Does formal or informal power-sharing produce peace? *

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Abstract

A key motivation for civil war are grievances that derive from the unequal treatment or outright discrimination of ethnic groups. Preventing violence thus requires ethnic equality, e.g., in the form of power-sharing. Yet whether or not formal power-sharing rules are effective in preventing large-scale violence is a controversial question. We add to this debate

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by distinguishing between the direct and indirect effects of power-sharing institutions on the risk of ethnic civil war onset. On the one hand, formal rules might directly reduce conflict risk by shaping future expectations of cooperation. On the other hand, they might only work indirectly through actual executive coalitions, the absence of discrimination, or an implemented division of power. Combining data on three conceptually distinct types of formal power-sharing rules with information on power-sharing practices, we empirically assess this relationship on a global scale. Our findings reveal that power-sharing institutions affect the probability of ethnic conflict onset mostly through power-sharing practices that these institutions seem to induce.

1 Introduction

Power-sharing institutions are a commonly prescribed means of fostering civil peace in divided societies. In theory, power-sharing institutions induce peace by ensuring the inclusion of all groups in central decision making; by preventing persecution of or discrimination against groups not in power; and/or by empowering groups to control their own affairs by devolving power to subnational authorities. However, the relationship between power-sharing and peace is multi-faceted: power-sharing can take many different forms, some of which may not reduce conflict; civil conflict can take many different forms, some of which may not be alleviated by powersharing; and the effects of *de jure* power-sharing institutions on conflict may be either direct, or mediated through *de facto* power-sharing practices.

Thus, it should not be surprising that the existing literature on the effects of power-sharing is deeply conflicted. Most empirical analyses find that at least some forms of power-sharing are effective at reducing the risk of violent conflict, but there is disagreement about what types of power-sharing are effective(e.g., Hartzell and Hoddie, 2003; Jarstad and Nilsson, 2008; Mattes and Savun, 2009; Cederman, Wimmer and Min, 2010; Cederman, Gleditsch and Buhaug, 2013; Gates, Graham, Lupu, Strand and Strøm, 2013). And several prominent studies present evidence that power-sharing is either useless or has negative consequences (e.g., Roeder, 2005; Toft, 2010; Selway and Templeman, 2012). These contrasting results call for a re-assessment of the effects of power-sharing.

Core to both our theoretical and empirical contributions is our attention to the interplay between *de jure* power-sharing institutions and *de facto* power-sharing rules. While the recent literature on power-sharing is almost exclusively concerned with formal rules(e.g., Lijphart, 1999; Hartzell and Hoddie, 2003; Hartzell and Hoddie, 2007; Jarstad and Nilsson, 2008; Norris, 2008; Jarstad, 2009; Mehler, 2009; Martin, 2013; Ottmann and Vüllers, 2014 forthcoming), we argue that these formal rules have both a direct *and* an indirect effect on the likelihood of civil war. While the direct effect promises a future stake in power to leaders of excluded ethnic groups (Hale, 2008, Ch.4), the indirect effect of formal power-sharing rules is to reduce the risk of civil war through power-sharing behavior, e.g., by inducing broad, inclusive coalitions (see, e.g., Bogaards, 2013).

We cast a wide net around what we consider to be power-sharing institu-

tions. Building on the work of Strøm and Gates (2012), we distinguish three dimensions of power-sharing: *constraining*, *inclusive*, and *dispersive* institutions. Each of these three three types of institutions is expected to induce a specific type of powersharing practice, namely the absence of political discrimination (constraining), broad elite coalitions (inclusive), and effective regional autonomy (dispersive).

Empirically, we integrate two cutting-edge powersharing datasets: one that captures *de jure* power-sharing institutions and the other that captures *de facto* power-sharing practices – i.e. actual inclusion, discrimination, and autonomy. These datasets offer global coverage of 180 countries from 1975-2010, allowing us to overcome the limitations of studies that cover only narrow subsets of cases, such as post-conflict states. Our unique combination of data on both formal and informal power-sharing allows us to employ causal mediation analysis in which we estimate the direct effects of formal institutions on both civil war risk and power-sharing behavior, and the indirect effect of institutions on conflict, as mediated by behavior. Thus, we are able to take a large empirical leap forward, untangling the direct and indirect effects of three distinct types of power-sharing and reconciling at least some of of more prominent conflicting claims in the literature.

Consistent with the work of Gates, Graham, Lupu, Strand and Strøm (2013), we find that constraining power-sharing institutions make ethnic conflict onset less likely by limiting the share of the population belonging to discriminated ethnic groups. However, while Gates et al. failed to find a direct effect of inclusive powersharing institutions on civil conflict, we are able to unpack this relationship and identify two conflicting, indirect effects. We find that inclusive institutions increase the share of ethnic groups represented in government, thereby reducing the likelihood of conflict with excluded groups, but increasing the likelihood of infighting among power-sharing partners. We also find that dispersive institutions make it more likely that ethnic groups enjoy regional autonomy, and that regional autonomy reduces the likelihood of territorial conflict.

In the next section we briefly review the literature on power-sharing. We derive three main hypotheses on how formal institutions through their effect on power-sharing practices should affect the likelihood of conflict onset. Section four presents the data on which we draw, while section five present the empirical tests of the hypotheses related to inclusive, constraining and dispersive institutions.

In the conclusion we discuss future steps in our research on formal and informal power-sharing.

2 Power-sharing in the literature

Much of the literature on power-sharing[1] pays tribute to Lijphart's (1969, 1975) notion of consociationalism and its four essential components, namely the grand coalition, the mutual veto, segmental autonomy and proportionality (see most recently, Martin, 2013). Consociationalism should allow for the peaceful coexistence of ethnically distinct groups and democracy in "plural societies" – a position that had been negated implicitly or explicitly by a series of scholars (e.g., Dahl, 1971; Rabushka and Shepsle, 1972). In his early writings Lijphart (1969, 1975) conceptualized consociationalism largely as a set of behavioral practices by political elites. For instance, proportionality in the recruitment for administrative positions (and not proportional representation as an electoral system) was originally conceptualized as a practice and not as a de jure prescription.

Later, Lijphart and others have turned their attention to formal power-sharing institutions and studied the correlation of these formal rules with outcomes other than democracy such as conflict, economic and social performance (see, e.g., Lijphart, 1999). This focus on institutions is, at least partially, rooted in the desire to impact policy (Lijphart, 1985). As Belmont, Mainwaring and Reynolds (2002, 2) convincingly argue "[i]n contrast [to most other factors influencing conflict], political institutions can be altered to increase the likelihood of managing conflict democratically." Consequently, if power-sharing practices have positive effects and the former can be induced by power-sharing institutions, scholars should try to understand what institutions are most conducive for such practices.

In the civil war literature, scholars investigate the impact of a large number of different formal power-sharing institutions on the outbreak of intrastate conflict. While research on civil war onset tends to focus on electoral rules and the distinction between parliamentary and presidential regimes (e.g., Reynal-Querol, 2002; Roeder, 2005; Schneider and Wiesehomeier, 2008; Selway and Templeman, 2012) studies on conflict recurrence spearheaded by Hartzell and Hod-

[1] An excellent review of this literature appears in Binningsbø (2013), on whom we rely heavily in what follows.

die (2003) usually focus either on a mix of political, military, and territorial power-sharing provisions in peace agreements or their individual effects (see, Walter, 2002; Mukherjee, 2006; Hartzell and Hoddie, 2007; Jarstad and Nilsson, 2008; Jarstad, 2009; Mattes and Savun, 2009; Mehler, 2009; Martin, 2013). Due to different conceptualizations and operationalizations of power-sharing in the existing literature no consensus on the actual effects of power-sharing has been reached. Some scholars even argue that power-sharing endangers peace (Roeder, 2005; Selway and Templeman, 2012).

Work on power-sharing by Strøm and Gates (2012) introduces a new conceptual framework for studying power-sharing by arguing that power can be shared in three distinct ways. These three dimensions of power-sharing find expression in three distinct institutional frameworks. First, constraining institutions should guarantee that governments do not overreach and violate either individual or collective rights. Second, inclusive institutions should guarantee inclusion of relevant groups into government and give them a say in governmental affairs. Third, dispersive institutions devolve some government powers to sub-national units. The authors find that constraining institutions reduce the risk of civil war but inclusive and dispersive institutions do not.[2]

In this paper, we consider another reason for the conflicting interpretations of the effects attributed to power-sharing: the lacking attention paid to power-sharing behavior or practice in the literature, which is most likely due to the difficulty in collecting data on de facto power-sharing. Some experts on conflict recurrence already note the difference between de jure power-sharing provisions in peace agreements and their de facto implementation (Jarstad and Nilsson, 2008; Ottmann and Vüllers, 2014 forthcoming), but these studies cannot assess power-sharing behavior when it is not prescribed, but instead emerges in the absence of formal powersharing rules. This is problematic because such cases are not uncommon.

The lack of attention paid to behavioral practices has other costs as well. It is possible for formal powersharing institutions to fail to produce peace either because the institutions fail to induce powersharing behavior or because the powersharing behavior they induce fails to induce peace. Similarly, if they induce peace it may be because they induce powersharing behavior and this powershar-

[2]As we will discuss below, Gates, Graham, Lupu, Strand and Strøm (2013) study all civil wars, while the main focus in this paper is on ethnic civil wars.

ing behavior induces peace, or it may be that the formal rules have a direct effect on civil peace that is not mediated through powersharing behavior at all. Most studies simply lack information on the behavior of the actors that are involved in power-sharing pacts and civil war, making it impossible to untangle these direct and indirect effects.

Recent research that builds on the "Ethnic Power Relations" (EPR-ETH) by Cederman, Wimmer and Min (2010) has begun to study power-sharing behavior, but this work has correspondingly paid less attention to formal institutions (Wucherpfennig, 2013; Bormann, 2014). We build on these efforts by exploring the interaction of power-sharing institutions and behavior as well as their separate and joint effects on the risk of ethnic civil war.

