relevant ethnic groups in a country according to EPR. Including population, land area and GDP per capita in the regressions causes the number of observations in the estimations to drop from about 5,000 to 4,000.

I also use the EPR dataset to control for number of years of peace and number of years of conflict, as well as for a variable taking the value 1 if the group was involved in conflict in the past (*War history*).

## **5 Baseline Results: Decentralisation and incidence of ethnic civil wars**

I start with estimating the effect of decentralisation on the incidence of civil wars for all ethnic groups that are territorially concentrated and which do not enjoy a dominant or monopoly access to power. In all tables of results that follow, I sequentially estimate the

effect of various measures of decentralisation. In column (1) the variable of interest is self-rule, in column (2) I include the squared term of self-rule, in column (3) I look at policy decentralisation, fiscal autonomy and the interaction between the two, in column (4) I look at representation, in column (5) at shared-rule and in column (6) at shared-rule and shared-rule squared.

Table 4 presents the results of the estimation of equation 2 with difference GMM (as proposed by Arellano & Bond (1991)). In these specifications, all variables are first-differenced to eliminate unobserved heterogeneity, and the change in decentralisation is then instrumented by the second to fifth lags of the levels of decentralisation.<sup>18</sup> In the absence of serial correlations of the error term, such an instrumentation is valid and addresses the reverse causality issue. I chose to use 4 lags of the decentralisation variables to ensure sufficient strength of the instruments while maintaining computation ease.<sup>19</sup>

The effect of self-rule appears to be negative and statistically significant at the 10% level. The magnitude of the effect is large (-0.0042) as an increase of one standard deviation of self-rule would lead to a reduction of the risk of civil war by 70% (-0.032). There is no evidence of a quadratic effect of self-rule (column (2)) and none of policy decentralisation, fiscal autonomy and the interaction of the two exert a statistically significant impact on the likelihood of civil wars. The coefficient associated with Representation, however, is significantly negative (-0.016) at the 5% level. The point estimate is also very large in absolute value. An increase of one standard deviation in the index of representation would reduce the risk of civil war by 0.041 whereas the average risk of civil war in the sample is 0.045. Shared-rule is not a statistically significant predictor of conflict.

The number of regional governments is positively associated with risk of civil war, and

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<sup>18</sup>All independent variables enter the regressions with a lag. The second to fifth lag of the lag of the endogenous variable thus correspond to the third to sixth lags of the contemporary endogenous variable.

<sup>19</sup>I also consider the number of regional governments and the log of GDP per capita as endogenous in the difference GMM estimations. The results are robust to varying the variables that are considered endogenous; results are available upon request.

the effect is significant at the 5% level in two specifications and at the 10% level in one specification. This suggests that increasing the number of layers of governments may fuel conflict through the ensuing loss of policy coordination.

Civil wars in the past year is a strong predictor of contemporary conflict. Groups that are junior partner are less likely to engage in conflict than groups that are senior partners. Other political statuses are unrelated to conflict. Contrary to expectations, the results on the standalone and squared coefficient associated with relative size of groups suggest that the risk of civil wars is lowest for mid-sized groups. However none of these terms reach usual levels of statistical significance. War history, log GDP per capita, democracy, population and years of peace are all unrelated to civil war. Ethnic fragmentation, however, is negatively associated with conflict (at the 10% level). Given that the regressions are dynamic, this shows that a rise in the number of politically relevant ethnic groups lowers the risk for each of these groups to engage in conflict.

## **5.1 Decentralisation, regional autonomy and incidence of ethnic civil wars**

So far I have only looked at decentralisation. I now introduce regional autonomy. In all tables that follow, column (1) estimates the unconditional effect of regional autonomy and column (2) estimates the effect of regional autonomy, self-rule and the interaction between the two. Columns (3-6) replicate the analysis of column (2) with policy, fiscal autonomy, representation and shared-rule, respectively.

With difference GMM, the effect of autonomy is consistently negative and statistically significant. In columns (1), (3-4) and (6) of table 5 the coefficient associated with the standalone effect of autonomy ranges between -0.14 and -0.18 and is significant at the 1% or 5% levels. In columns (2) and (5) of table 5 the standalone coefficient of autonomy is indistinguishable from zero but autonomy still exerts a significant conflict-mitigating

impact through its interaction with self-rule and representation, respectively. The interaction term between autonomy and self-rule is estimated at -0.019 (significant at the 10% level) and that between autonomy and representation is very large in absolute value (-0.057) and is significant at the 1% level. This means that once we account for unobserved heterogeneity and reverse causality, autonomy status appear to be a very strong factor of ethnic peace. Quite remarkably, the results suggest that autonomous regions with no authority on policy, fiscal autonomy or shared-rule still deter ethnic groups to participate in conflict. However, it is the combination of autonomy and authority on self-rule, policy, fiscal autonomy and representation which exerts the most potent impact on preventing or stopping civil wars.

The standalone coefficients of decentralisation in table 5 yield the effect of decentralisation for groups which do not have access to an autonomous region. In columns (2), (3) and (4), which correspond to self-rule, policy and fiscal autonomy, respectively, this standalone coefficient is positive and statistically significant. This means that decentralisation without autonomy is in fact fueling conflict. Representation and shared-rule, however, do not fuel civil wars even when groups do not have access to an autonomous region.

This strong impact of autonomy and decentralisation is mostly apparent when both variables are instrumented with a difference GMM estimator (pooled OLS or group fixed effects estimations do not find a significant impact of autonomy). This echoes the findings of Cederman et al. (2015) who also found the peace-promoting effect of autonomy to only appear once they use an instrumental variables approach. This makes sense if central governments are strategically using autonomy and decentralisation to curb ethnic conflict. As long as central governments dislike giving away power through decentralisation and/or granting autonomy status, we would expect to observe decentralisation and autonomy status only when the threat of or damage from conflict is high. This creates a positive relationship between decentralisation and autonomy on the one hand, and ethnic conflict

on the other hand, which obscures any conflict-mitigating impact decentralisation and autonomy might exert. By instrumenting decentralisation and conflict, one is able to reveal the causal (and negative) impact of these two variables on conflict.

## 6 Robustness tests

I am testing the robustness of the results in a number of ways. Firstly, I am checking that the results do not depend on the list of covariates included. Whereas group-level controls are standard, the same is not true for country-level controls. Beyond population, GDP per capita and democracy, one could consider including further country characteristics such as size, elevation, presence of mountains and forest cover, institutions, oil reserves and so forth. The difference GMM estimator already controls for all time-invariant characteristics but not those that vary over time. Besides there exist other sources of measurement for population, democracy and GDP per capita than those I used so far. Fortunately, the results of this paper do not crucially depend on which covariates are included and how they are measured.<sup>20</sup> To avoid showing the results of multiple specifications, I will simply display results of regressions that do not include any country-level controls *altogether*, in table 8. These are quite close to the baseline results displayed in table 7. Autonomy is still found to significantly reduce the incidence of ethnic war, independently of decentralisation, in column (1) and (5). Autonomy combined with policy and with representation are also still found to exert a negative and significant effect on ethnic war (albeit the point estimate of the latter is reduced in absolute value). Standalone decentralisation measures are never significant predictors of ethnic civil war. Overall this exercise establishes that the main result regarding autonomy does not hinge on the use of a particular empirical specification.

In a second stage, I am considering a change in the dependent variable. The dependent

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<sup>20</sup>All results are available upon request.

variable used so far takes the value 1 if a given ethnic group takes part in any civil war. Yet EPR further distinguishes between territorial and government civil wars. The former category, which corresponds to wars fought on account of territorial incompatibility, is most closely associated with secessionist wars involving ethnic minorities. Territorial civil wars are also much more frequent than government ones and make up for 78% of civil wars in the estimation sample. It is then interesting to check that the previous results of table 5 hold when the dependent variable of civil wars is restricted to territorial conflicts. Table 9 displays the results of the estimation of equation 2 with such a dependent variable. The results are mostly the same and autonomy continues to exert a statistically significant and meaningful negative impact on risks of ethnic wars. Still, the point estimate associated with autonomy is slightly lower in absolute value in columns (1) and (6) and much lower in column (4) where the coefficient goes to -0.075 from a value of -0.13 in table 5). The effect of autonomy becomes indistinguishable from zero in column (3) but is now significantly negative in column (5). The positive effect associated with the standalone coefficient of self-rule in column (2) ceases to be significantly positive and the negative impact associated with the interaction between autonomy and self-rule continues to be negative and weakly statistically significant. The direct and indirect effects of decentralisation measured by policy remain mostly unchanged. Fiscal autonomy is no longer fuelling conflict when groups have no autonomy status and the interaction between representation and autonomy is still statistically negative even though the impact becomes smaller in absolute value (-0.022 against -0.057).

For the third robustness test I consider an alternative variable of autonomy, stemming from EPR and Cederman et al. (2015). Whereas RAI defines regional autonomy on the basis of a special status between regional governments and the center, EPR and Cederman et al. (2015) define autonomy on the basis of territorial power-sharing between regional and central governments. It is possible to see the EPR measure of autonomy, thus, as a

combination of the autonomy and decentralisation variables from RAI. Table 10 display the results of the estimation of equation 2 with the variable of regional autonomy from EPR. In column (1) I restrict the sample to the corresponding one used in table 5 as the variable of regional autonomy from EPR is available for a much larger sample than that from RAI.<sup>21</sup> The main result regarding the impact of regional autonomy holds. In columns (1), (5) and (6) the effect of regional autonomy is negative and statistically significant, although the point estimate and precision of the estimated coefficients are smaller than in baseline results. The finding in the last two columns suggest that the effect of autonomy operates irrespective of the level of decentralisation. None of the interactions between autonomy and decentralisation are significantly different from zero. Both of these results are consistent with the interpretation of the variable of autonomy from EPR as a combination of the pure effects of autonomy (special relationship) and substantial territorial power-sharing (decentralisation).

Finally, I check whether the results hold when I restrict the sample to local majorities. I consider ethnic groups that are demographically dominant within the boundaries of at least one regional government to be local majorities. While such local majorities represent 50% of all the groups in the sample, they represent 80% of all the groups in conflict. Groups that are local majorities can more credibly seek secession and mount viable rebellions so that such concentration of ethnic conflicts within these groups is not surprising (Fearon & Laitin 1999, Toft 2003). Local majorities are also more likely to benefit from decentralisation as they can use their dominant local weight to send representatives to the regional government. The regional median voter is also a member of the given ethnic group. Given that local majorities have both high potential for violence and can reap many benefits from decentralisation, it is interesting to explore what the

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<sup>21</sup>Remarkably, when I do not restrict the sample, the point estimate of autonomy is the same (-0.17) irrespective of whether it is measured by RAI or EPR. When the latter is used, the sample size rises to 14,556 from less than 4,000 when the former is used.

effect of decentralisation is on these groups' propensity to engage in civil wars.

The results are displayed in table 11. Results of table 11 are very similar to those of table 5 which presented the findings of the difference GMM estimations on all groups. Both tables show that when the endogenous variables (i.e. regional autonomy and decentralisation) are instrumented, they exert a significant conflict-mitigating effect. The lack of meaningful differences between tables 11 and 5 suggest that the benefits of regional autonomy and decentralisation are not confined to locally dominant ethnic groups.<sup>22</sup>

Finally, the results are robust to the inclusion of higher lags of the variables of interest. In the baseline specification, I have lagged by one year all right-hand-side variables to help alleviating the issue of reverse causality. It is, however, very possible that the dynamic effect of decentralisation and autonomy is not well captured by a simple one-period lag. When I include higher lags of autonomy and decentralisation, I find that the first and second lags are the only ones to ever exert a statistically significant impact on subsequent civil wars. The results do not change as the result of the introduction of higher lags. In fact, the sum of the coefficients associated with the first and second lag is very close to the coefficient associated with the single first lag of the baseline specifications. Changing which variables are considered endogenous (which can be instrumented by second order lag and higher) and which are considered predetermined (which can be instrumented by first order lag and higher) also do not change the findings.<sup>23</sup>

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<sup>22</sup>One might be worried by the low p-values of the AR(2) test in table 11. These are just above 10% and do not give much confidence that the assumption of absence of serial correlation is met. However, when I use the third to sixth lag of the endogenous variables (instead of the second to fifth lags), the results are mostly unchanged and the p-value associated with the AR(3) test rise to about 0.4, showing that the instrumentation approach is valid. The results are available upon request.