3 Power-sharing institutions and practices

We argue that formal institutions have both direct and indirect effects on civil peace. Indeed, when scholars argue that formal powersharing induces peace, it is primarily indirect effects that they have in mind. Powersharing institutions are expected to induce peace primarily by inducing powersharing behavior. However, it is also possible that formal institutions have direct effects that are not mediated by powersharing practices. In other words, institutions can affect civil war risk directly, i.e., without altering power-sharing behavior.

One possible mechanism for such a direct effect is that formal rules shape the expectations of actors about their future within a state. For example, if formal rules exist that promise reserved seats in the legislature for minority groups, the expectation of future inclusion may discourage armed rebellion by minority groups in the present, even if elections under those formal rules have yet to take place and the minority group currently has no power in government. This distinction between present reality and future expectations is particularly important during transitional periods where new formal rules have been agreed to but not yet implemented, or when rules previously in force have been temporarily suspended, such as during a period of martial law.

Thus, we argue that powersharing institutions can influence civil conflict indirectly by inducing powersharing behavior, or directly, by shaping actors' expectations about the future. But what types of powersharing are most effective? Which type of effect (direct or indirect) dominates in each case? What types of

conflict are prevented?

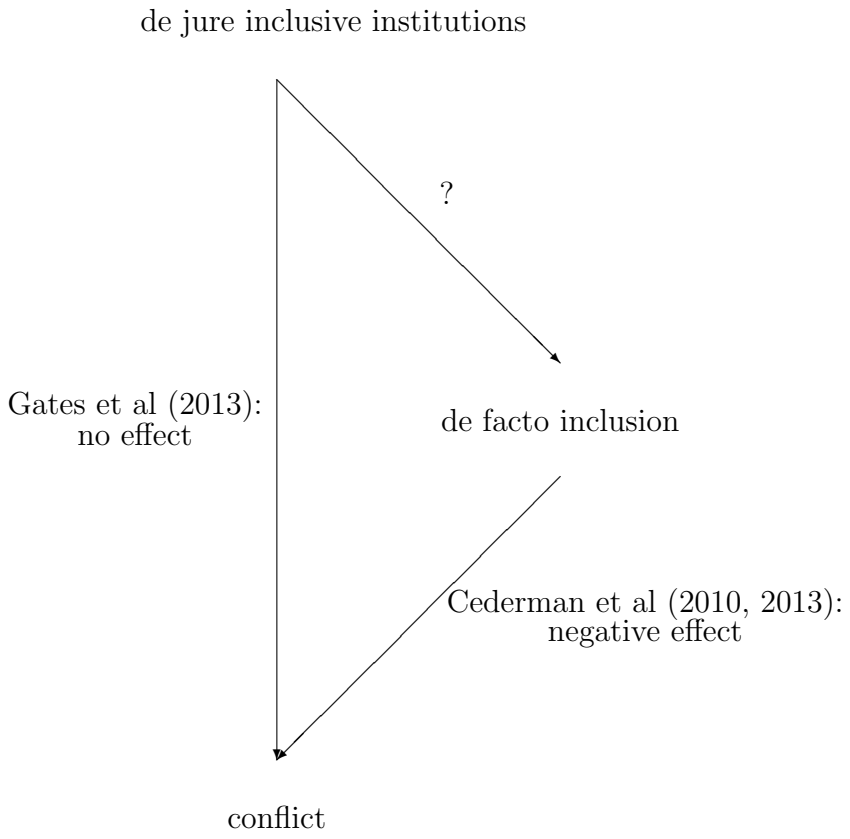
Our answers to these questions begin by drawing on Gates, Graham, Lupu, Strand and Strøm (2013), who identify three dimensions of power-sharing: inclusive, and dispersive, and constraining. Inclusive powersharing guarantees inclusion of minority groups within government decision making, and is closely aligned with core elements of consociationalism Lijphart's (1969, 1975). Inclusive institutions include reserved legislative seats or executive positions for minority groups and mandates of military inclusiveness. Dispersive powersharing involves the delegation of power away from the central government toward regional governments and includes institutions that empower regional governments and ensure the accountability of those governments to regional constituencies. Regional autonomy has been touted at least since Gurr, Harff, Marshall and Scarritt's (1993) influential work as a way to mitigate conflict (see also Gurr, 2000). Lastly, constraining powersharing protects minority groups and parties out of power from abuse and discrimination. Constraining institutions include independent judiciaries, prohibitions against religious discrimination, and bans on ethnic parties.

While these links between power-sharing institutions and conflict have been debated in the literature for some time, we have relatively little substantive knowledge, especially at the empirical level, about the behavioral mechanisms that link institutions to conflict. In what follows, we identify the specific powersharing behavior each type of institution is expected to induce and discuss both the direct and indirect anticipated effects on civil conflict.

The goal of inclusive power-sharing institutions is to guarantee access to government to particular subsets of society. Since our measures of power-sharing practices rely on information on ethnic groups, we argue that ethnic groups are supposed to gain governmental access through inclusive institutions. Consequently, in the presence of such institutions we should see a larger share of ethnic groups represented in government. As shown in Figure 1 we expect that inclusive institutions should work through an increase of de facto inclusion to diminish the likelihood of conflict.[3] Empirically, while Cederman, Wimmer and Min (2010) find evidence for this conflict reducing effect of inclusive practices (see also Cederman, Gleditsch and Buhaug, 2013), Gates, Graham, Lupu, Strand and Strøm (2013) find no direct effect from inclusive power-sharing institutions on

[3]The question mark in this figure and in the next three indicate that there is no firm empirical evidence for the links specified between power-sharing institutions and practices.

Figure 1: Inclusive institutions



conflict onset. It might be, however, that the effect of inclusive institutions is mediated by inclusive practices by ethnic elites. Based on this we propose our first hypothesis:

Hypothesis 1. *Inclusive power-sharing institutions, by making governments more inclusive, decrease the likelihood of conflict onset.*

While this general hypothesis follows quite directly from recent research on political inclusion, some of this work also highlights that more inclusive arrangements may heighten the tensions among the government coalition. Wimmer, Cederman and Min (2009) distinguish between civil wars among partners of power-sharing arrangements, i.e. infighting, and those that involve an excluded group fighting against the state. Roessler (2011) explores this dynamic in Sub-Saharan Africa and argues that power-sharing simply moves the commitment

problem that existed between the government and excluded ethnic groups into the government coalition. Put differently, power-sharing in the present does not rule out defections by one of the power-sharing partners in the future (also see Walter, 2002; Dal Bó and Powell, 2009). Based on these arguments we refine our first hypothesis to capture this more nuanced effect of power-sharing and propose the two following sub-hypotheses:

Hypothesis (H1a)**.** *Inclusive power-sharing institutions, by making governments more inclusive, decrease the likelihood of conflict onset between the government and a politically excluded group.*

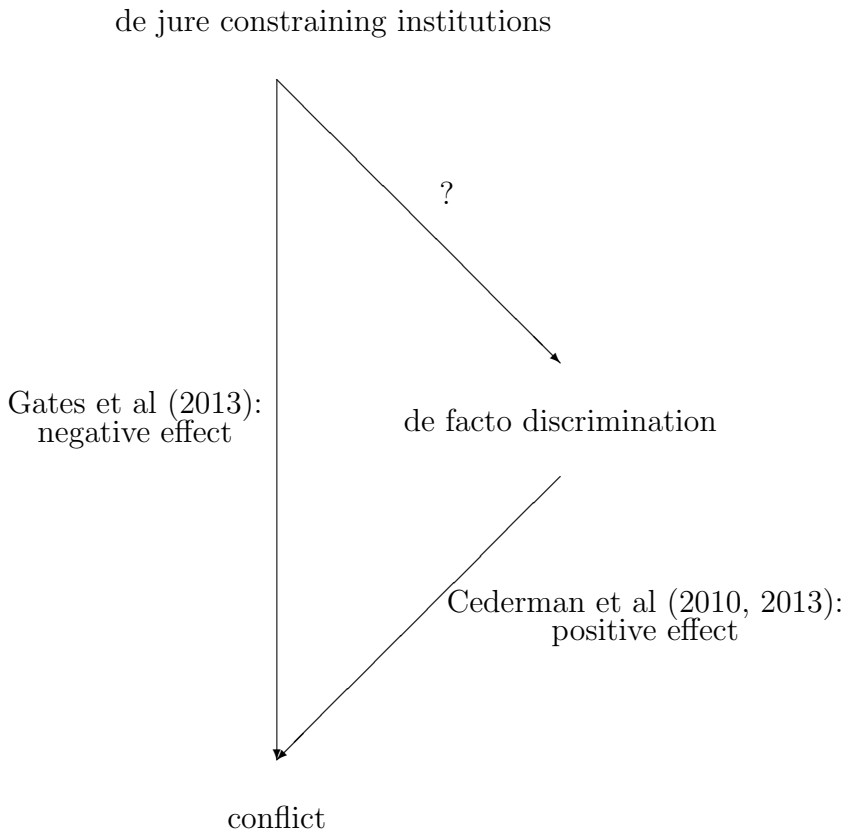
Hypothesis (H1b)**.** *Inclusive power-sharing institutions, by making governments more inclusive, increase the likelihood of conflict onset among the power-sharing partners in government.*

Constraining power-sharing institutions, as mentioned above, should make overreach by governments more difficult. In other words, in the presence of strong institutional constraints government-initiated discrimination against particular ethnic groups (and individuals) should be less likely. Consequently, we assume, as illustrated in Figure 2, that the presence of constraining institutions should affect conflict onset mostly by reducing discrimination in a country. Again, studies by Cederman, Wimmer and Min (2010) and Cederman, Gleditsch and Buhaug (2013) show that discriminated groups and the importance of these groups in a country increase the likelihood of ethnic conflict. Likewise, Gates, Graham, Lupu, Strand and Strøm (2013) find that such constraining institutions, decrease the likelihood of all civil wars. Based on this, we propose our second hypothesis:

Hypothesis 2. *Constraining power-sharing institutions, by reducing the extent of discrimination, decrease the likelihood of conflict onset.*