<sup>23</sup>All these results are not shown to save space but are available upon request.

## 7 Extension: onset and continuation of civil wars

Decentralisation and autonomy need not exert the same impact on conflict if implemented during peace years or in the middle of a conflict. Cederman et al. (2015) rightly point out that central governments which try to manage existing conflict by decentralisation and/or autonomy may be perceived as weak by the rebels. This would encourage them to continue or even increase their mobilisation in the conflict to either obtain secession or simply more decentralisation/autonomy as part of a strategic game with the state.

To allow for decentralisation/autonomy to have a distinct effect depending on the timing of implementation I will now estimate separate models for *onset* and *continuation* of civil wars. The model for onset is given by:

$$C_{ijt}|(C_{ijt-1} = 0) = \beta_2 D_{ijt-1} + \beta_3 X_{ijt-1} + \beta_4 S_{jt-1} + \beta_5 P_{ijt-1} + \mu_{ij} + \eta_t + u_{ijt} \quad (3)$$

This is the same model as described by equation 1 except that the dependent variable is now only observed if the ethnic group  $i$  was *not* in conflict in the preceding year. Since equation 3 conditions on past peace status, the lag of the dependent variable drops from the list of covariates (as it is always equal to 0). The parameter of interest remains  $\beta_2$  but it should now be interpreted as the effect of decentralisation/autonomy on the likelihood of an onset of civil war involving group  $i$ .

The model for continuation is given by:

$$C_{ijt}|(C_{ijt-1} = 1) = \beta_2 D_{ijt-1} + \beta_3 X_{ijt-1} + \beta_4 S_{jt-1} + \beta_5 W_{ijt-1} + \mu_{ij} + \eta_t + u_{ijt} \quad (4)$$

This equation is only estimated if group  $i$  was already in conflict in the preceding year. The lagged dependent variable also drops from the equation and  $\beta_5$  now measures

the effect of conflict duration,  $W$ , on the likelihood that the conflict continues. The parameter of interest  $\beta_2$  should be interpreted as the effect of decentralisation/autonomy on the likelihood that civil war that involved group  $i$  in the preceding year continues in the present year.

It is a common strategy in studies of conflict to separate onset and continuation (or duration) to account for the effect of conflict dynamics (Elbadawi & Sambanis 2002, de Ree & Nillesen 2009). It is also close in spirit to the approach used by Cederman et al. (2015) which contrasted the effect of autonomy on groups that have never been involved in civil wars and groups that have at some point been involved in a civil war.

In the sample used in previous estimations, about 179 group-year were coded as in civil war. These are broken down into 20 onsets of civil wars and 159 instances of continuing conflict. Onsets are thus a rare event but conditioning on past peace status preserves most of the sample size. Conversely, to study conflict continuation, I restrict the sample to groups which were in conflict in the preceding year. The number of observations then drops to 179 (corresponding to 12 groups observed during 15 years of conflict on average). Out of these 179 observations, conflict is still present at time  $t$  in 159 cases, meaning that cessation of conflict happens at a rate of 11.2%. The analysis on continuation needs to be taken with caution given the small number of groups involved.

## **7.1 Decentralisation, regional autonomy and onset of civil wars**

Table 6 present results of the estimations of the onset equation 3 with difference GMM. These suggest that autonomy on its own is not effective in preventing civil wars. On the contrary, granting special autonomy status without giving actual authority to the regional governments increases the risk of onset of civil wars. Likewise, decentralisation without autonomy is unable to prevent civil wars (self-rule and fiscal autonomy without

autonomous status is even found to increase the risk of onset, by 0.009 and 0.036 respectively). However, decentralisation combined with autonomy leads to significantly lower risk of civil wars. This is true when decentralisation is measured by self-rule, policy, fiscal autonomy and representation. Both the standalone coefficient associated with shared-rule and its interaction with autonomy are indistinguishable from zero.

Since the standalone effect of autonomy is positive and statistically significant in columns (3) and (5) and the interactive terms between autonomy and decentralisation are negative and significant in the same specifications, the overall impact of autonomy is ambiguous. The full marginal effect of autonomy becomes negative when the index of policy decentralisation reaches the value of 4.7 and when the index of representation reaches a value of 3.4. The median value of both indices is 4 so it appears that regional autonomy in conjunction with above-median decentralisation is effective at preserving peace.

In sum, estimations of the onset of civil wars yield similar conclusions than those of the incidence of civil wars, namely that a combination of decentralisation and autonomy is an effective peace-promoting strategy but that both of them in isolation tend to be either ineffective or counter-productive.

## **7.2 Decentralisation, regional autonomy and the continuation of civil wars**

Table 7 present results of the estimations of the continuation equation 4 with difference GMM. Unlike for onset, autonomy is negatively and significantly associated with lower risk that existing conflict continues. Decentralisation is mostly ineffective in putting an end to civil wars. The only exception is the extent of representation which has a strongly positive and statistically significant (at the 5% level) impact on the likelihood that the conflict stops. There is no evidence that the effect of the interactions between

decentralisation and autonomy are statistically different from zero. Given the low number of observations, the results on continuation of conflict should be taken with caution and suggestive at best that granting autonomy status - or increasing representation - are the most effective strategy to end the participation of ethnic groups in civil wars while increasing self-rule and shared-rule of regional governments does not seem to produce any effect.

Beyond looking at onset and continuation of civil wars, I have also investigated whether groups which do not enjoy autonomy while at least one other groups within the country does are more likely to participate in wars. This would be consistent with arguments by Cornell (2002) and Toft (2003) that autonomy granting sets precedent and fuels a wave of separatist demands. I do not find evidence for this phenomenon. The same applies when I look at groups enjoying less degree of self-rule than others in a country.<sup>24</sup>

## 8 Discussion and concluding remarks

In this paper, I have empirically revisited the links between decentralisation and ethnic conflict. The paper adds to our understanding of the topic by addressing three limitations of the current literature: i) it unpacks how decentralisation can mitigate conflict by considering various mechanisms of self-rule, shared-rule and regional autonomy as opposed to a single number of decentralisation; ii) it matches information on all politically relevant ethnic groups (from the EPR dataset) with the decentralisation and autonomy they experience through the regional governments that rule their areas through the Regional Autonomy Index dataset; and iii) it deals with unobserved heterogeneity and reverse causality biases by using the difference GMM estimator (and establishing its validity for the question at hand).

The core message of the empirical investigation is that regional autonomy is a powerful

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<sup>24</sup>Results available upon request.

institutional device to reduce risks of ethnic conflict. It lowers both the risk of onset of new civil wars and that of continuation of existing civil wars. The effect of autonomy is maximised when regional governments do enjoy substantial powers of self-rule (especially to prevent onsets of new conflict) and political decentralisation is strong (ensuring a fair representation of minorities in regional governments). Political decentralisation on its own is a robust and significant factor of continued ethnic peace but it fails to end existing civil wars. Self-rule and shared-rule on their own, i.e. without formal autonomy of regional governments, are mostly ineffective and may even increase the odds of onset of new conflicts. The magnitude of the estimated impact of autonomy on conflict risk is significant. For instance, the combination of regional autonomy and wide-ranging decentralisation reduces incidence of civil wars by about 60-70%.

The relevance of the findings for policy-makers is clear. The move towards decentralised governance should not be resisted out of fear that it will unleash centrifugal forces. On its own, increased decentralisation - whether in terms of policy and fiscal authority or shared-rule - is found to be mostly unrelated to the incidence, onset and continuation of ethnic civil wars. In addition, political decentralisation is found to be a robust and quantitatively significant factor of ethnic peace. The most promising path to lower incidence of ethnic civil war is regional autonomy, however. Regional autonomy reduces the incidence and continuation of ethnic conflicts even when decentralisation is limited. The effect of autonomy on incidence and onset of large-scale conflicts is maximised when combined with wide-ranging powers of self-rule and representation by regional governments. This means that peace-preservation strategies need to actively engage with grievances from ethnic minorities, including through the design of a special regional rule. Simply shifting decision-making authority to all regional and local governments is not as effective a strategy. However, middle-of-the-road approaches where regional autonomy is granted but regional governments have little actual power are ineffective or maybe dangerous and

fuel risk of onset of large-scale conflicts.

The effect of regional autonomy is significantly different from zero only when the variable is instrumented. This echoes the findings by Cederman et al. (2015) and further establish that central governments strategically grant autonomy status in response to threats or existence of ethnic conflict. This explains why ethnic groups which are local majorities are both much more likely to participate in conflict and to enjoy autonomous governments than local minorities. Once this strategic interaction is taken into account, the paper reveals that a move towards regional autonomy does dampen the likelihood and incidence of ethnic civil wars.

The paper has two main limitations that need to be acknowledged. Firstly, it only looks at large-scale ethnic violence. It is possible that decentralisation and regional autonomy exert different impact on low level rebellions or intergroup violence. Secondly, it draws its conclusions from a sample that excludes sub-Saharan Africa and South Asia, among other regions. It remains then unclear how decentralisation and regional autonomy would work in countries that are more fragmented, poorer and less democratic.

## References

- Alesina, Alberto, Reza Baqir & William Easterly. 1999. "Public Goods and Ethnic Divisions." *Quarterly Journal of Economics* 114(4):1243–1284.
- Arellano, M & O. Bover. 1995. "Another look at the instrumental variable estimation of error-components models." *Journal of Econometrics* 68:29–51.
- Arellano, M & S. Bond. 1991. "Some tests of specification for panel data: Monte Carlo evidence and an application to employment equations." *Review of Economic Studies* 58:277–297.
- Arzaghi, Mohammad & Vernon J. Henderson. 2005. "Why countries are fiscally decentralizing." *Journal of Public Economics* 89:1157–1189.
- Bakke, Kristin & Erik Wibbels. 2006. "Diversity, Disparity, and Civil Conflicts in Federal States." *World Politics* 59(1):1–50.
- Bardhan, Pranab & Dilip Mookherjee. 2000. "Capture and Governance at Local and National Levels." *American Economic Review, Papers and Proceedings of the One Hundred Twelfth Annual Meeting of the American Economic Association* 90(2):135–139.
- Bardhan, Pranab & Dilip Mookherjee. 2005. "Decentralizing Anti-Poverty Program Delivery in Developing Countries." *Journal of Public Economics* 89(4):675–704.
- Brancati, Dawn. 2006. "Decentralization: Fueling the Fire or Dampening the Flames of Ethnic Conflict." *International Organization* 60(Summer):651–685.
- Brown, Graham. 2010. "Federalism, Decentralisation and Horizontal Inequalities." CRISE Policy Briefing No. 3.
- Brown, Graham K. 2009. "Regional Autonomy, Spatial Disparity and Ethnoregional Protest in Contemporary Democracies: A Panel Data Analysis, 1985–2003." *Ethnopolitics* 8(1):47–66.

- Buchanan, James M. & Roger L. Faith. 1987. "Secession and the Limits of Taxation: Toward a Theory of Internal Exit." *American Economic Review* 77(5):1023–1031.
- Bunce, Valerie. 1999. *Subversive Institutions: The Design and the Destruction of Socialism and the State*. Cambridge: Cambridge University Press.
- Cederman, Lars-Erik, Andreas Wimmer & Brian Min. 2010. "Why Do Ethnic Groups Rebel? New Data and Analysis." *World Politics* 62(1):87–119.
- Cederman, Lars-Erik, Simon Hug, Andreas Schadel & Julian Wucherpfennig. 2015. "Territorial Autonomy in the Shadow of Conflict: Too Little, Too Late?" *American Political Science Review* 109(2):354–370.
- Christin, Thomas & Simon Hug. 2012. "Federalism, the Geographic Location of Groups, and Conflict." *Conflict Management and Peace Science* 29:93–122.
- Cohen, Frank S. 1997. "Proportional Versus Majoritarian Ethnic Conflict Management in Democracies." *Comparative Political Studies* 30(5):607–630.
- Collier, Paul & Anke Hoeffler. 2004. "Greed and Grievance in Civil War." *Oxford Economic Papers* 56(4):563–595.
- Cornell, Svante E. 2002. "Autonomy as a Source of Conflict: Caucasian Conflicts in Theoretical Perspective." *World Politics* 54(2):245–276.
- de Ree, Joppe & Eleonora Nillesen. 2009. "Aiding violence or peace? The impact of foreign aid on the risk of civil conflict in sub-Saharan Africa." *Journal of Development Economics* 88:301–313.
- Elazar, D.J. 1987. *Exploring Federalism*. Tuscaloosa: University of Alabama Press.
- Elbadawi, Ibrahim & Nicholas Sambanis. 2002. "How Much War Will We See? Explaining the Prevalence of Civil War." *Journal of Conflict Resolution* 46(3):307–334.
- Fearon, James D. & David D. Laitin. 1999. "Weak States, Rough Terrain, and Large-Scale Ethnic Violence Since 1945." Paper prepared for delivery at the 1999 Annual

Meetings of the American Political Science Association (APSA), 2-5 September 1999, Atlanta, GA.

Flamand, Sabine. 2015. "Partial Decentralization as a Way to Prevent Secessionist Conflict." Unpublished manuscript.

Fritzen, Scott A. 2007. "Linking context and strategy in donor support for decentralisation: a diagnostic framework." *Public Administration and Development* 27(1):13–25.

Gleditsch, Nils Petter, Peter Wallensteen, Mikael Eriksson, Margareta Sollenberg & Håvard Strand. 2002. "Armed Conflict 1946–2001: A New Dataset." *Journal of Peace Research* 39(5):615–637.

Gordon, R.H. 1983. "An Optimal Taxation Approach to Fiscal Federalism." *Quarterly Journal of Economics* 98:567–586.

Gurr, Ted Robert. 1970. *Why Men Rebel*. Princeton University Press, NJ.

Gurr, Ted Robert. 1994. "Peoples Against States: Ethnopolitical Conflict and the Changing World System: 1994 Presidential Address." *International Studies Quarterly* 38(3):347–377.

Habyarimana, James., Macartan. Humphreys, Daniel N. Posner & Jeremy. Weinstein. 2007. "Why Does Ethnic Diversity Undermine Public Goods Provision? An Experimental Approach." *American Political Science Review* 101:709–725.

Hale, H.E. 2004. "Divided We Stand: Institutional Sources of Ethnofederal State Survival and Collapse." *World Politics* 56:165–193.

Hechter, Michael. 2000. *Containing Nationalism*. Oxford: Oxford University Press.

Holtz-Eakin, D, W Newey & H. S Rosen. 1988. "Estimating vector autoregressions with panel data." *Econometrica* 56:1371–1395.

- Hooghe, Liesbet, Gary Marks, Arjan H. Schakel, Sandi Chapman Osterkatz, Sara Niedzwiecki & Sarah Shair-Rosenfield. 2016. *A Postfunctionalist Theory of Governance. Volume I: Measuring Regional Authority*. Oxford: Oxford University Press.
- Horowitz, D.L. 1985. *Ethnic Groups in Conflict*. California Press.
- Hug, Simon. 2013. "Use and misuse of MAR." *Annual Review of Political Science* p. 16.
- Hyslop, D.R. 1999. "State dependence, serial correlation and heterogeneity in intertemporal labor force participation of married women." *Econometrica* 6:1255–1294.
- Kymlicka, Will. 1998. Is Federalism a Viable Alternative to Secession? In *Theories of Secessionism*, ed. P.B. Lehning. New York: Routledge Press pp. 111–150.
- Lieberman, Evan S & Gwyneth C H. McClendon. 2013. "The Ethnicity-Policy Preference Link in Sub-Saharan Africa." *Comparative Political Studies* 46(5).
- Lijphart, Arend. 1977. *Democracies in Plural Societies: A Comparative Exploration*. New Haven, CT: Yale University Press.
- Lijphart, Arend. 1996. "The Puzzle of Indian Democracy: A Consociational Interpretation." *American Political Science Review* 90(2):258–268.
- Lustick, Ian, Dan Miodownik & Roy J. Eidelson. 2004. "Secessionism in Multicultural States: Does Sharing Power Prevent or Encourage It?" *American Political Science Review* 94(2):209–230.
- Marshall, Monty G, Keith Jagers & Ted Robert Gurr. 2011. "Polity IV Project: Dataset Users' Manual." Center for Systemic Peace: Polity IV Project.
- Minorities at Risk Project. 2009. "Minorities at Risk Dataset." College Park, MD: Center for International Development and Conflict Management. Retrieved from <http://www.cidcm.umd.edu/mar/> on: 15/03/2016.

- Murshed, Syed Mansoob., Mohamad Zulfan. Tadjoeeddin & Anis. Chowdhury. 2009. "Is Fiscal Decentralization Conflict Abating ? Routine Violence and District Government in Java, Indonesia." *Oxford Development Studies* 37(4):397–421.
- Musgrave, R.A. 1959. *The Theory of Public Finance*. McGraw-Hill.
- Nordquist, Kjell-Ake. 1998. *Autonomy as a Conflict-Solving Mechanism: An Overview*. Markku Suksi.
- Oates, Wallace E. 1972. *Fiscal Federalism*. New York, NY: Harcourt Brace Jovanovich.
- OECD. 2013. "Fiscal Federalism 2014: Making Decentralisation Work." OCED Publishing.
- Panizza, Ugo. 1999. "On the determinants of fiscal centralization: Theory and evidence." *Journal of Public Economics* 74:97–139.
- Perez-Sebastian, Fidel & Ohad Raveh. 2014. "Natural Resources, Decentralization, and Risk Sharing: Can Resource Booms Unify Nations?" Oxford Centre for the Analysis of Resource Rich Economies Resarch Paper 142.
- Posen, B.R. 1993. "The Security Dilemma and Ethnic Conflict." *Survival* 35(1):27–47.
- Rodden, J. 2004. "Comparative Federalism and Decentralization: On Meaning and Measurement." *Comparative Politics* 36:481–500.
- Roodman, David. 2009. "How to do xtabond2: An introduction to difference and system GMM in Stata." *The Stata Journal* 9(86-136):1.
- Saideman, Stephen, David J. Lanoue, Michael Campenni & Samuel Stanton. 2002. "Democratization, Political Institutions and Ethnic Conflict: A Pooled Time-Series Analysis, 1985-1998." *Comparative Political Studies* 35(1):103–129.
- Sambanis, Nicholas & Branko Milanovic. 2014. "Explaining Regional Autonomy Differences in Decentralized Countries." *Comparative Political Studies* 47(13):1830–1855.

- Seabright, Paul. 1996. "Accountability and Decentralisation in Government: An Incomplete Contracts Model." *European Economic Review* 40(1):61–89.
- Stock, James H., Jonathan T. Wright & Motohiro Yogo. 2002. "A Survey of Weak Instruments and Weak Identification in Generalized Methods of Moments." *Journal of Business and Economic Statistics* 20(4):518–529.
- Tiebout, C.M. 1956. "A Pure Theory of Local Expenditure." *Journal of Political Economy* 64:416–424.
- Toft, Monica Duffy. 2003. *The Geography of Ethnic Violence: Identity, Interests, and the Indivisibility of Territory*. Princeton University Press.
- Tranchant, Jean-Pierre. 2008. "Fiscal Decentralization, Institutional Quality and Ethnic Conflict: A Panel Data Analysis, 1985-2001." *Conflict, Security and Development* 8(4):491–514.
- Uppsala Conflict Data Program. 2014. "UCDP Actor Dataset 2.2-2014." Uppsala University.
- Vogt, Manuel, Nils-Christian Bormann, Seraina Rügger, Lars-Erik Cederman, Philipp Hunziker & Luc Girardin. 2015. "Integrating Data on Ethnicity, Geography, and Conflict: The Ethnic Power Relations Dataset Family." *Journal of Conflict Resolution* 59(7):1327–1342.
- Wimmer, Andreas, Lars-Erik Cederman & Brian Min. 2009. "Ethnic Politics and Armed Conflict: A Configurational Analysis of a New Global Data Set." *American Sociological Review* 74:316–337.
- World Bank. 2014. "World Development Indicators 2014." Washington, DC: The World Bank.

**Table 1 Mean of group-level variables in the analysis and EPR samples**

| Sample                                    | EPR   | Analysis | EPR                  | Analysis             |
|---|-------|----------|----------------------|----------------------|
| Groups                                    | All   | All      | Politically Excluded | Politically Excluded |
|   | (1)   | (2)      | (3)                  | (4)                  |
| <b>Political Status:</b>                  |       |          |                      |                      |
| Monopoly                                  | 0.053 | 0.114    |                      |                      |
| Dominant                                  | 0.063 | 0.085    |                      |                      |
| Senior partner                            | 0.096 | 0.071    | 0.108                | 0.088                |
| Junior partner                            | 0.190 | 0.091    | 0.215                | 0.113                |
| Self-excluded                             | 0.016 | 0.007    | 0.018                | 0.009                |
| Powerless                                 | 0.425 | 0.479    | 0.480                | 0.598                |
| Discriminated                             | 0.158 | 0.154    | 0.179                | 0.192                |
| <b>Relative size</b>                      | 0.182 | 0.239    | 0.128                | 0.115                |
| <b>Incidence of civil war</b>             | 0.031 | 0.019    | 0.044                | 0.028                |
| <b>Incidence of territorial civil war</b> | 0.020 | 0.015    | 0.029                | 0.022                |

Note: author's calculations based on the EPR dataset. The analysis sample refers to the sample used in subsequent estimations. Sample size varies between 9,640 and 11,513 observations for the analysis sample and between 41,000 and 46,667 observations for the full EPR sample.