The last type of institutions, namely dispersive power-sharing institutions, aims at giving more autonomy to particular regions and groups. Under the assumption that federal or other lower-tier units are often not under the direct control of the central government but rather governed by other ethnic groups, dispersive institutions should increase the likelihood that groups have regional autonomy and thus, as illustrated in Figure 3, lead to de facto dispersion. Cederman, Hug, Schädel and Wucherpfennig (2013) find that groups with regional

Figure 2: Constraining institutions



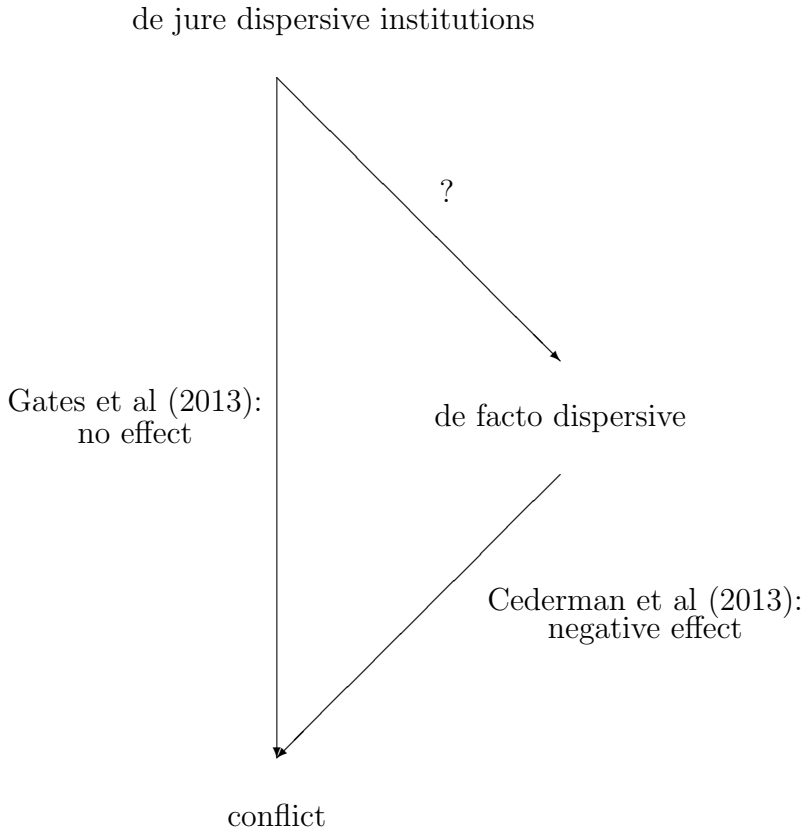
autonomy are less likely to engage in conflict if no previous conflict has yet occurred. In a postwar setting, however, regional autonomy reduces the likelihood of conflict recurrence in a significant way only if it is combined with ethnic inclusion into the central government. Gates, Graham, Lupu, Strand and Strøm (2013), however, find no direct effect of dispersive institutions on conflict onset. Based on this we propose the following hypothesis:

Hypothesis 3. *Dispersive power-sharing institutions, through their positive effect on regional autonomy, decrease the likelihood of conflict onset.*

4 Data

To evaluate our hypotheses we need data that comprise information on institutions and behavior, and an empirical strategy that allows us to assess both the

Figure 3: Dispersive institutions



direct and indirect effects of power-sharing institutions. We first present our data before turning to our empirical strategy and the analyses subsequently.

Combining two recent datasets allows us to assess the relationships between power-sharing institutions, power-sharing behavior of the leaders of ethnic groups, and the occurrence of violent civil conflict. The *Power-sharing Agency and Civil Conflict* (PACC) dataset captures primarily *de jure* power-sharing institutions (Strøm and Gates, 2012), while the *Ethnic Power Relations* (EPR-ETH) dataset captures *de facto* information regarding the allocation of power at the center among ethnic groups within each state (Cederman, Wimmer and Min, 2010; Cederman, Gleditsch and Buhaug, 2013).

The PACC dataset offers annual data on 180 countries from 1975-2010.[4] This

[4]All independent states with populations greater than 250,000 are included. A country-day version of this dataset exists as well (Gates, Graham, Lupu, Strand and Strøm, 2013).

broad coverage allows us to assess the effect of power-sharing institutions in a global sample that includes states with and without a history of ethnic conflict.[5] At the core of the dataset are nineteen indicators of power-sharing, each of which is associated with one the three distinct dimensions of power-sharing Strøm and Gates (2012) identify theoretically: inclusive, dispersive, and constraining. These indicators are listed in Table 1.

Table 1: Underlying indicators of the three dimensions of power-sharing in the PACC dataset

Type of power-sharing	Indicators
Inclusive	Mandated Grand Coalition or Unity Government
	Mutual Veto
	Reserved Executive Positions
	Reserved Seats
	Mandated Military Inclusiveness
Dispersive	Subnational Tax Authority
	Subnational Education Authority
	Subnational Police Authority
	State/Provincial Executive Elections
	State/Provincial Legislative Elections
	Constituency Alignment (i.e. state/provincial representation in the upper house)
Constraining	Religion Protected (Freedom From Discrimination)
	Religion Protected (Freedom of Practice)
	Military Legislator Ban
	Ethnic Party Ban
	Judicial Review
	Judicial Tenure (Two binary variables)
	Judicial Constitution (i.e. role of the judiciary described in the constitution)

The measure of *inclusive* power-sharing incorporates two of Lijphart's (1969) components of consociationalism: grand coalitions and mutual veto. It also includes the reservation of seats or executive positions for specific minority groups to ensure their inclusion in central-government decision-making and the (mandated) inclusiveness of the military.[6] The indicators of *dispersive* power-sharing are grouped along three dimensions: (1) the powers allocated to sub-national

[5]This feature of the PACC is a decisive advantage as most other studies draw inferences about the effects of power-sharing institutions by using information from peace-agreements. The latter, however, are only adopted in postwar settings, making broader inferences impossible.

[6]Note that these are exclusively *de jure* measures and do not include some of the arrangements that are frequently associated with consociationalism, such as the inclusion of extraneous parties, i.e. parties that are not necessary for a parliamentary majority, in the governing coalition.

governments; (2) whether sub-national governments are directly elected; and (3) the representation of sub-national constituencies in the central government via the upper house of the legislature. Finally, the indicator of *constraining* power-sharing institutions includes the constitutional protection of religious freedom; the barring of the military from engagement in elected politics; the banning of ethnic or religious parties; and the existence of an effective judicial check on the authority of elected officials.[7]

Strøm, Gates, Graham and Strand (2013) conduct a factor analysis of these 19 indicators and find that they, indeed, cluster cleanly around three latent variables, with each indicator correlating most closely with the type of power-sharing it is theoretically associated with. Based on this analysis, they then proceed to construct three indices, *Inclusive power-sharing*, *Dispersive power-sharing*, and *Constraining power-sharing*, which we employ in our analysis to cover the formal institutions.[8]

For the power-sharing practices we draw on the EPR-ETH data which comprises information about politically relevant ethnic groups in all states where political actors advance ethnic claims, or where the state politically discriminates ethnic groups, i.e., whenever ethnicity is relevant in national politics.[9] The EPR codebook notes that "[an] ethnic group is considered politically relevant if at least one political organization claims to represent it in national politics..." For all politically relevant groups in a state the EPR-ETH dataset provides information on the political access of group representatives to executive power, and the group sizes relative to the ethnically relevant population.[10]

As Table 2 shows, the EPR data is based on eight categories of power-access for ethnic groups: the monopoly and dominant categories describe regimes in

[7]Constraining power-sharing refers specifically to institutions designed to protect the rights of minority groups. Therefore, it does not include checks on executive authority provided to opposition parties in the legislature, which are the dominant components of veto-player-type measures of political constraints (e.g. *Checks* from the Database of Political Institutions (Beck, Clarke, Groff, Keefer and Walsh, 2001) or the executive constraints (*XCONST*) component of Polity (Marshall, Gurr, Davenport and Jaggers, 2002)).

[8]For details on index creation and the underlying indicators, see Strøm and Gates (2012) and the PACC Codebook that is available from the authors on request.

[9]Discrimination is usually negative as in Apartheid South-Africa or in the United States under the Jim Crow regime. However, it can also be positive as exemplified by the case of Hispanics in the United States. Hispanics became a politically relevant ethnic group when they were mentioned in the Voting Rights Act of 1965.

[10]Token membership by ethnic elites who cannot or do not effectively represent a group does not qualify for an "inclusion" coding.

which representatives from one ethnic group rule alone. Representatives of groups with a senior- and junior-partner coding share power in multi-ethnic coalitions. All other groups are considered as being excluded from executive power but might enjoy regional or separatist autonomy. Members of powerless groups do not even enjoy autonomy rights while discriminated groups are actively persecuted by the state. As power-sharing behavior is only relevant if there are at least two politically relevant ethnic groups, we drop all observations from countries where ethnicity is not relevant.[11]

Table 2: Categories of power access in the EPR dataset

Included	Monopoly
	Dominant
	Senior Partner
	Junior Partner
Excluded	Regional Autonomy
	Separatist Autonomy
	Powerless
	Discriminated

While Gates, Graham, Lupu, Strand and Strøm (2013) offer information at the country-level, the EPR-ETH data is based on group-level characteristics. To combine the two datasets, we choose to rely on country-years as our unit of analysis. Since the EPR-ETH data offers only information on ethnic power-sharing, we restrict our main analyses to ethnic civil wars, but for comparative purposes also report analyses that consider both ethnic and non-ethnic civil conflicts in the appendix.[12] Our dependent variables are from the UCDP/PRIO Armed Conflict Database (ACD) that codes a new civil war onset when at least 25 battle-deaths have occurred during a calendar year (Gleditsch, Wallensteen, Eriksson, Sollenberg and Strand, 2002; Harbom and Wallensteen, 2010). In order to distinguish new civil wars from dormant conflicts, we only code a new onset if there has been at least a two-year intermission in fighting. We identify ethnic civil wars by drawing on the work by Wucherpfennig, Metternich, Cederman and Gleditsch (2012), who match rebel to ethnic groups and code a new ethnic civil war whenever rebel groups claim to fight on behalf and recruit from a specific ethnic group. This conceptualization implies that we consider peace to imply that no new conflict

[11] Table 7 in the appendix lists all country-years covered in the analyses.