**Table 2 Mean of country-level variables in the analysis and EPR samples**

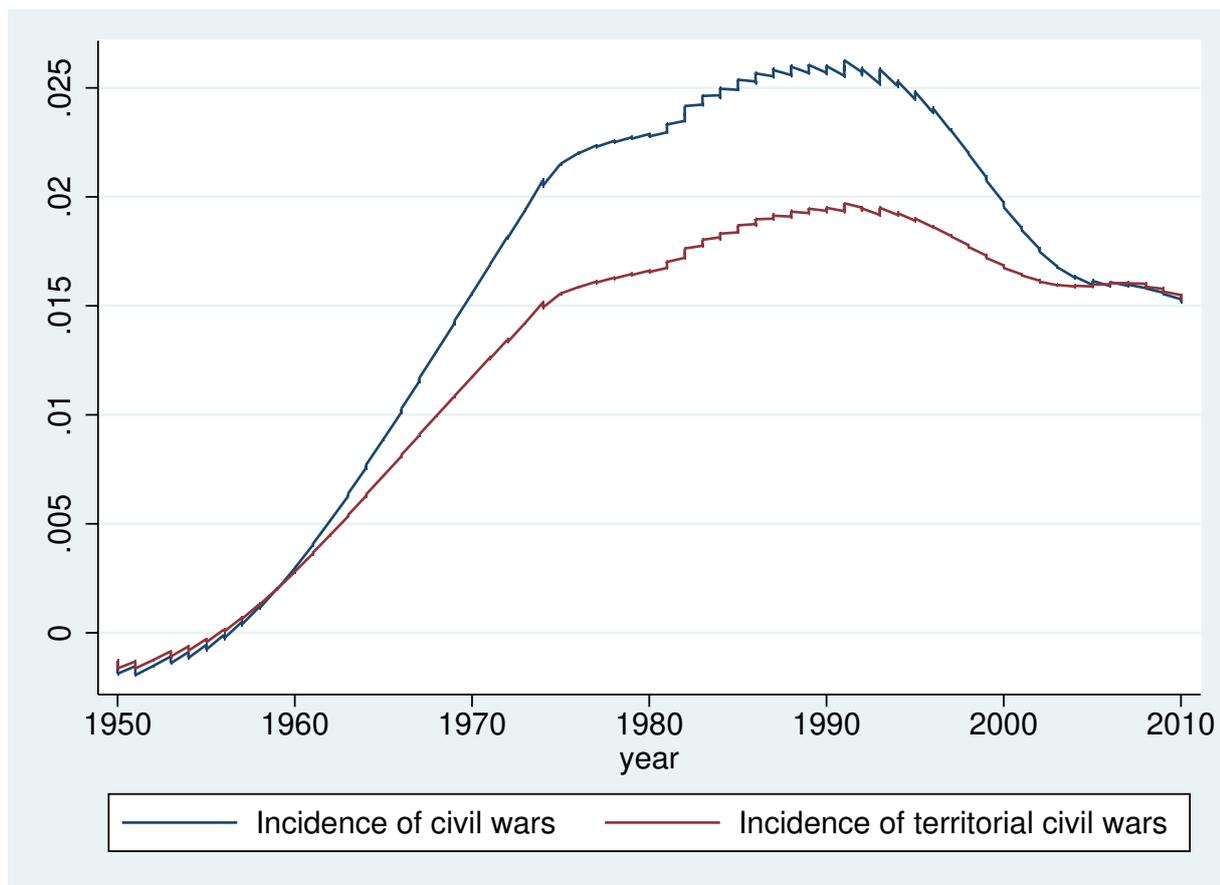
| Sample                  | EPR    | Analysis |
|-------------------------|--------|----------|
|                         | Mean   | Mean     |
|                         | (1)    | (2)      |
| Log Population          | 15.791 | 16.370   |
| Log Land area           | 12.216 | 12.467   |
| Log GDP per capita      | 7.116  | 8.769    |
| Polity 2 score          | -1.857 | 5.395    |
| Number of ethnic groups | 4.829  | 2.944    |

Source: author's calculations based on EPR data.

**Table 3 Summary statistics of the analysis sample**

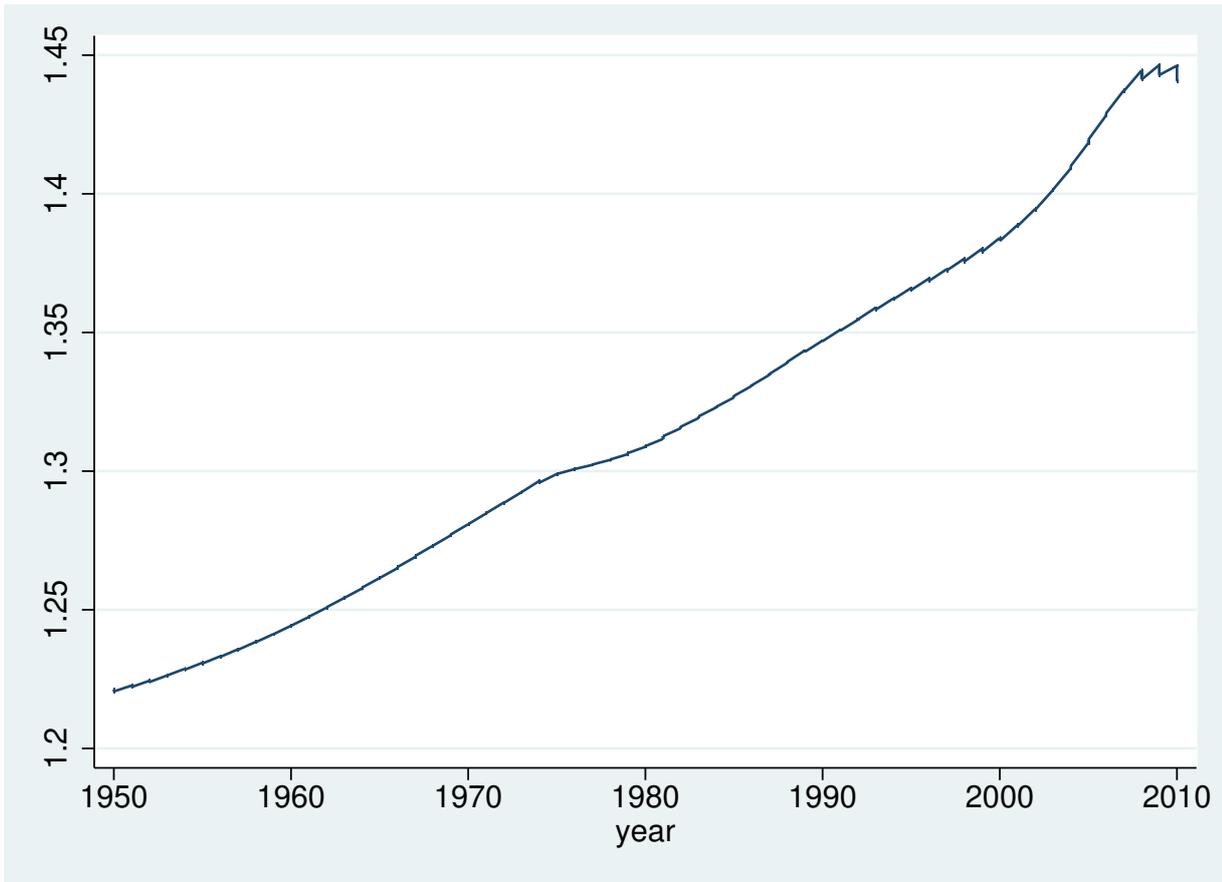
| Variable                           | Mean   | (Std. Dev.) | Min.   | Max.   | N    |
|------------------------------------|--------|-------------|--------|--------|------|
| Incidence of civil war             | 0.028  | (0.165)     | 0      | 1      | 7215 |
| Incidence of territorial civil war | 0.022  | (0.148)     | 0      | 1      | 7215 |
| Relative size                      | 0.115  | (0.2)       | 0      | 0.939  | 7215 |
| Relative size <sup>2</sup>         | 0.053  | (0.151)     | 0      | 0.882  | 7215 |
| Senior partner                     | 0.088  | (0.284)     | 0      | 1      | 7215 |
| Junior partner                     | 0.113  | (0.317)     | 0      | 1      | 7215 |
| Self-excluded                      | 0.009  | (0.093)     | 0      | 1      | 7215 |
| Powerless                          | 0.598  | (0.49)      | 0      | 1      | 7215 |
| Discriminated                      | 0.192  | (0.394)     | 0      | 1      | 7215 |
| Downgraded                         | 0.004  | (0.066)     | 0      | 1      | 7215 |
| War history                        | 0.102  | (0.42)      | 0      | 4      | 7215 |
| Years of continuous peace          | 34.012 | (19.695)    | 0      | 64     | 7215 |
| Self-rule                          | 10.584 | (7.974)     | 0      | 49     | 7099 |
| Policy                             | 4.329  | (2.971)     | 0      | 18     | 7099 |
| Fiscal autonomy                    | 2.889  | (3.119)     | 0      | 19     | 7099 |
| Representation                     | 3.365  | (2.53)      | 0      | 12     | 7099 |
| Shared-rule                        | 3.129  | (3.878)     | 0      | 24     | 7099 |
| Nb. of regional gvts.              | 1.385  | (0.537)     | 0      | 3      | 7215 |
| Regional autonomy (RAI)            | 0.148  | (0.355)     | 0      | 1      | 7069 |
| Territorial autonomy (EPR)         | 0.31   | (0.463)     | 0      | 1      | 7215 |
| Log of GDP per capita              | 8.723  | (1.324)     | 5.617  | 10.986 | 5455 |
| Polity2 score                      | 5.552  | (5.682)     | -9     | 10     | 7045 |
| Log of population                  | 16.757 | (1.409)     | 13.688 | 19.55  | 5531 |
| Log of land area                   | 12.773 | (1.647)     | 8.543  | 16.117 | 5340 |
| Nb. of ethnic groups               | 7.824  | (10.367)    | 2      | 39     | 7215 |
| East Asia and Pacific              | 0.202  | (0.402)     | 0      | 1      | 5531 |
| Europe and Central Asia            | 0.396  | (0.489)     | 0      | 1      | 5531 |
| Latin America and Caribbean        | 0.306  | (0.461)     | 0      | 1      | 5531 |
| Middle East and North Africa       | 0.024  | (0.154)     | 0      | 1      | 5531 |
| North America                      | 0.071  | (0.257)     | 0      | 1      | 5531 |

Figure 1 Incidence of civil wars in the analysis sample, 1950-2010



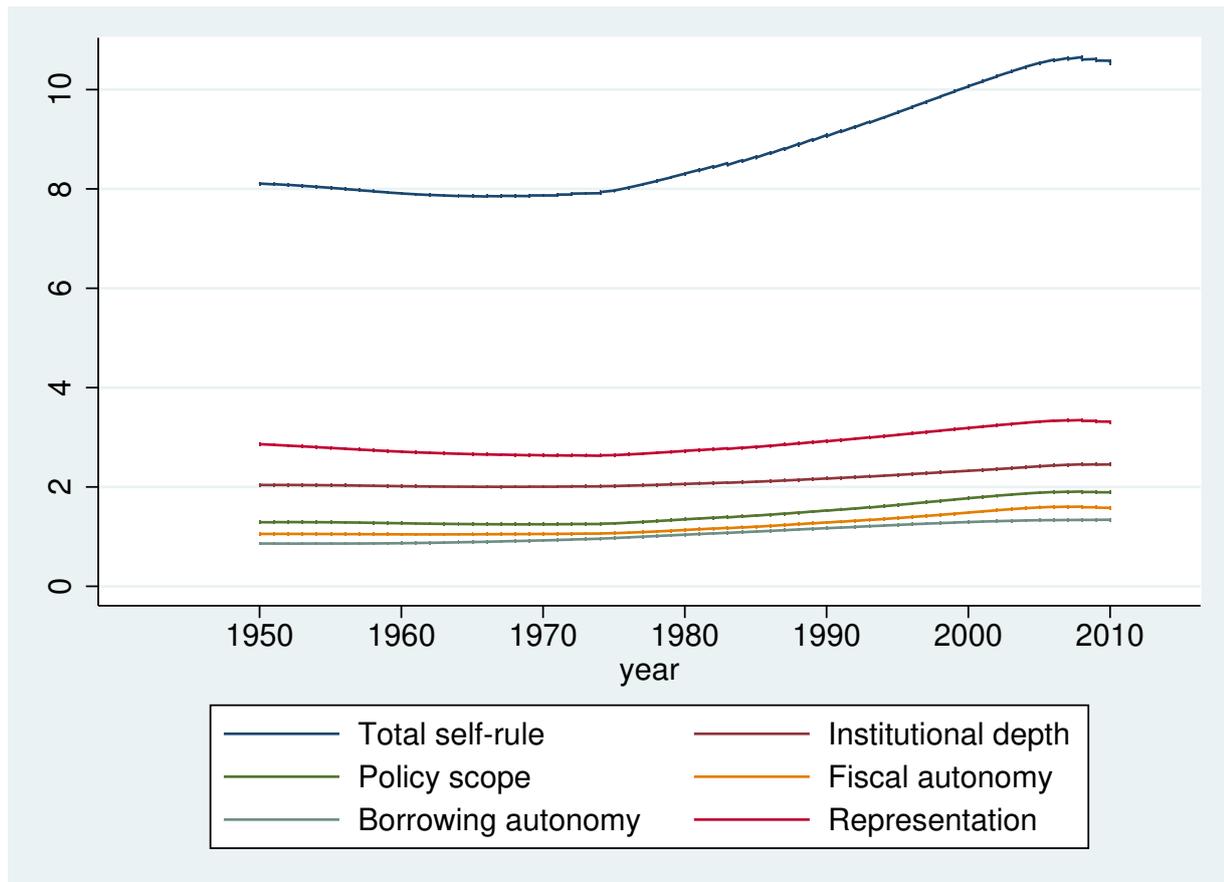
Note: Average incidence calculated with a non-parametric local regression (lowess). Source: author's calculations based on EPR data.

**Figure 2 Number of regional governments in the analysis sample, 1950-2010**



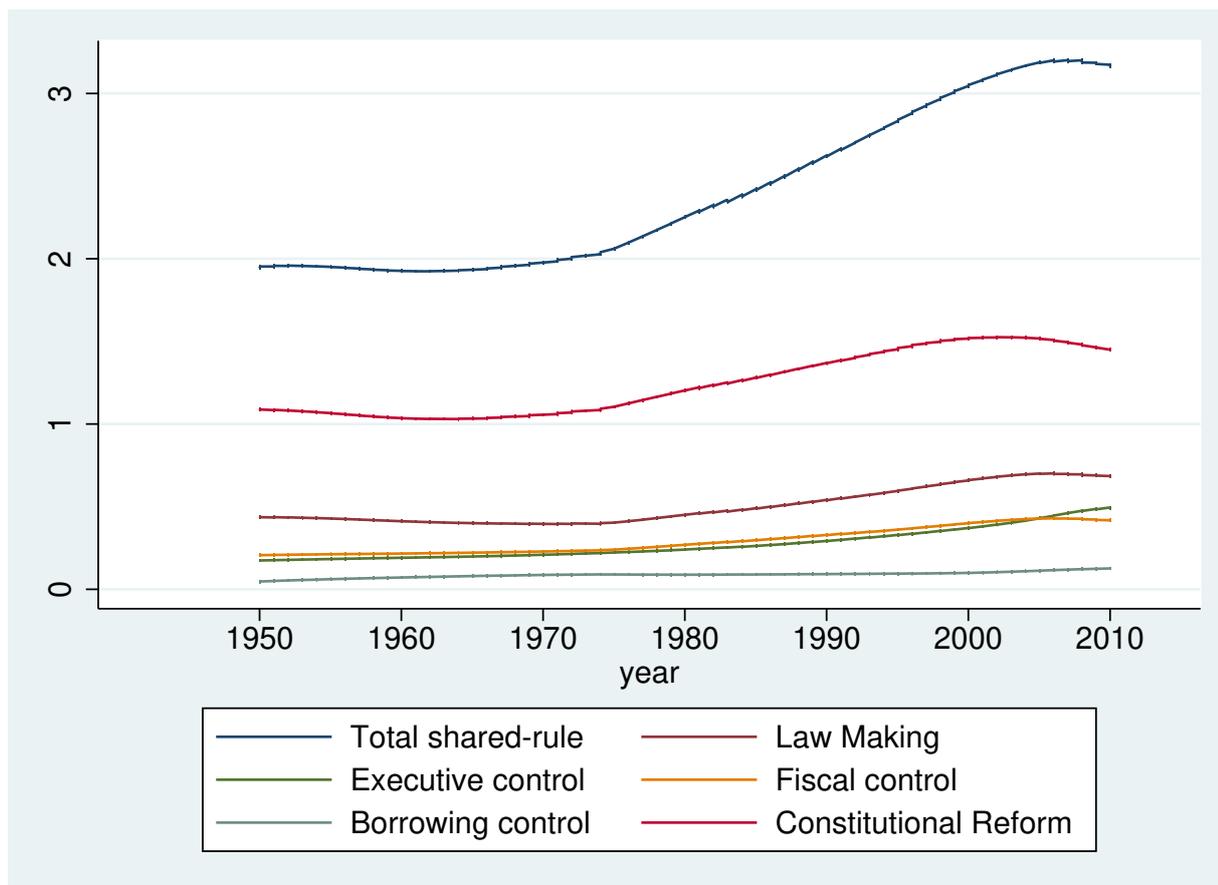
Note: Average calculated with a non-parametric local regression (lowess). Source: author's calculations based on EPR data.

Figure 3 Self-rule in the analysis sample, 1950-2010



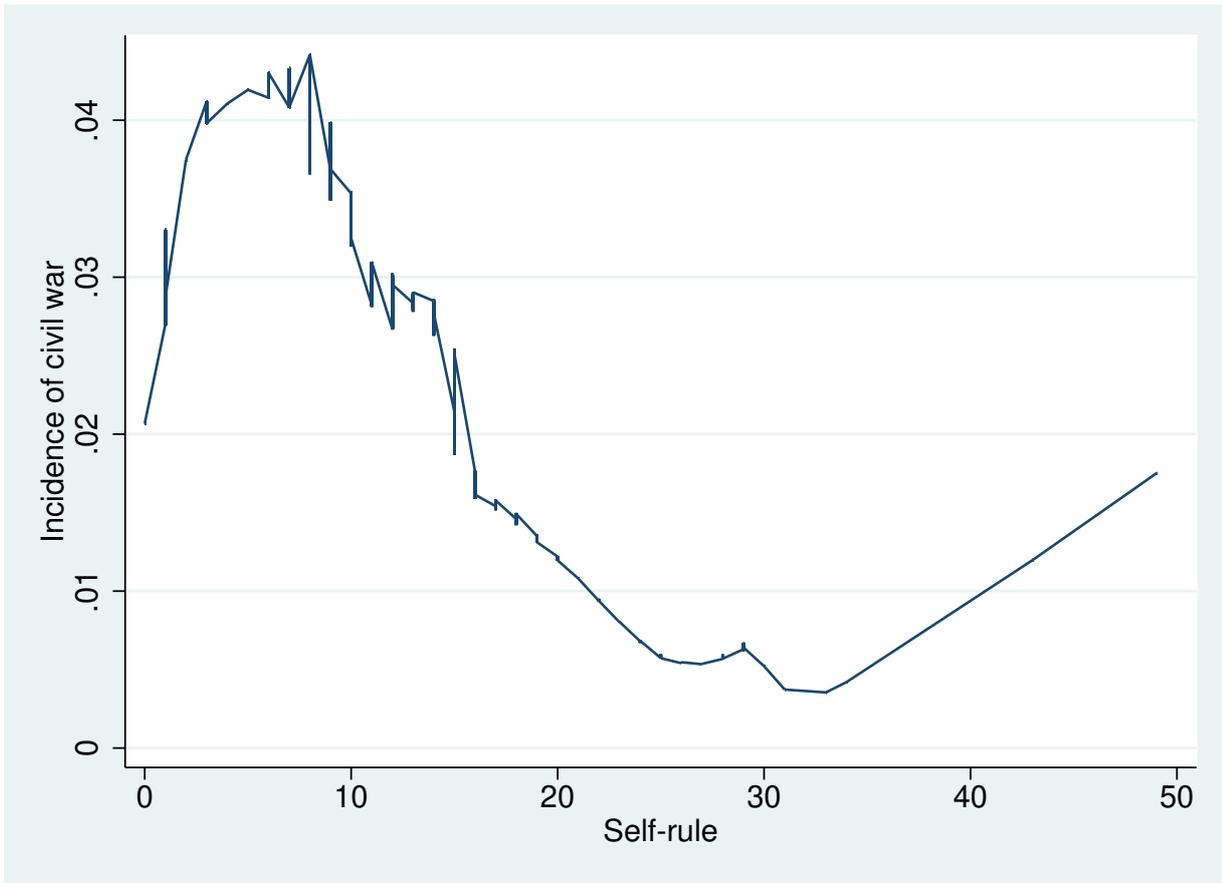
Note: Average calculated with a non-parametric local regression (lowess). Source: author's calculations based on EPR data.

Figure 4 Shared-rule in the analysis sample, 1950-2010



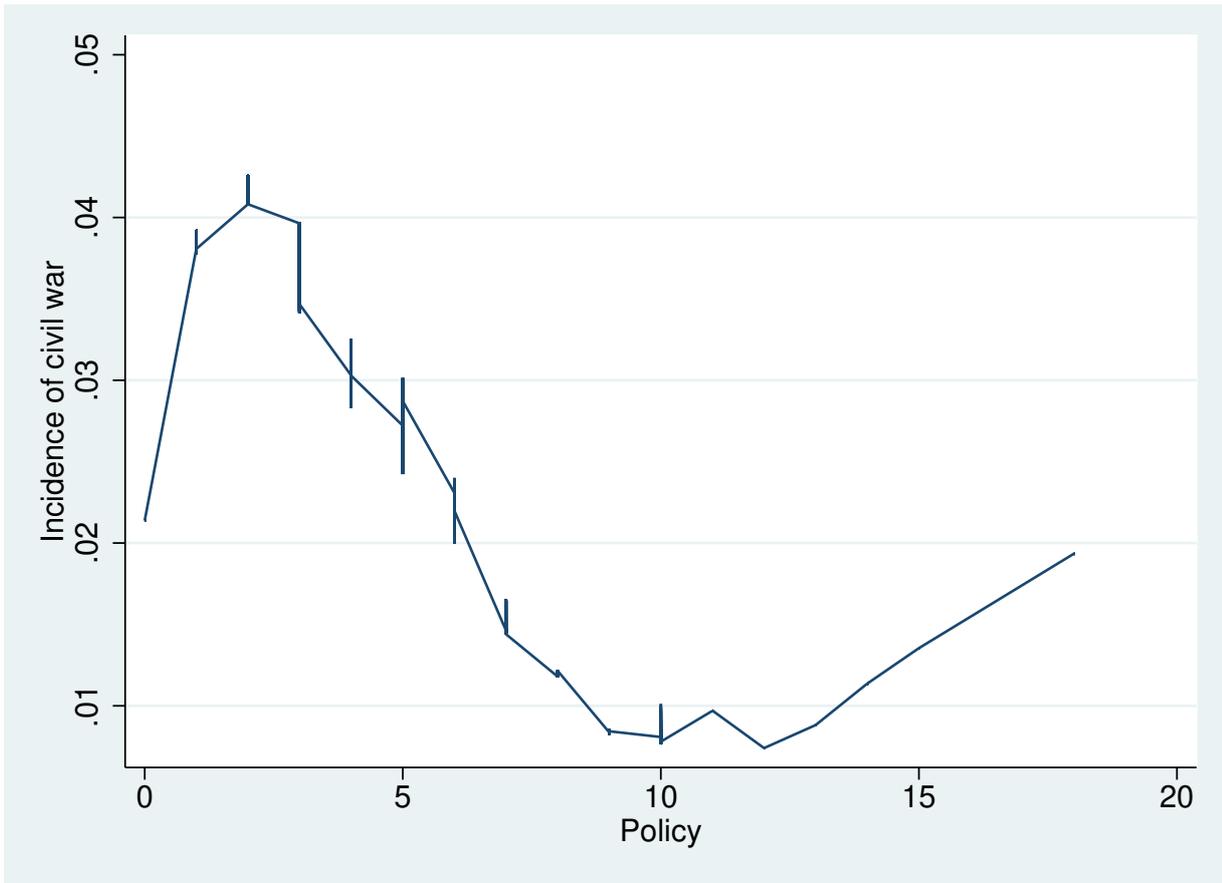
Note: Average calculated with a non-parametric local regression (lowess). Source: author's calculations based on EPR data.