[12] We keep observations with ongoing conflicts in the analyses. When dropping country-years with ongoing conflicts we obtain substantively very similar results.

flares up in a country.

Our empirical approach demands that we specify de facto inclusion, discrimination, and territorial dispersion of power. To make the analysis as intuitive as possible we choose three straightforward indicators that we aggregate from the group-level EPR-ETH data to the country-level. First, de facto inclusion corresponds to the share of ethnic groups represented in governments that comprise political leaders from at least two ethnic groups. For all governments that are formed by a monopoly or a dominant ethnic group this indicator equals 0.[13] Second, we measure de facto discrimination by the population share of ethnic groups that suffer active political discrimination at the hands of the government. More specifically, we consider groups whose members are denied essential civil liberties such as voting or citizenship rights due to their ethnic identity as being discriminated. Third, de facto dispersion of power is measured by the share of the population belonging to ethnic groups with regional autonomy.[14]

As we wish to assess both the direct and indirect effect of power-sharing institutions, we draw on Imai, Keele, Tingley and Yamamoto (2011) and their framework for causal mediation analysis. For our hypotheses we report models that estimate how institutions affect power-sharing behavior, and how the two jointly affect ethnic conflict onset. Based on these models we then carry out a causal mediation analysis to assess whether institutions have an indirect effect through power-sharing behavior or whether the effect is direct.

[13]We have explored a series of other operationalizations, including a dummy indicator of whether one or more than one ethnic group is in government, an interaction between this dummy indicator and the population share of ethnic groups represented in government, and finally the latter indicator without interaction. We have generated the same set of variables by using as dummy variable an indicator for coalitions of ethnic groups forming a majority. The substantive conclusions from all these analyses are identical to the ones presented below.

[14]As table 2 suggests, regional autonomy is coded in the EPR dataset only for ethnic groups not included in government. Cederman, Hug, Schädel and Wucherpfennig (2013) provide additional data that we will use, namely whether senior or junior partners in government had some sort of autonomy in their regions. We use this more fine-grained coding for additional analyses reported in the appendix.

5 Empirical analysis

We first assess the way in which inclusive power-sharing institutions affect inclusive practices and the likelihood of ethnic conflict onset.[15] The first two columns of Table 3 report the results of two models that are based on two of the causal arrows in Figure 1. More specifically, in the first model we wish to assess what affects power-sharing behavior (i.e., the share of ethnic groups included in power-sharing governments).[16] The second model assesses how both power-sharing institutions and behavior affect the likelihood of ethnic conflict onset. We use for both models a rather sparse empirical specification, focusing on the main explanatory variables for ethnic conflict onset at the country-level identified by (Cederman, Wimmer and Min, 2010; Cederman, Gleditsch and Buhaug, 2013), namely the log of the GDP per capita, the log of the population size, and the number of prior conflicts that a country has experienced since world war II. To this we add two dummies for the colonial legacy to mitigate at least in part some issues of endogeneity,[17] and polynomials of the number of peaceful years to control for time-dependence. Finally, apart our two main variables, namely inclusive power-sharing institutions and the share of ethnic groups included in power-sharing arrangements, we also add an indicator variable for all cases for which the institutions variable is missing.

The results for the first model show that inclusive institutions, controlling for other factors, increase the share of ethnic groups included in power-sharing governments. This positive coefficient also reaches statistical significance. The second, conflict-model, however, shows that when controlling for the share of ethnic groups included in power-sharing governments inclusive power-sharing institutions do no longer statistically significantly affect the likelihood of conflict. On the other hand in this second model the share of ethnic groups included in power-sharing governments has a slight negative but statistically insignificant

[15] In the appendix we offer a series of analyses comparing models focusing on conflict onsets generally and ethnic conflict in particular. As the results are quite similar we focus our causal mediation analyses on the explanation of ethnic conflict, as this is more appropriate for a dataset focusing on ethnic groups.

[16] For simplicity's sake we estimated this first model as a linear model despite the fact that the dependent variable it is bounded by 0 from below and 1 from above.

[17] Both Wucherpfennig, Hunziker and Cederman (2012) and (r Cederman, Hug, Schädel and Wucherpfennig, 2013)ely in part on this colonial heritage to instrument for power access, resp. territorial autonomy.

effect on ethnic conflict onset.

Table 3: Inclusive institutions and ethnic conflict

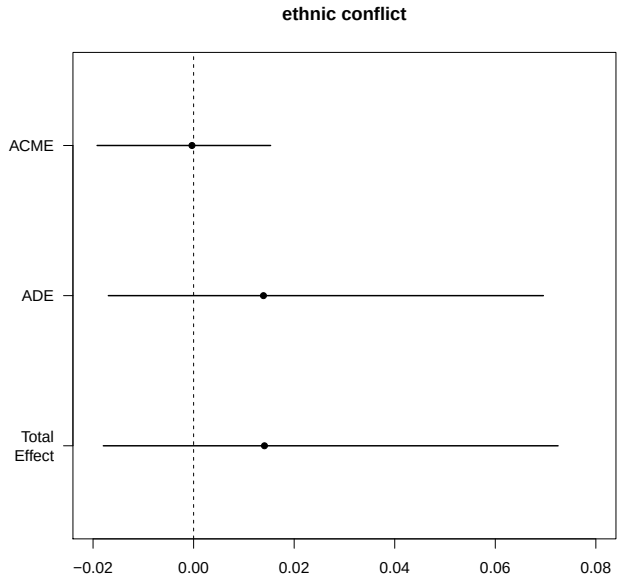
	inclusion	ethnic conflict
Inclusive PS	0.090*	0.023
	(0.007)	(0.051)
Institution missing data	−0.069*	0.119
	(0.012)	(0.096)
Included share of ethnic groups		−0.023
		(0.134)
Log(GDP p.c.)	−0.023	−0.294*
	(0.012)	(0.100)
Log(Population)	−0.058*	0.209*
	(0.010)	(0.080)
Prior Conflicts	−0.004	0.076*
	(0.003)	(0.014)
British Colony	0.204*	−0.198
	(0.015)	(0.126)
French Colony	0.340*	0.083
	(0.016)	(0.128)
Peace Years	0.008*	−0.018
	(0.002)	(0.020)
Peace Years^2	−0.000*	0.001
	(0.000)	(0.001)
Peace Years^3	0.000*	−0.000
	(0.000)	(0.000)
constant	0.707*	−2.507*
	(0.084)	(0.691)
N	4104	4104
R^2	0.188	
adj. R^2	0.186	
Resid. sd	0.348	
AIC		953.724
BIC		1257.071
$\log L$		−428.862

Standard errors in parentheses
* indicates significance at $p < 0.05$

These results, however, do not reflect the possibility that the effect of inclusive power-sharing institutions is mediated by power-sharing behavior. A causal mediation analysis suggests that this is barely the case. Although the estimated average mediated effect (ACME) is negative as expected by our first hypothesis, it is small and statistically not significant. The estimated average direct effect (ADE) of inclusive power-sharing institutions is even positive, i.e. it increases the risk of civil war, but fails to reach statistical significance as well. These effects

are depicted in Figure 4.[18]

Figure 4: Maximum effect of inclusive power-sharing institutions (mediated through the share of ethnic groups in power-sharing coalitions) on ethnic conflict onset



These results fail to support our first hypothesis and question the overall beneficial effects of political inclusion. To assess our sub-hypotheses, which suggest a differential effect of inclusion on two types of distinct conflicts, Table 4 reports the results of models that distinguish between governmental conflicts due to infighting among power-sharing partners and those involving at least one excluded group in a fight against the power-sharing partners.[19]

[18] As the distribution of the variable of inclusive power-sharing institutions is severely skewed, we carried out the same analyses as above with a dichotomous indicator that indicates whether at least one power-sharing element is present. The results we obtained lead to exactly the same substantive conclusions. Following Cederman, Gleditsch and Buhaug (2013, chapter 7), we also assessed whether ethnic conflicts over territory are differently affected by inclusion then those over government. As these authors we find a similar pattern with inclusive institutions having a stronger direct effect on the likelihood of governmental conflicts than on territorial ones.

[19] Wimmer, Cederman and Min (2009), as they are not explicitly interested in power-sharing, use as explanatory variable "center segmentation," i.e., the number of groups represented in government, and not the share of groups represented. If we add "center segmentation" to our models we fail to find the significant positive effect on infighting reported by Wimmer, Cederman and Min (2009, 332).

Table 4: Inclusive institutions and ethnic governmental conflict among and against power-sharing partners

	inclusion	infighting	outfighting
constant	0.707*	−0.505	−0.381
	(0.084)	(1.934)	(1.091)
Inclusive PS	0.090*	0.018	0.033
	(0.007)	(0.083)	(0.088)
Log(GDP p.c.)	−0.023	−0.446	−0.369*
	(0.012)	(0.246)	(0.162)
Log(Population)	−0.058*	−0.201	−0.091
	(0.010)	(0.248)	(0.128)
Prior Conflicts	−0.004	0.075	0.009
	(0.003)	(0.056)	(0.028)
Peace Years	0.008*	0.023	−0.024
	(0.002)	(0.049)	(0.030)
Peace Years^2	−0.000*	−0.000	0.001
	(0.000)	(0.002)	(0.002)
Peace Years^3	0.000*	−0.000	−0.000
	(0.000)	(0.000)	(0.000)
Institution missing data	−0.069*	0.049	0.135
	(0.012)	(0.261)	(0.152)
British Colony	0.204*	−4.207	−0.161
	(0.015)	(202.772)	(0.213)
French Colony	0.340*	−0.566*	0.318
	(0.016)	(0.282)	(0.173)
Included share of ethnic groups		1.138*	−0.618*
		(0.344)	(0.222)
N	4104	4104	4104
R^2	0.188		
adj. R^2	0.186		
Resid. sd	0.348		
AIC		154.862	368.822
BIC		458.208	672.168
$\log L$		−29.431	−136.411

Standard errors in parentheses
* indicates significance at $p < 0.05$

The results reported in Table 4 show that inclusive power-sharing institutions positively affect the share of ethnic groups represented in power-sharing arrangements, but the latter has quite distinct effects on the two sets of conflicts. The results show that the larger the share of ethnic groups represented in a power-sharing arrangement, the likelier a conflict among these partners is. Vice-versa, an identical increase in the share of ethnic groups in power-sharing arrangements decreases significantly the likelihood of a conflict with excluded groups.[20]

[20]Strictly speaking the two models dealing with conflict among power-sharing partners and against excluded groups are obviously linked. For this reason we report in the appendix in

We depict these effects in Figure 5. The two panels of this figure show that inclusive institutions have no direct, but an indirect effect, on conflict. In addition, the direction of this effect depends on the type of conflict we consider, i.e. whether among power-sharing partners or between the state and an excluded group. These opposing effects are clearly the reason why we failed to find effects for inclusive institutions and practices on conflict onset above. Similarly, it is likely that Gates, Graham, Lupu, Strand and Strøm's (2013) null finding, that inclusive institutions do not reduce the likelihood of conflict onset, is due to these two opposing effects of these institutions.

Figure 5: Maximum effect of inclusive power-sharing institutions (mediated through the share of ethnic groups in power-sharing coalitions) on ethnic conflict onset

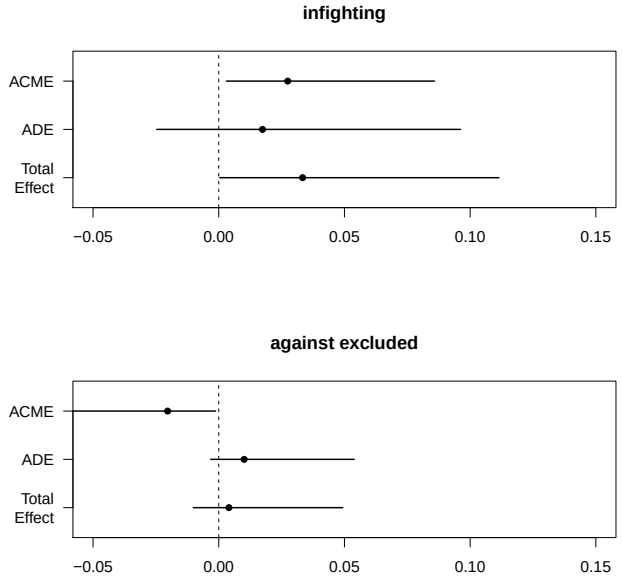
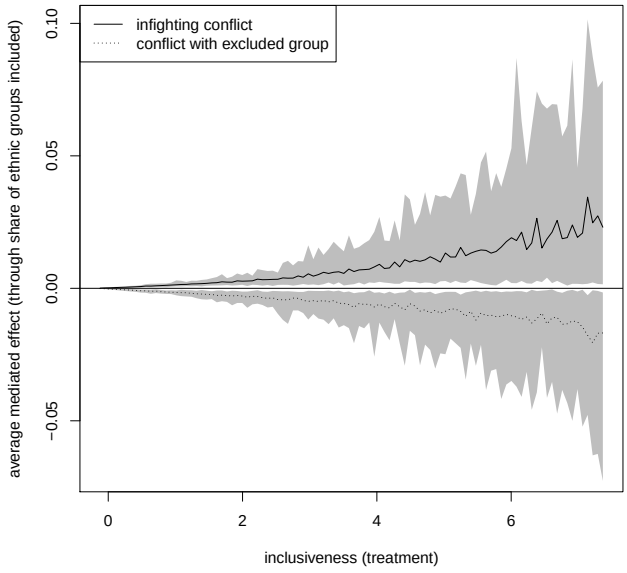
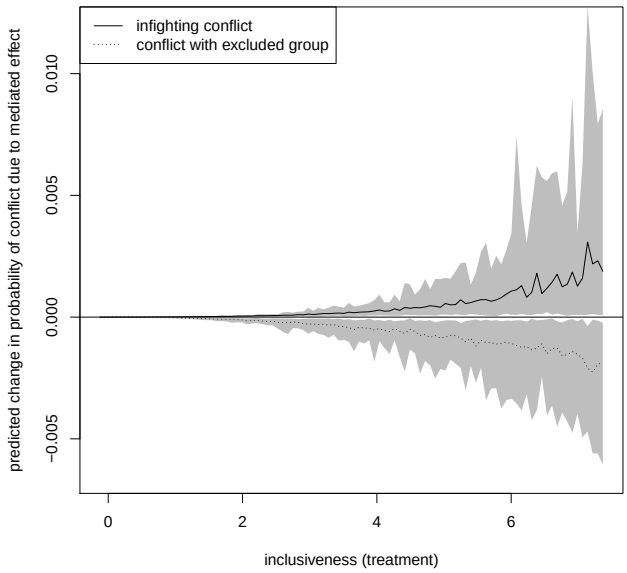


Table 11 the results of a multinomial probit model (Imai and van Dyk, 2005*a*; Imai and van Dyk, 2005*b*). While some small differences eppear, the substantive insights regarding power-sharing remain the same. For this reason we continue our analysis with the simpler two probit models.

Figure 6: Maximum effect of inclusive power-sharing institutions (mediated through the share of ethnic groups in power-sharing coalitions) on ethnic conflict onset





The question obviously becomes what the respective importance of these effects on the two types of conflicts are. Figure 6 depicts the relevant information in two different ways. First, the mediated effect on the two types of conflict is reported as a function of the level of inclusive power-sharing institutions (top panel). Second, based on these mediated effects we generated changes in predicted probabilities of conflict onset (bottom panel).[21] As these two panels show, both in terms of marginal effects and average predictive differences in the conflict probabilities, the two types of conflicts are affected to similar (absolute) extents. For instance, if in all country-years the inclusive institutions were at their maximum the probability of an infighting conflict is predicted to increase, on average, by 0.023. The same change leads to a decrease of the probability of a conflict against excluded groups by 0.017. These changes, obviously, also relate to the frequency of these two types of conflict, as the number of governmental conflicts among partners of power-sharing arrangements is small, namely 15, while the conflicts involving politically excluded groups are more numerous, namely 35.

Moving to our second hypothesis we assess whether constraining power-sharing institutions act through a reduction in the share of discriminated ethnic groups to affect the likelihood of conflict onset. Models 1 and 2 in Table 5 demonstrate that constraining power-sharing institutions decrease the share of the discriminated population, and the latter increases the likelihood of ethnic conflict onset. Figure 7 shows that for the corresponding mediated effect the confidence interval excludes zero, and thus this effect is statistically significant. In contrast, both the direct and total effect are estimated with confidence intervals that include the value of zero. Consequently, this analysis lends strong support to our second hypothesis, which states that the effect of constraining power-sharing institutions operates through the level of discrimination of ethnic groups.

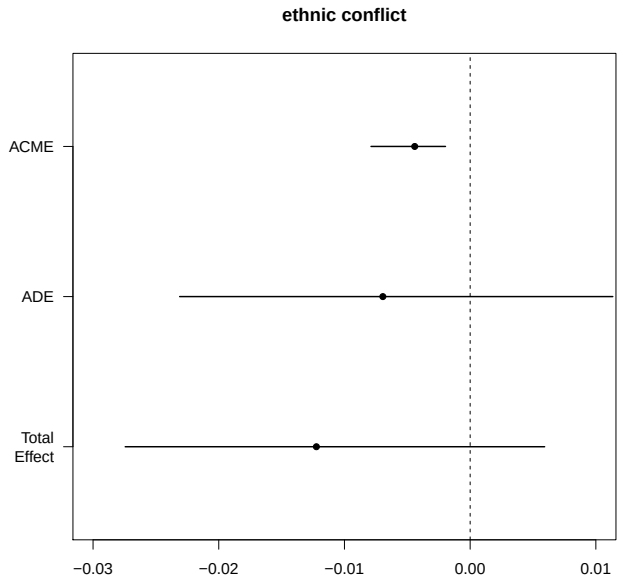
[21] This was done in a rather approximate way drawing on Gelman and Hill's (2007) proposal to generate "average predicted differences" in probabilities based on the sample values of the remaining covariates (see also Hanmer and Kalkan, 2013). Consequently, we used the simulated mediated effects and combined these with the estimated coefficients of the conflict equation and let the degree of inclusiveness vary from its minimum to its maximum.

Table 5: Constraining institutions and ethnic conflict

	discrimination	ethnic conflict
Constaining PS	−0.048*	−0.038
	(0.004)	(0.062)
Institution missing data	0.009	0.040
	(0.006)	(0.116)
Discriminated Pop. Share		0.700*
		(0.213)
Log(GDP p.c.)	0.006	−0.277*
	(0.005)	(0.099)
Log(Population)	−0.032*	0.256*
	(0.004)	(0.082)
Prior Conflicts	−0.002	0.075*
	(0.001)	(0.014)
British Colony	0.060*	−0.172
	(0.007)	(0.124)
French Colony	−0.076*	0.158
	(0.008)	(0.126)
Peace Years	−0.008*	−0.006
	(0.001)	(0.020)
Peace Years^2	0.000*	0.000
	(0.000)	(0.001)
Peace Years^3	−0.000*	−0.000
	(0.000)	(0.000)
constant	0.326*	−3.001*
	(0.038)	(0.708)
N	4104	4104
R^2	0.152	
adj. R^2	0.150	
Resid. sd	0.160	
AIC		942.553
BIC		1245.900
$\log L$		−423.277

Standard errors in parentheses
* indicates significance at $p < 0.05$

Figure 7: Maximum effect of constraining power-sharing institutions (mediated through population share of ethnic groups discriminated) on conflict onset



Finally, turning to our third hypothesis we assess whether territorial dispersive power-sharing increases the share of the population belonging to ethnic groups with regional autonomy and thus decreases the likelihood of territorial conflict onset.[22] Table 6 shows both for ethnic conflict in general and territorial ethnic conflict in particular that dispersive institutions slightly increase the share of the population with regional autonomy. When we consider the effect of institutions and practices on conflict we find a positive effect on conflict (both ethnic conflict in general and territorial conflict in particular) for institutions, and a negative one for the share of the population belonging to ethnic groups with regional autonomy. Both of these effects in Models 2 and 4 in Table 6 fail to reach statistical significance. When we assess, however, both the mediated and the direct effect we find that the mediated effect of territorial dispersive power-sharing through regional autonomy practices has a significantly negative effect both on ethnic conflict and territorial ethnic conflict (see Figure 8).[23]

6 Discussion

Our analyses provide considerable evidence that power-sharing institutions affect, through their influence on power-sharing practices, the likelihood of ethnic conflicts. We found in our causal mediation analyses almost no evidence for a direct causal effect from institutions on conflict-proneness. These results obviously hinge to a large extent on two important sets of assumptions. First of all, Imai, Keele, Tingley and Yamamoto (2011, 770) discuss that results from causal mediation analyses depend on the assumption of sequential inexorability, which consists of two parts:

> First, given the observed pretreatment con founders, the treatment assignment is assumed to be ignorable – statistically independent of potential outcomes and potential mediators. This part of the assumption is often called no-omitted-variable-bias, exogeneity, or un-

[22] Brancati (2014) offers an interesting analysis on the link between economic integration and separatist tendencies.