Figure 5 Self-rule and incidence of civil war in the analysis sample, 1950-2010



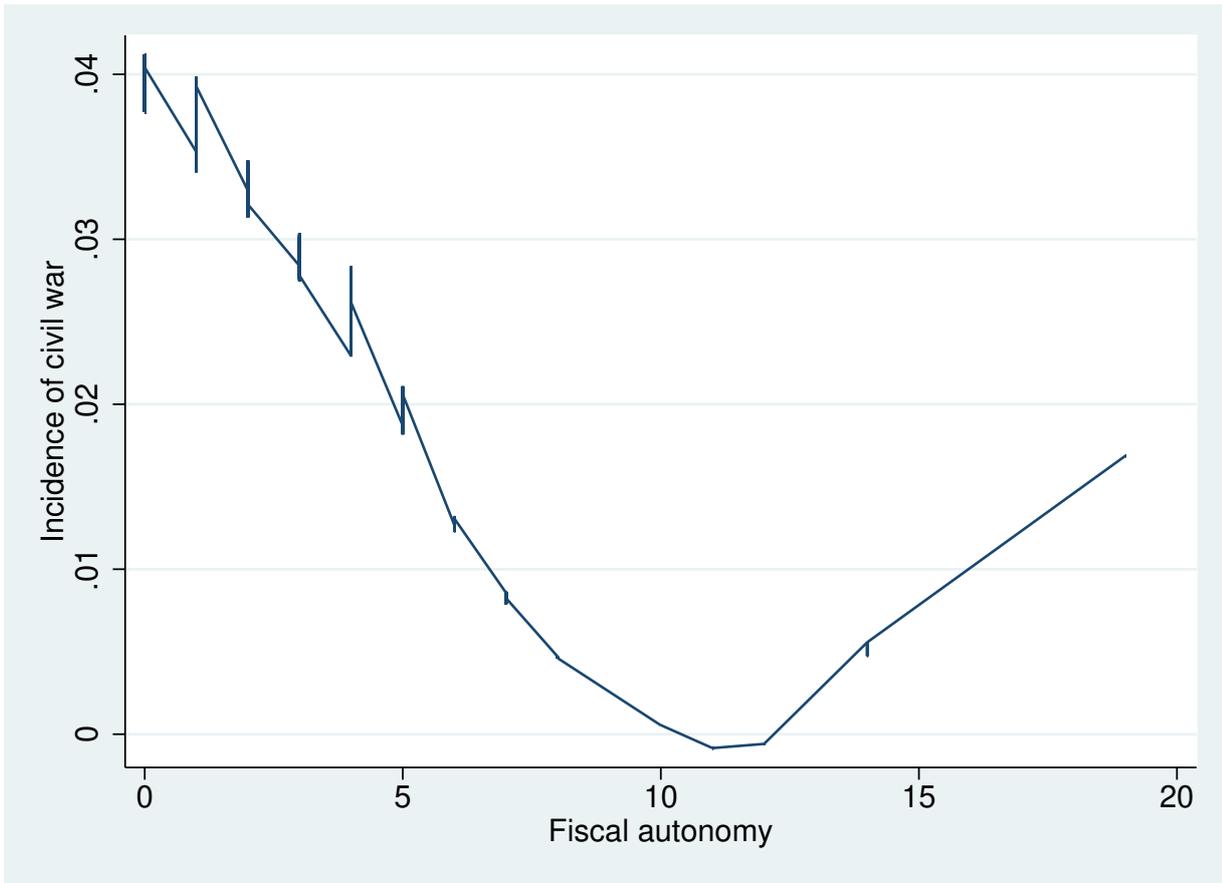
Note: Average calculated with a non-parametric local regression (lowess). Source: author's calculations.

Figure 6 Policy decentralisation and incidence of civil war in the analysis sample, 1950-2010



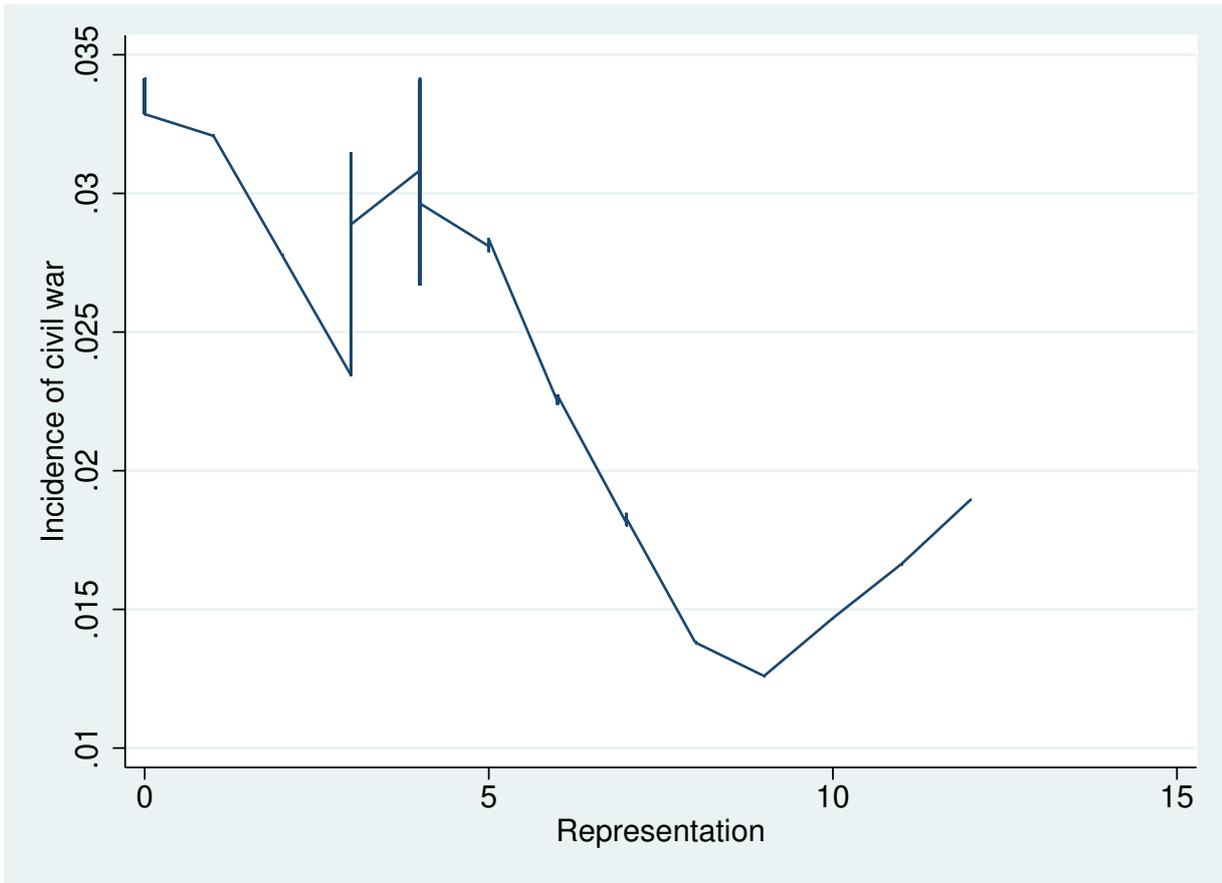
Note: Average calculated with a non-parametric local regression (lowess). Source: author's calculations.

**Figure 7 Fiscal autonomy and incidence of civil war in the analysis sample, 1950-2010**



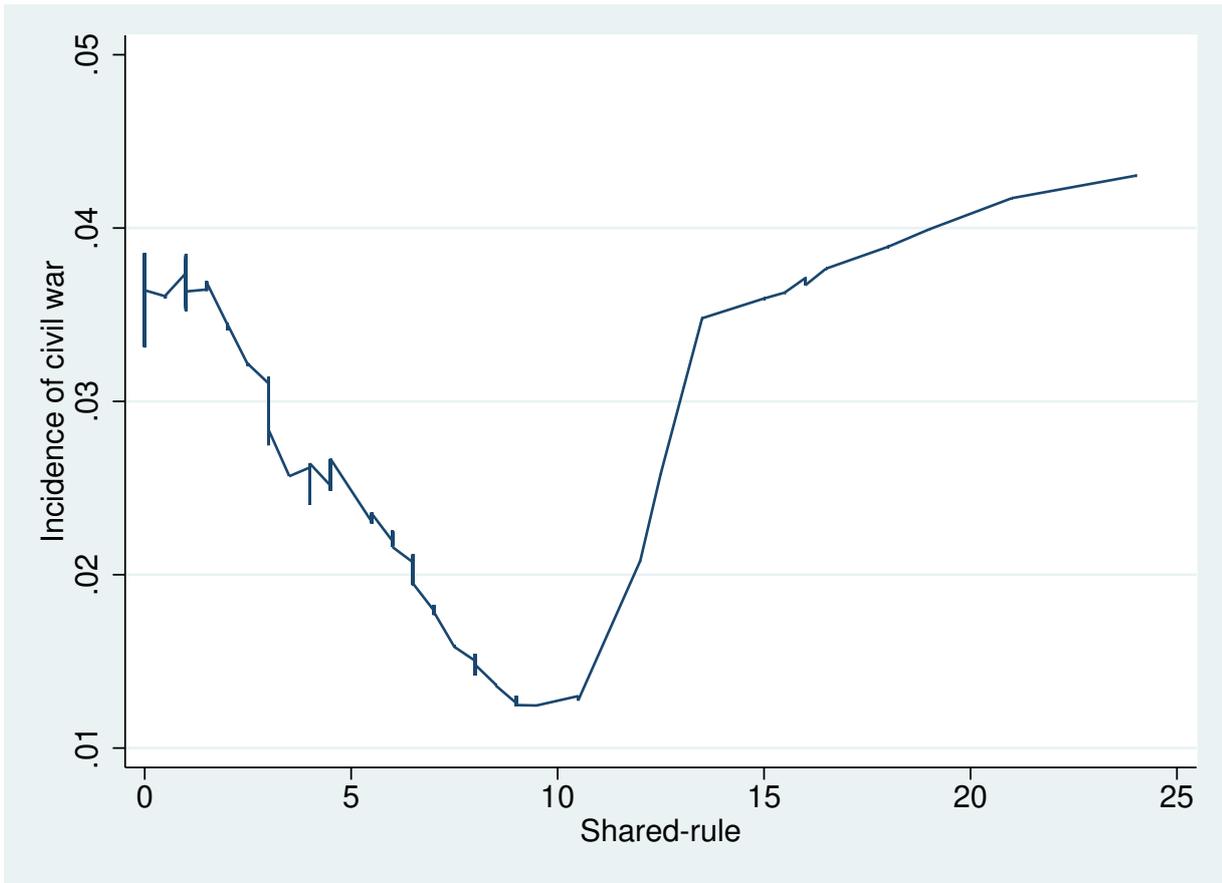
Note: Average calculated with a non-parametric local regression (lowess). Source: author's calculations.

Figure 8 Representation and incidence of civil war in the analysis sample, 1950-2010



Note: Average calculated with a non-parametric local regression (lowess). Source: author's calculations.

Figure 9 Shared-rule and incidence of civil war in the analysis sample, 1950-2010



Note: Average calculated with a non-parametric local regression (lowess). Source: author's calculations.