[23] Cederman, Hug, Schädel and Wucherpfennig (2013) employ in their study of regional autonomy a revised coding, i.e., by assessing also whether partners in power-sharing arrangements profit from regional autonomy. Using this new coding of regional autonomy (see appendix) suggests that the mediated effect of dispersive institutions through practice actually increase the likelihood of ethnic conflict, as well as ethnic territorial conflict.

Table 6: Dispersive institutions and ethnic conflict

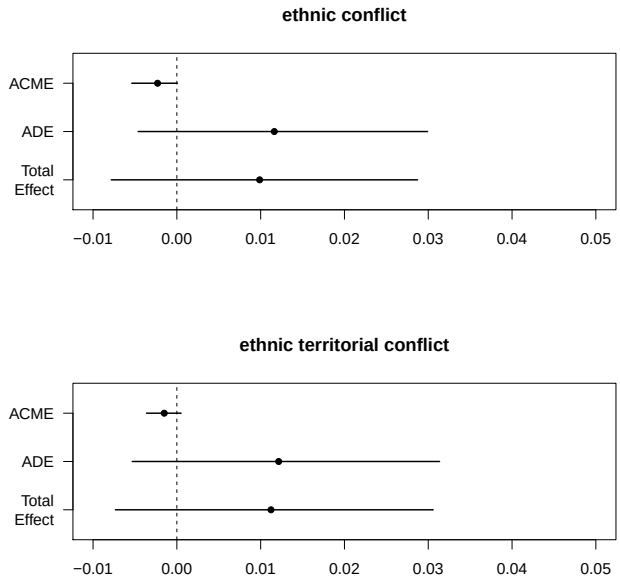
	autonomy	ethnic conflict	autonomy	territorial conflict
Dispersive PS	0.009*	0.063	0.009*	0.096
	(0.001)	(0.063)	(0.001)	(0.080)
Institution missing data	−0.001	0.138	−0.001	0.104
	(0.002)	(0.099)	(0.002)	(0.129)
Autonomous Pop. Share		−1.277		−1.004
		(0.744)		(0.821)
Log(GDP p.c.)	−0.008*	−0.291*	−0.005*	−0.255
	(0.002)	(0.103)	(0.002)	(0.134)
Log(Population)	0.013*	0.214*	0.013*	0.385*
	(0.002)	(0.086)	(0.002)	(0.108)
Prior Conflicts	0.005*	0.081*	0.004*	0.056*
	(0.001)	(0.014)	(0.001)	(0.016)
British Colony	−0.013*	−0.277*	−0.013*	−0.145
	(0.003)	(0.128)	(0.003)	(0.155)
French Colony	−0.010*	0.037	−0.010*	0.033
	(0.003)	(0.122)	(0.003)	(0.181)
Peace Years	0.001*	−0.002	0.001	−0.025
	(0.000)	(0.020)	(0.001)	(0.025)
Peace Years^2	−0.000	−0.000	−0.000	0.000
	(0.000)	(0.001)	(0.000)	(0.001)
Peace Years^3	0.000	−0.000	0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)
constant	−0.059*	−2.531*	−0.069*	−3.802*
	(0.018)	(0.740)	(0.018)	(0.976)
N	4104	4104	4104	4104
R^2	0.098		0.090	
adj. R^2	0.096		0.088	
Resid. sd	0.067		0.067	
AIC		945.977		590.760
BIC		1249.324		894.106
$\log L$		−424.989		−247.380

Standard errors in parentheses
* indicates significance at $p < 0.05$

> confoundedness. . . . The second part . . . implies that the observed mediator is ignorable given the actual treatment status and pretreatment confounders.

Second, our results also depend on the assumption that we rely on the right causal order. Both assumptions are difficult to assess. In the appendix we offer some sensitivity analyses dealing with the sequential ignorability assumption, while here we wish to address the issue whether our assumption concerning the causal order is correct.

Figure 8: Maximum effect of dispersive power-sharing institutions (mediated through population share of autonomous ethnic groups) on conflict onset (old autonomy coding)

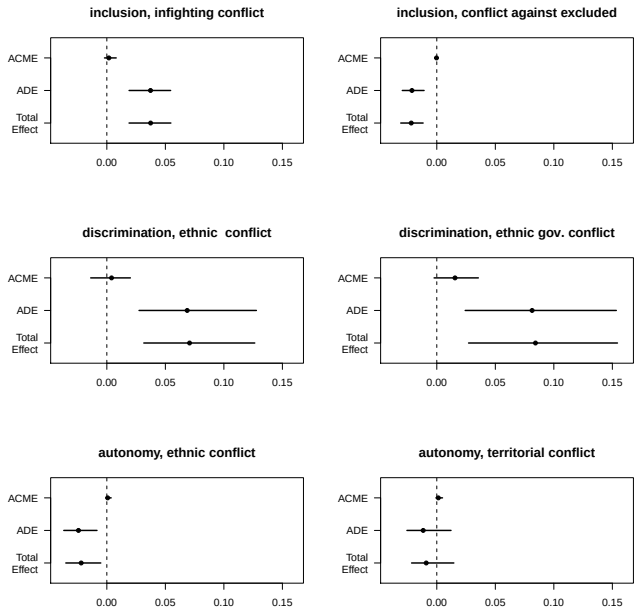


Obviously the link between power-sharing institutions and practices is a complex one, and the causal order may even differ across cases and situations. It seems useful, however, for the main empirical results to assess whether assuming the reverse causal order would lead us to very different results. More specifically, for the analyses underlying the causal mediation results depicted in Figures 6 (inclusive power-sharing), 7 (constraining power-sharing), and 8 (dispersive power-sharing) we re-estimate our models by considering power-sharing institutions as the mediator and power-sharing practices as the treatment.[24] For simplicity's sake we present only the graphical illustrations of these results in Figure 9.

Across the six panels in Figure 9 a striking commonality appears. The average causal mediated effect is systematically small and its confidence interval includes zero. At the same time, the direct effects of power-sharing practices are systematically larger and the confidence intervals systematically exclude the value of zero, with the single exception of the effect of autonomy on territorial conflict.

[24]We keep the exact same set of control variables, which is probably not the ideal setting.

Figure 9: Maximum effect of power-sharing practices mediated by power-sharing institutions on ethnic conflict onset



This suggests that the effect of power-sharing practices cannot be explained as being mediated by power-sharing institutions. Quite to the contrary, when we consider practices as being causally prior, the effects of these practices are almost entirely of a direct nature.

At the substantive level it is worth noting that in terms of the direction of the effects we find the expected pattern. Inclusion increases the likelihood of infighting among power-sharing partners, while reducing the probability that an excluded group engages in a conflict. Discrimination on the other hand increases the likelihood of ethnic conflicts in general and ethnic governmental conflicts specifically. Finally, regional autonomy granted to groups excluded from central power-sharing decreases the likelihood of ethnic conflict in general and territorial conflict in particular. This latter effect, as the confidence intervals comprise zero, is not statistically significant.

7 Conclusion

Whether and how power-sharing mitigates societal conflict and thus reduces the likelihood of civil war has preoccupied scholars for a considerable time. Drawing on broad or narrow conceptions of power-sharing institutions or behavior and studying both pre- and postwar or only postwar cases, conflict researchers have found conflicting results. In this paper we argued that in order to overcome this impasse we need on the one hand a more precise concept of power-sharing institutions and a more precise evaluation of how such institutions through behavioral practices actually affect conflict onset.

To do so we combined data on power-sharing institutions with measures of power-sharing practices of ethnic groups. The evaluation of our three main hypotheses led to mixed results. While we found some evidence that inclusive power-sharing institutions and practices reduce the likelihood of conflict onset against excluded groups, these same institutions and practices increase the likelihood of infighting. Much clearer is the mediated effect of dispersive institutions. The latter reduces the extent of discrimination in a country and through this significantly reduces the likelihood of conflict onset. power-sharing practice has also a non-negligible direct effect. Finally, we could also confirm our third hypothesis that territorial dispersive institutions, by increasing the population share of ethnic groups profiting from regional autonomy, decreases the likelihood of ethnic conflict in general and territorial conflicts in particular. When considering, however, also the regional autonomy granted to ethnic groups that belong to a power-sharing arrangement, this mediated effect disappears.

The effects we reported in this paper are, however, likely to be conservative estimates of the effects of power-sharing institutions and behavior. First of all we focused only on countries and years where power-sharing could effectively be deployed among ethnic groups. We did not consider at all the possibility that power-sharing might operate at a different level than ethnic groups. While this conservative bias in our results makes us obviously more confident about our positive results regarding our second hypothesis dealing with constraining institutions. This result as well as the other concerning inclusive institutions may, however, be affected equally by another problem, namely that power-sharing institutions, even when controlling for the various factors we introduced in our models, are not assigned to countries independently of the potential for conflict.

Put differently, we might face a problem of endogeneity, as power-sharing institutions might well be adopted especially in situations where tensions are so high that conflict is likely.