**Table 4 Difference GMM estimates of the effect of decentralisation on the incidence of ethnic civil wars**

| Lagged covariate                           | (1)      | (2)       | (3)      | (4)      | (5)      | (6)       |
|--|----------|-----------|----------|----------|----------|-----------|
| Self-rule                                  | -0.0042* | -0.0068   |          |          |          |           |
|  | (0.0025) | (0.0060)  |          |          |          |           |
| Self-rule <sup>2</sup>                     |          | 0.00011   |          |          |          |           |
|  |          | (0.00020) |          |          |          |           |
| Policy                                     |          |           | -0.0085  |          |          |           |
|  |          |           | (0.0059) |          |          |           |
| Fiscal autonomy                            |          |           | 0.0035   |          |          |           |
|  |          |           | (0.014)  |          |          |           |
| Policy × Fiscal autonomy                   |          |           | 0.00063  |          |          |           |
|  |          |           | (0.0018) |          |          |           |
| Representation                             |          |           |          | -0.016** |          |           |
|  |          |           |          | (0.0076) |          |           |
| Shared-rule                                |          |           |          |          | -0.0034  | -0.0028   |
|  |          |           |          |          | (0.0040) | (0.0042)  |
| Shared-rule <sup>2</sup>                   |          |           |          |          |          | -0.00011  |
|  |          |           |          |          |          | (0.00027) |
| Nb. of regional gvts.                      | 0.067*   | 0.055     | 0.062**  | 0.088**  | 0.026    | 0.044     |
|  | (0.039)  | (0.035)   | (0.028)  | (0.044)  | (0.026)  | (0.029)   |
| Civil war                                  | 0.47***  | 0.47***   | 0.49***  | 0.45***  | 0.50***  | 0.51***   |
|  | (0.16)   | (0.15)    | (0.14)   | (0.16)   | (0.15)   | (0.14)    |
| <i>Political status, r: senior partner</i> |          |           |          |          |          |           |
| Junior partner                             | -0.050   | -0.061*   | -0.065*  | -0.066** | -0.036   | -0.036    |

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|                            |          |           |          |          |          |          |
|----------------------------|----------|-----------|----------|----------|----------|----------|
|                            | (0.040)  | (0.033)   | (0.038)  | (0.032)  | (0.023)  | (0.022)  |
| Self-exclusion             | 0.24     | 0.22      | 0.22     | 0.27     | 0.26     | 0.26     |
|                            | (0.17)   | (0.17)    | (0.16)   | (0.21)   | (0.19)   | (0.19)   |
| Powerless                  | -0.017   | -0.023    | -0.019   | -0.0016  | 0.0060   | 0.0071   |
|                            | (0.028)  | (0.031)   | (0.027)  | (0.035)  | (0.032)  | (0.034)  |
| Discriminated              | 0.041    | 0.036     | 0.032    | 0.056    | 0.052    | 0.045    |
|                            | (0.047)  | (0.054)   | (0.055)  | (0.063)  | (0.060)  | (0.064)  |
| Downgraded in last year    | -0.067   | -0.063    | -0.082   | -0.059   | -0.068   | -0.063   |
|                            | (0.056)  | (0.055)   | (0.056)  | (0.057)  | (0.058)  | (0.057)  |
| Relative size              | -4.01    | -4.10     | -2.94    | -3.67    | -4.49    | -4.65    |
|                            | (2.72)   | (2.73)    | (2.71)   | (2.99)   | (2.96)   | (3.04)   |
| Relative size <sup>2</sup> | 3.09     | 3.32      | 1.27     | 2.73     | 2.35     | 2.68     |
|                            | (2.28)   | (2.29)    | (2.35)   | (2.62)   | (2.21)   | (2.34)   |
| War history                | -0.11    | -0.12*    | -0.11    | -0.10    | -0.082   | -0.074   |
|                            | (0.074)  | (0.070)   | (0.069)  | (0.078)  | (0.057)  | (0.059)  |
| Log GDP per capita         | 0.053    | 0.062     | 0.050    | 0.028    | 0.061    | 0.066    |
|                            | (0.055)  | (0.043)   | (0.040)  | (0.073)  | (0.052)  | (0.052)  |
| Polity2 score              | -0.00071 | -0.000024 | -0.0014  | -0.00030 | -0.00089 | -0.00056 |
|                            | (0.0018) | (0.0017)  | (0.0019) | (0.0018) | (0.0023) | (0.0022) |
| Log population             | 0.078    | 0.095     | 0.068    | 0.052    | 0.079    | 0.066    |
|                            | (0.069)  | (0.068)   | (0.061)  | (0.053)  | (0.052)  | (0.052)  |
| Nb. of ethnic groups       | -0.010*  | -0.0100*  | -0.0097* | -0.0099* | -0.010*  | -0.0096* |
|                            | (0.0061) | (0.0053)  | (0.0056) | (0.0059) | (0.0062) | (0.0058) |
| Years of peace             | 0.0021   | 0.0017    | 0.00097  | 0.0024   | 0.0021   | 0.0022   |

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|                               |          |          |          |          |          |          |
|-------------------------------|----------|----------|----------|----------|----------|----------|
|                               | (0.0040) | (0.0041) | (0.0033) | (0.0040) | (0.0035) | (0.0034) |
| Year                          | -0.0028  | -0.0029  | -0.0019  | -0.0021  | -0.0035  | -0.0037  |
|                               | (0.0036) | (0.0036) | (0.0028) | (0.0032) | (0.0033) | (0.0030) |
| Observations                  | 4067     | 4067     | 4067     | 4067     | 4067     | 4067     |
| AR(2) test (p-value)          | 0.433    | 0.461    | 0.395    | 0.390    | 0.355    | 0.339    |
| Hansen overid. test (p-value) | 1        | 1        | 1        | 1        | 1        | 1        |

Note: Standard errors in parentheses. Standard errors are clustered at country level. Sample of 111 groups.

All decentralisation variables and the log of GDP per capita are considered endogenous and are instrumented by the second to sixth lags of their levels. \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

**Table 5 Difference GMM estimates of the effect of autonomy and decentralisation on the incidence of ethnic civil wars**

| Lagged covariate     | (1)      | (2)      | (3)      | (4)      | (5)     | (6)      |
|----------------------|----------|----------|----------|----------|---------|----------|
| Autonomy             | -0.17*** | -0.045   | -0.13**  | -0.13*** | 0.018   | -0.18*** |
|                      | (0.045)  | (0.071)  | (0.058)  | (0.036)  | (0.064) | (0.031)  |
| Self-rule            |          | 0.0074*  |          |          |         |          |
|                      |          | (0.0040) |          |          |         |          |
| Autonomy × Self-rule |          | -0.019*  |          |          |         |          |
|                      |          | (0.0096) |          |          |         |          |
| Policy               |          |          | 0.017*** |          |         |          |
|                      |          |          | (0.0049) |          |         |          |
| Autonomy × Policy    |          |          | -0.025*  |          |         |          |
|                      |          |          | (0.014)  |          |         |          |
| Fiscal autonomy      |          |          |          | 0.023*   |         |          |

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|                               |         |         |         |         |         |           |
|-------------------------------|---------|---------|---------|---------|---------|-----------|
|                               |         |         |         |         |         | (0.012)   |
| Autonomy × Fiscal autonomy    |         |         |         |         |         | -0.040    |
|                               |         |         |         |         |         | (0.026)   |
| Representation                |         |         |         |         |         | 0.0059    |
|                               |         |         |         |         |         | (0.0094)  |
| Autonomy × Representation     |         |         |         |         |         | -0.057*** |
|                               |         |         |         |         |         | (0.020)   |
| Shared-rule                   |         |         |         |         |         | 0.0018    |
|                               |         |         |         |         |         | (0.0068)  |
| Autonomy × Shared-rule        |         |         |         |         |         | 0.00050   |
|                               |         |         |         |         |         | (0.012)   |
| Nb. of regional gvts.         | 0.082*  | 0.020   | 0.010   | 0.060*  | 0.067   | 0.027     |
|                               | (0.045) | (0.038) | (0.036) | (0.033) | (0.055) | (0.018)   |
| Observations                  | 3886    | 3886    | 3886    | 3886    | 3886    | 3886      |
| AR(2) test (p-value)          | 0.336   | 0.309   | 0.294   | 0.324   | 0.281   | 0.243     |
| Hansen overid. test (p-value) | 1       | 1       | 1       | 1       | 1       | 1         |

Note: Standard errors in parentheses. Standard errors are clustered at country level. Sample of 111 groups.

All regressions include the lag of civil war and the same covariates as in table 4. \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

**Table 6 Difference GMM estimates of the effect of autonomy and decentralisation on the onset of civil wars**

| Lagged covariate | (1)     | (2)    | (3)    | (4)     | (5)    | (6)    |
|------------------|---------|--------|--------|---------|--------|--------|
| Autonomy         | 0.040   | 0.17   | 0.22*  | 0.063   | 0.25*  | 0.060  |
|                  | (0.097) | (0.11) | (0.13) | (0.066) | (0.15) | (0.10) |

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|                            |         |         |         |           |         |          |
|----------------------------|---------|---------|---------|-----------|---------|----------|
| Self-rule                  |         |         |         | 0.0090*** |         |          |
|                            |         |         |         | (0.0032)  |         |          |
| Autonomy × Self-rule       |         |         |         | -0.023**  |         |          |
|                            |         |         |         | (0.0089)  |         |          |
| Policy                     |         |         |         | 0.014     |         |          |
|                            |         |         |         | (0.011)   |         |          |
| Autonomy × Policy          |         |         |         | -0.047**  |         |          |
|                            |         |         |         | (0.019)   |         |          |
| Fiscal autonomy            |         |         |         | 0.036***  |         |          |
|                            |         |         |         | (0.0081)  |         |          |
| Autonomy × Fiscal autonomy |         |         |         | -0.054*** |         |          |
|                            |         |         |         | (0.019)   |         |          |
| Representation             |         |         |         | 0.011     |         |          |
|                            |         |         |         | (0.011)   |         |          |
| Autonomy × Representation  |         |         |         | -0.073**  |         |          |
|                            |         |         |         | (0.031)   |         |          |
| Shared-rule                |         |         |         |           |         | 0.0096   |
|                            |         |         |         |           |         | (0.0066) |
| Autonomy × Shared-rule     |         |         |         |           |         | -0.022   |
|                            |         |         |         |           |         | (0.013)  |
| Nb. of regional gvts.      | 0.066   | -0.0074 | -0.0074 | 0.039     | 0.042   | -0.034   |
|                            | (0.072) | (0.034) | (0.031) | (0.037)   | (0.042) | (0.065)  |
| Observations               | 3707    | 3707    | 3707    | 3707      | 3707    | 3707     |
| AR(2) test (p-value)       | 0.076   | 0.081   | 0.106   | 0.121     | 0.110   | 0.086    |

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|                               |       |       |   |   |   |       |
|-------------------------------|-------|-------|---|---|---|-------|
| AR(3) test (p-value)          | 0.478 | 0.528 |   |   |   | 0.476 |
| Hansen overid. test (p-value) | 1     | 1     | 1 | 1 | 1 | 1     |

Note: Standard errors in parentheses. Standard errors are clustered at country level. Sample of 107 groups. All regressions include the same covariates as in table 4 except for the lagged dependent variable.

\* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

**Table 7 Difference GMM estimates of the effect of autonomy and decentralisation on the continuation of civil wars**

| Lagged covariate           | (1)      | (2)     | (3)     | (4)      | (5)      | (6)    |
|----------------------------|----------|---------|---------|----------|----------|--------|
| Autonomy                   | -0.40*** | -0.19   | -0.47*  | -0.42*** | -0.16    | -0.20  |
|                            | (0.13)   | (0.31)  | (0.24)  | (0.16)   | (0.16)   | (0.36) |
| Self-rule                  |          | -0.032  |         |          |          |        |
|                            |          | (0.028) |         |          |          |        |
| Autonomy × Self-rule       |          | 0.0014  |         |          |          |        |
|                            |          | (0.029) |         |          |          |        |
| Policy                     |          |         | 0.032   |          |          |        |
|                            |          |         | (0.046) |          |          |        |
| Autonomy × Policy          |          |         | 0.0042  |          |          |        |
|                            |          |         | (0.043) |          |          |        |
| Fiscal autonomy            |          |         |         | 0.035    |          |        |
|                            |          |         |         | (0.052)  |          |        |
| Autonomy × Fiscal autonomy |          |         |         | 0.0068   |          |        |
|                            |          |         |         | (0.062)  |          |        |
| Representation             |          |         |         |          | -0.099** |        |

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|                               |        |        |        |        |         |         |
|-------------------------------|--------|--------|--------|--------|---------|---------|
|                               |        |        |        |        | (0.046) |         |
| Autonomy × Representation     |        |        |        |        | -0.024  |         |
|                               |        |        |        |        | (0.052) |         |
| Shared-rule                   |        |        |        |        |         | -0.023  |
|                               |        |        |        |        |         | (0.024) |
| Autonomy × Shared-rule        |        |        |        |        |         | -0.028  |
|                               |        |        |        |        |         | (0.11)  |
| Nb. of regional gvts.         | 0.19   | 0.55   | 0.035  | 0.10   | 0.68*   | 0.22    |
|                               | (0.20) | (0.46) | (0.28) | (0.24) | (0.40)  | (0.24)  |
| Observations                  | 179    | 179    | 179    | 179    | 179     | 179     |
| AR(2) test (p-value)          | 0.330  | 0.245  | 0.354  | 0.362  | 0.164   | 0.302   |
| Hansen overid. test (p-value) | 1      | 1      | 1      | 1      | 1       | 1       |

Note: Standard errors in parentheses. Standard errors are clustered at country level. Sample of 12 groups.

All regressions include the same covariates as in table 4 except for the lagged dependent variable.

\* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

**Table 8 Difference GMM estimates of the effect of autonomy and decentralisation on the incidence of civil wars: no country-level covariates**

| Lagged covariate     | (1)     | (2)      | (3)    | (4)     | (5)      | (6)     |
|----------------------|---------|----------|--------|---------|----------|---------|
| Autonomy             | -0.14*  | 0.0060   | 0.020  | -0.052  | -0.091** | -0.14   |
|                      | (0.078) | (0.096)  | (0.12) | (0.052) | (0.039)  | (0.088) |
| Self-rule            |         | 0.0044   |        |         |          |         |
|                      |         | (0.0049) |        |         |          |         |
| Autonomy × Self-rule |         | -0.016   |        |         |          |         |

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|                               |         |         |          |         |         |          |
|-------------------------------|---------|---------|----------|---------|---------|----------|
|                               |         |         | (0.0095) |         |         |          |
| Policy                        |         |         | 0.013    |         |         |          |
|                               |         |         | (0.0081) |         |         |          |
| Autonomy × Policy             |         |         | -0.038*  |         |         |          |
|                               |         |         | (0.021)  |         |         |          |
| Fiscal autonomy               |         |         | 0.0059   |         |         |          |
|                               |         |         | (0.015)  |         |         |          |
| Autonomy × Fiscal autonomy    |         |         | -0.032   |         |         |          |
|                               |         |         | (0.031)  |         |         |          |
| Representation                |         |         | 0.0099   |         |         |          |
|                               |         |         | (0.0092) |         |         |          |
| Autonomy × Representation     |         |         | -0.027** |         |         |          |
|                               |         |         | (0.011)  |         |         |          |
| Shared-rule                   |         |         |          |         |         | -0.0029  |
|                               |         |         |          |         |         | (0.0054) |
| Autonomy × Shared-rule        |         |         |          |         |         | 0.0086   |
|                               |         |         |          |         |         | (0.012)  |
| Nb. of regional gvts.         | 0.10**  | -0.020  | -0.030   | 0.029   | 0.0052  | 0.030    |
|                               | (0.048) | (0.043) | (0.040)  | (0.032) | (0.039) | (0.046)  |
| Observations                  | 4083    | 4083    | 4083     | 4083    | 4083    | 4083     |
| AR(2) test (p-value)          | 0.196   | 0.192   | 0.175    | 0.196   | 0.158   | 0.143    |
| Hansen overid. test (p-value) | 1       | 1       | 1        | 1       | 1       | 1        |

Note: Standard errors in parentheses. Standard errors are clustered at country level.

All regressions include the same covariates as in table 5.

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\* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

**Table 9 Difference GMM estimates of the effect of autonomy and decentralisation on the incidence of territorial civil wars**

| Lagged covariate           | (1)                 | (2)                 | (3)                 | (4)                  | (5)                  | (6)                |
|----------------------------|---------------------|---------------------|---------------------|----------------------|----------------------|--------------------|
| Autonomy                   | -0.13***<br>(0.036) | -0.035<br>(0.069)   | -0.022<br>(0.088)   | -0.075***<br>(0.029) | -0.092***<br>(0.029) | -0.15**<br>(0.065) |
| Self-rule                  |                     | 0.0061<br>(0.0043)  |                     |                      |                      |                    |
| Autonomy × Self-rule       |                     | -0.014*<br>(0.0085) |                     |                      |                      |                    |
| Policy                     |                     |                     | 0.014**<br>(0.0059) |                      |                      |                    |
| Autonomy × Policy          |                     |                     | -0.034*<br>(0.017)  |                      |                      |                    |
| Fiscal autonomy            |                     |                     |                     | 0.018<br>(0.012)     |                      |                    |
| Autonomy × Fiscal autonomy |                     |                     |                     | -0.034<br>(0.027)    |                      |                    |
| Representation             |                     |                     |                     |                      | 0.0069<br>(0.0088)   |                    |
| Autonomy × Representation  |                     |                     |                     |                      | -0.022**<br>(0.011)  |                    |
| Shared-rule                |                     |                     |                     |                      |                      | -0.0046            |

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|                               |         |         |         |         |         |          |
|-------------------------------|---------|---------|---------|---------|---------|----------|
|                               |         |         |         |         |         | (0.0050) |
| Autonomy × Shared-rule        |         |         |         |         |         | 0.014    |
|                               |         |         |         |         |         | (0.0091) |
| Nb. of regional gvts.         | 0.044*  | -0.024  | -0.028  | 0.022   | 0.00089 | 0.021    |
|                               | (0.026) | (0.036) | (0.032) | (0.017) | (0.034) | (0.024)  |
| Observations                  | 3890    | 3890    | 3890    | 3890    | 3890    | 3890     |
| AR(2) test (p-value)          | 0.169   | 0.162   | 0.140   | 0.184   | 0.129   | 0.117    |
| Hansen overid. test (p-value) | 1       | 1       | 1       | 1       | 1       | 1        |

Note: Standard errors in parentheses. Standard errors are clustered at country level.

All regressions include the same covariates as in table 5.

\* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

**Table 10 Difference GMM estimates of the effect of autonomy and decentralisation on the incidence of civil wars: Alternative measure of regional autonomy**

| Lagged covariate     | (1)     | (2)      | (3)     | (4)     | (5)     | (6)      |
|----------------------|---------|----------|---------|---------|---------|----------|
| Autonomy (EPR)       | -0.096* | -0.074   | -0.071  | -0.060  | -0.094* | -0.084** |
|                      | (0.050) | (0.047)  | (0.053) | (0.045) | (0.054) | (0.040)  |
| Self-rule            |         | -0.0054  |         |         |         |          |
|                      |         | (0.0057) |         |         |         |          |
| Autonomy × Self-rule |         | 0.0037   |         |         |         |          |
|                      |         | (0.0053) |         |         |         |          |
| Policy               |         |          | -0.0065 |         |         |          |
|                      |         |          | (0.011) |         |         |          |
| Autonomy × Policy    |         |          | 0.0052  |         |         |          |

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|                               |         |         |         |         |          |         |
|-------------------------------|---------|---------|---------|---------|----------|---------|
|                               |         |         |         | (0.011) |          |         |
| Fiscal autonomy               |         |         |         | 0.00044 |          |         |
|                               |         |         |         | (0.018) |          |         |
| Autonomy × Fiscal autonomy    |         |         |         | -0.0043 |          |         |
|                               |         |         |         | (0.018) |          |         |
| Representation                |         |         |         | -0.013  |          |         |
|                               |         |         |         | (0.010) |          |         |
| Autonomy × Representation     |         |         |         | 0.0089  |          |         |
|                               |         |         |         | (0.010) |          |         |
| Shared-rule                   |         |         |         |         | 0.0011   |         |
|                               |         |         |         |         | (0.0034) |         |
| Autonomy × Shared-rule        |         |         |         |         | -0.0034  |         |
|                               |         |         |         |         | (0.0065) |         |
| Nb. of regional gyts.         | 0.037   | 0.042   | 0.028   | 0.027   | 0.040    | 0.012   |
|                               | (0.042) | (0.040) | (0.027) | (0.033) | (0.041)  | (0.035) |
| AR(2) test (p-value)          | 0.169   | 0.162   | 0.140   | 0.184   | 0.129    | 0.117   |
| Hansen overid. test (p-value) | 1       | 1       | 1       | 1       | 1        | 1       |

Note: Standard errors in parentheses. Standard errors are clustered at country level.

All regressions include the same covariates as in table 5.

\* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$

**Table 11 Difference GMM estimates of the effect of autonomy and decentralisation on the incidence of ethnic civil wars - local majorities only**

| Lagged covariate           | (1)                | (2)                | (3)                 | (4)                | (5)                | (6)                 |
|----------------------------|--------------------|--------------------|---------------------|--------------------|--------------------|---------------------|
| Autonomy                   | -0.25**<br>(0.098) | -0.075<br>(0.12)   | -0.12<br>(0.10)     | -0.15**<br>(0.072) | 0.065<br>(0.21)    | -0.20**<br>(0.083)  |
| Self-rule                  |                    | 0.0057<br>(0.0057) |                     |                    |                    |                     |
| Autonomy × Self-rule       |                    | -0.014<br>(0.0099) |                     |                    |                    |                     |
| Policy                     |                    |                    | 0.015**<br>(0.0061) |                    |                    |                     |
| Autonomy × Policy          |                    |                    | -0.031*<br>(0.017)  |                    |                    |                     |
| Fiscal autonomy            |                    |                    |                     | 0.016<br>(0.013)   |                    |                     |
| Autonomy × Fiscal autonomy |                    |                    |                     | -0.020<br>(0.025)  |                    |                     |
| Representation             |                    |                    |                     |                    | -0.0086<br>(0.016) |                     |
| Autonomy × Representation  |                    |                    |                     |                    | -0.061*<br>(0.033) |                     |
| Shared-rule                |                    |                    |                     |                    |                    | -0.0035<br>(0.0071) |
| Autonomy × Shared-rule     |                    |                    |                     |                    |                    | 0.011<br>(0.014)    |

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|                               |         |         |         |         |         |         |
|-------------------------------|---------|---------|---------|---------|---------|---------|
| Nb. of regional gvts.         | 0.086*  | 0.026   | 0.0096  | 0.061*  | 0.12*   | 0.028   |
|                               | (0.052) | (0.033) | (0.030) | (0.035) | (0.063) | (0.023) |
| Observations                  | 2035    | 2035    | 2035    | 2035    | 2035    | 2035    |
| AR(2) test (p-value)          | 0.172   | 0.129   | 0.145   | 0.132   | 0.128   | 0.113   |
| Hansen overid. test (p-value) | 1       | 1       | 1       | 1       | 1       | 1       |

Note: Standard errors in parentheses. Standard errors are clustered at country level. Sample of 60 ethnic groups.

All regressions include the lag of civil war and the same covariates as in table 4. \* $p < 0.1$ , \*\* $p < 0.05$ , \*\*\* $p < 0.01$