Consequently, in future research we will attempt to assess whether we have a sufficient number of pretreatment controls to obtain an unbiased estimate of the mediated effect of power-sharing institutions. As our assessment of the effect is obviously also quite imprecise, since we do not consider the specific groups targeted by specific institutions (e.g., the main religious groups in Lebanon), we will also assess these effects at the group level. Disaggregating the analysis to the group level is, however, also fraught with difficulties. As Wucherpfennig (2013) shows power-sharing offers may well be made strategically to a subset of groups. Whether this is related to institutions will be more difficult to assess.

Appendix

In this appendix we offer first information on the cases being used in our empirical analyses, and then present a series of additional analyses. Finally, in the last part we present sensitivity analyses for the main analyses presented in the text.

Cases

Table 7: Countries and years covered in the analysis

country	min(year)	max(year)	country	min(year)	max(year)
Afghanistan	1975	2002	Kyrgyzstan	1992	2009
Albania	1990	2009	Laos	1975	2009
Algeria	1975	1991	Latvia	1992	2009
Angola	2003	2008	Lebanon	1975	2009
Argentina	1978	2009	Liberia	1975	2009
Armenia	1992	2009	Libya	2007	2009
Australia	1975	2009	Lithuania	1992	2009
Austria	1975	2009	Macedonia	1994	2009
Azerbaijan	1996	2009	Madagascar	1975	2001
Bahrain	1975	2009	Malawi	1975	2009
Bangladesh	1975	2009	Malaysia	1976	2009
Belarus	1992	2009	Mali	1975	2007
Belgium	1975	2009	Mauritania	1975	2009
Benin	1975	2009	Mexico	1975	2009
Bhutan	1975	2009	Moldova	1992	2009
Bolivia	1975	2009	Mongolia	1975	2009
Bosnia and Herzegovina	1996	2009	Montenegro	2007	2009
Botswana	1975	2009	Morocco	1975	2009
Brazil	1978	2009	Mozambique	1976	2009
Bulgaria	1975	2009	Myanmar	1993	2004
Burundi	1975	2009	Namibia	1991	2009
Cambodia	1976	2009	Nepal	1975	2009
Cameroon	1975	2009	New Zealand	1975	2009
Canada	1975	2009	Nicaragua	1975	2009
Central African Republic	1975	2009	Niger	1975	2009
Chad	1975	2005	Nigeria	1975	2009
Chile	1975	2009	Pakistan	1978	2004
China	1977	2009	Panama	1975	2009
Congo	1975	2009	Paraguay	1975	2009
Costa Rica	1975	2009	Peru	1975	2007
Croatia	1994	2009	Poland	1975	2009
Czechoslovakia	1975	1992	Romania	1975	2009
Democratic Republic of the Congo	1975	2009	Russia	1975	1999
Djibouti	1978	2009	Rwanda	1975	2009

Continued on next page

Table 7: Countries and years covered in the analysis

country	min(year)	max(year)	country	min(year)	max(year)
Ecuador	1975	2009	Saudi Arabia	1975	2009
Egypt	1975	2009	Senegal	1975	2009
El Salvador	1975	2009	Sierra Leone	1975	2009
Eritrea	1994	2009	Slovakia	1994	2009
Estonia	1992	2009	Slovenia	1993	2009
Ethiopia	1993	1998	South Africa	1989	2009
Fiji	1975	2009	Spain	1975	2009
Finland	1975	2009	Sri Lanka	1975	2004
France	1975	2009	Sudan	1975	1983
Gabon	1975	2009	Switzerland	1975	2009
Gambia	1975	1993	Syria	1975	2009
Georgia	1994	2009	Taiwan	1975	2009
Ghana	1975	2009	Tajikistan	1992	2009
Greece	1975	2009	Tanzania	1975	2009
Guatemala	1996	2009	Thailand	1983	2003
Guinea	1975	2009	Togo	1975	2009
Guinea-Bissau	1975	2009	Trinidad and Tobago	1975	2009
Guyana	1975	2009	Turkey	1975	1984
Honduras	1975	2009	Turkmenistan	1992	2009
Hungary	1975	2009	Uganda	1975	1993
India	1975	1979	Ukraine	1992	2009
Indonesia	1975	2009	United Kingdom	1992	2009
Iran	1975	2005	United States of America	1975	2003
Iraq	1997	2004	Uruguay	2006	2009
Israel	2000	2000	Uzbekistan	1992	2009
Italy	1975	2009	Venezuela	1975	2009
Ivory Coast	1975	2009	Vietnam	1975	2009
Japan	1975	2009	Yemen	1991	2009
Jordan	1975	2009	Yemen Arab Republic	1975	1989
Kazakhstan	1992	2009	Yugoslavia	1975	2002
Kenya	1975	2009	Zambia	1975	2009
Kuwait	1975	2009	Zimbabwe	1980	2009

Additional analyses

Table 8 reports the results of a set of models linking power-sharing institutions and de facto inclusion to conflict onset. The dependent variable of the first three models is the onset of any type of conflict, while the last three focus on ethnic conflict onsets. In each of these two sets the first model uses all available country-years, but controls for the count of prior civil wars. The second and third models then distinguish, as do Gates, Graham, Lupu, Strand and Strøm (2013), between pre- and postwar observations. Next to the power-sharing vari-

ables we also include a set of standard control variables as used by Cederman, Gleditsch and Buhaug (2013, chapter 7). We add in addition as a pretreatment (i.e., pre-adoption of power-sharing institutions) variable the colonial heritage.[25] Wucherpfennig, Hunziker and Cederman (2012) integrate this variable into their instrumental variable approach to address the endogeneity of power relations (see also Cederman, Hug, Schädel and Wucherpfennig, 2013), while Blanton, Mason and Athow (2001) find that colonial heritage relates to ethnic conflict.

The results reported in Table 8 suggest that neither power-sharing institutions nor power-sharing behavior of the inclusive type appear to have important effects on conflict onset. Among the three types of power-sharing institutions we find as Gates, Graham, Lupu, Strand and Strøm (2013) only an effect for the constraining ones. The latter reduce the likelihood of conflict onset (in general and for ethnic conflicts in particular), however, only in a post-war setting. In countries that have not experienced a civil war since the end of the World War II, inclusive institutions appear to increase the likelihood of conflict, but this effect is statistically insignificant. When we consider the effect of power-sharing practices, measured by the share of the population represented in power-sharing arrangements, we find mostly positive coefficients, but none reaches statistical significance..[26]

Overall, these results, which do not take into consideration that power-sharing institutions and behavior find themselves probably in a particular causal order, seem to suggest that power-sharing is of rather limited importance for the preservation of peace. As the variable for inclusive power-sharing institutions has a very skewed distribution (i.e., in very few country-years even only one of the indicators is coded positively), we reproduced the analyses reported in Table 8 by replacing this variable with a dichotomous indicator (which equals one if at least one institutional element is present). The results in Table 9 show largely similar effects, with one notable exception. Inclusive institutions, when coded as binary variable, appear to increase significantly the likelihood of ethnic conflicts. We will return

[25]More specifically we use two dichotomous variables for former British and French colonies, which are set equal to 0 both for countries colonized by other countries and countries not colonized at all.

[26]Both Wimmer, Cederman and Min (2009) and Cederman, Gleditsch and Buhaug (2013, chapter 7) find sizeable negative and statistically significant effects at the country-level for a variable based on the size of the largest excluded group. We explored why our analysis differs and found that excluding mono-ethnic countries and all years prior to 1975 reduces this effect considerably.

to this effect below, but note, given the lack of notable differences between the first three and the last three models in both tables, that we can focus in our causal mediation analyses without problems on the more relevant ethnic conflict onsets.

Regarding constraining institutons we once more first estimate a set of models for all civil wars and the subset of ethnic conflicts. Table 10 presents our findings indicating that the share of the discriminated population increases systematically and statistically significantly the likelihood of conflict onset. Constraining power-sharing institutions appear to reduce the probability of a renewed conflict, and this effect reaches statistical significance. Conversely, dispersive institutions affect negatively, though not statistically significantly, the likelihood of conflict onset but only in pre-war contexts – a result that corroborates findings by Cederman, Hug, Schädel and Wucherpfennig (2013). In general, however, the results reported in this table suggest again that limiting the subsequent analysis to ethnic conflicts is unlikely to introduce any notable changes.

Table 11 reports the results of a multinomial probit model (Imai and van Dyk, 2005*a*; Imai and van Dyk, 2005*b*).

Tables 12 and 13 report on the results of additional analyses assessing whether regional autonomy has different effects in pre- and post-war settings.

Table 8: Inclusion, power-sharing institutions and ethnic conflict 1

	all conflicts	pre-war	post-war	ethnic conflict	pre-war	post-war
Constraining PS	−0.115	0.405	−0.357*	−0.225	0.552	−0.415*
	(0.122)	(0.274)	(0.140)	(0.150)	(0.439)	(0.161)
Dispersive PS	−0.046	−0.544	−0.018	0.175	−0.347	0.223
	(0.129)	(0.348)	(0.143)	(0.157)	(0.537)	(0.167)
Inclusive PS	0.042	0.107	0.050	0.009	0.437	−0.060
	(0.099)	(0.358)	(0.103)	(0.122)	(0.415)	(0.132)
Institution missing data	0.116	0.821	−0.226	0.035	0.888	−0.251
	(0.213)	(0.445)	(0.249)	(0.264)	(0.717)	(0.288)
Included share of ethnic groups	0.121	0.116	0.072	−0.059	0.200	−0.162
	(0.251)	(0.447)	(0.309)	(0.308)	(0.680)	(0.360)
British Colony	−0.073	−1.189	0.391	−0.348	−17.777	0.171
	(0.224)	(0.676)	(0.231)	(0.272)	(1365.007)	(0.258)
French Colony	0.099	0.170	0.016	0.129	0.093	−0.019
	(0.249)	(0.524)	(0.302)	(0.296)	(0.754)	(0.355)
Log(GDP p.c.)	−0.332	−1.146*	−0.284	−0.673*	−2.121*	−0.621*
	(0.189)	(0.481)	(0.215)	(0.231)	(0.838)	(0.254)
Log(Population)	0.412*	0.498	0.858*	0.448*	0.701	0.657*
	(0.163)	(0.361)	(0.176)	(0.190)	(0.553)	(0.191)
Prior Conflicts	0.131*			0.128*		
	(0.024)			(0.028)		
Peace Years	−0.008	−0.255*	0.057	−0.003	−0.271	0.000
	(0.037)	(0.109)	(0.048)	(0.045)	(0.164)	(0.046)
Peace Years^2	−0.000	0.011*	−0.006	−0.000	0.012	−0.001
	(0.002)	(0.005)	(0.003)	(0.002)	(0.007)	(0.002)
Peace Years^3	−0.000	−0.000*	0.000	0.000	−0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
constant	−5.207*	−2.385	−8.083*	−4.465*	−1.238	−5.432*
	(1.454)	(3.197)	(1.642)	(1.697)	(4.893)	(1.814)
N	4104	1740	2364	4104	1740	2364
AIC	1311.460	341.503	992.747	954.726	184.644	788.059
BIC	1665.364	625.508	1292.688	1308.630	468.649	1088.001
$\log L$	−599.730	−118.751	−444.373	−421.363	−40.322	−342.029

Standard errors in parentheses
* indicates significance at $p < 0.05$

Table 9: Inclusion, power-sharing institutions and ethnic conflict 2

	all conflicts	pre-war	post-war	ethnic conflict	pre-war	post-war
Included share of ethnic groups	0.021	0.262	−0.005	−0.232	0.202	−0.301
	(0.254)	(0.463)	(0.310)	(0.316)	(0.696)	(0.363)
Constraining PS	−0.105	0.409	−0.340*	−0.200	0.591	−0.389*
	(0.122)	(0.272)	(0.139)	(0.149)	(0.436)	(0.159)
Dispersive PS	−0.059	−0.495	−0.035	0.141	−0.225	0.172
	(0.127)	(0.333)	(0.141)	(0.154)	(0.489)	(0.164)
Inclusive PS (binary)	0.418	−0.557	0.441	0.562*	0.854	0.435
	(0.228)	(0.823)	(0.239)	(0.272)	(0.998)	(0.277)
Institution missing data	0.168	0.854	−0.146	0.137	1.026	−0.140
	(0.214)	(0.440)	(0.250)	(0.264)	(0.684)	(0.289)
British Colony	−0.104	−1.188	0.351	−0.419	−17.774	0.115
	(0.225)	(0.676)	(0.234)	(0.276)	(1355.938)	(0.263)
French Colony	0.151	0.142	0.065	0.222	0.028	0.095
	(0.248)	(0.519)	(0.300)	(0.295)	(0.752)	(0.352)
Log(GDP p.c.)	−0.370	−1.039*	−0.287	−0.711*	−2.258*	−0.597*
	(0.190)	(0.491)	(0.216)	(0.229)	(0.869)	(0.250)
Log(Population)	0.390*	0.464	0.799*	0.433*	0.717	0.664*
	(0.161)	(0.358)	(0.174)	(0.187)	(0.550)	(0.185)
Prior Conflicts	0.129*			0.128*		
	(0.024)			(0.028)		
Peace Years	−0.006	−0.260*	0.053	−0.003	−0.264	−0.004
	(0.037)	(0.109)	(0.048)	(0.046)	(0.166)	(0.046)
Peace Years^2	0.000	0.011*	−0.006	−0.000	0.012	−0.001
	(0.002)	(0.005)	(0.003)	(0.002)	(0.007)	(0.002)
Peace Years^3	−0.000	−0.000*	0.000	−0.000	−0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
constant	−5.014*	−2.503	−7.748*	−4.377*	−1.148	−5.699*
	(1.438)	(3.157)	(1.611)	(1.655)	(4.879)	(1.734)
N	4104	1740	2364	4104	1740	2364
AIC	1308.411	341.082	989.700	950.686	184.954	785.914
BIC	1662.315	625.087	1289.642	1304.590	468.959	1085.855
$\log L$	−598.206	−118.541	−442.850	−419.343	−40.477	−340.957

Standard errors in parentheses
* indicates significance at $p < 0.05$

Table 10: Discrimination, power-sharing institutions and ethnic conflict

	all conflicts	pre-war	post-war	ethnic conflict	pre-war	post-war
Disriminated Pop. Share	1.057*	2.097*	0.935*	1.516*	3.665*	1.029*
	(0.406)	(0.993)	(0.454)	(0.453)	(1.260)	(0.496)
Constraining PS	−0.081	0.485	−0.340*	−0.196	0.619	−0.408*
	(0.122)	(0.273)	(0.139)	(0.150)	(0.447)	(0.160)
Dispersive PS	0.013	−0.565	0.044	0.259	−0.525	0.285
	(0.131)	(0.349)	(0.145)	(0.160)	(0.572)	(0.171)
Inclusive PS	0.059	0.172	0.065	0.020	0.649	−0.052
	(0.097)	(0.348)	(0.103)	(0.121)	(0.414)	(0.133)
Institution missing data	0.117	0.744	−0.221	0.042	0.625	−0.231
	(0.215)	(0.446)	(0.250)	(0.267)	(0.728)	(0.290)
British Colony	−0.058	−1.342*	0.392	−0.320	−17.805	0.150
	(0.218)	(0.652)	(0.224)	(0.267)	(1372.282)	(0.252)
French Colony	0.271	0.270	0.185	0.347	0.462	0.125
	(0.245)	(0.511)	(0.298)	(0.298)	(0.734)	(0.352)
Log(GDP p.c.)	−0.347	−1.252*	−0.293	−0.660*	−2.119*	−0.598*
	(0.186)	(0.479)	(0.212)	(0.227)	(0.869)	(0.247)
Log(Population)	0.432*	0.557	0.908*	0.506*	0.843	0.742*
	(0.164)	(0.363)	(0.179)	(0.194)	(0.550)	(0.195)
Prior Conflicts	0.135*			0.135*		
	(0.024)			(0.028)		
Peace Years	0.007	−0.258*	0.072	0.014	−0.268	0.005
	(0.037)	(0.108)	(0.048)	(0.046)	(0.160)	(0.046)
Peace Years^2	−0.001	0.011*	−0.007*	−0.001	0.011	−0.002
	(0.002)	(0.005)	(0.003)	(0.002)	(0.007)	(0.002)
Peace Years^3	0.000	−0.000*	0.000*	0.000	−0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
constant	−5.468*	−2.333	−8.565*	−5.265*	−2.036	−6.363*
	(1.454)	(3.173)	(1.646)	(1.720)	(4.992)	(1.828)
N	4104	1740	2364	4104	1740	2364
AIC	1305.533	338.012	988.880	944.835	178.273	784.284
BIC	1659.438	622.017	1288.821	1298.739	462.278	1084.226
$\log L$	−596.767	−117.006	−442.440	−416.418	−37.137	−340.142

Standard errors in parentheses

* indicates significance at $p < 0.05$

Table 11: Inclusive institutions and ethnic conflict among and against power-sharing partners

	infighting	outfighting
Inclusive PS	0.031	−0.018
	(0.095)	(0.107)
Institution missing data	0.110	0.156
	(0.390)	(0.155)
Included share of ethnic groups	1.733	−0.842
	(0.689)	(0.391)
Log(GDP p.c.)	−0.625	−0.419
	(0.639)	(0.237)
Log(Population)	−0.225	−0.066
	(0.366)	(0.133)
Prior Conflicts	0.070	−0.000
	(0.060)	(0.031)
Peace Years	−0.009	−0.029
	(0.046)	(0.033)
Peace Years^2	0.001	0.001
	(0.002)	(0.002)
Peace Years^3	−0.000	−0.000
	(0.000)	(0.000)
British Colony	−5.806*	−0.122
	(4.320)	(0.222)
French Colony	−0.624	0.367
	(0.354)	(0.189)
constant	−0.440	−0.395
	(2.634)	(1.113)
σ_1	0.933	
	(0.330)	
σ_2	1.067	
	(0.330)	
$\sigma_{1,2}$	0.331	
	(0.629)	
N	4104	

Standard errors in parentheses
1000 burnins, 5000 MCMC draws thinned by 5

Table 12: Dispersive power-sharing in pre- and post-war settings (old autonomy coding)

	auton. pop.	ethnic pre-war	auton. pop.	ethnic post-war	auton. po.p	terr. pre-war	auton. pop.	terr. post-war
Dispersive PS	−0.001	0.040	0.018*	0.020	−0.001	−0.258	0.018*	0.094
	(0.001)	(0.177)	(0.002)	(0.069)	(0.001)	(0.275)	(0.002)	(0.087)
Institution missing data	0.002	0.277	−0.001	0.102	0.002	0.262	−0.003	0.071
	(0.002)	(0.256)	(0.004)	(0.110)	(0.002)	(0.365)	(0.004)	(0.143)
Autonomous Pop. Share		−11.092		−0.828		−0.779		−0.586
		(14.320)		(0.717)		(6.790)		(0.831)
Log(GDP p.c.)	−0.007*	−0.668*	−0.004	−0.226*	−0.007*	−0.428	0.000	−0.341*
	(0.002)	(0.302)	(0.004)	(0.113)	(0.002)	(0.482)	(0.004)	(0.145)
Log(Population)	−0.000	0.170	0.032*	0.372*	−0.000	0.824*	0.033*	0.423*
	(0.002)	(0.203)	(0.003)	(0.091)	(0.002)	(0.379)	(0.003)	(0.113)
British Colony	−0.006	−3.978	−0.025*	−0.017	−0.006	−3.820	−0.027*	0.045
	(0.003)	(195.240)	(0.004)	(0.124)	(0.003)	(286.811)	(0.004)	(0.148)
French Colony	0.006	−0.007	−0.012*	−0.058	0.006	−0.045	−0.014*	−0.068
	(0.003)	(0.285)	(0.005)	(0.145)	(0.003)	(0.501)	(0.005)	(0.218)
Peace Years	−0.000	−0.109	−0.000	−0.005	−0.000	−0.154	0.001	−0.028
	(0.001)	(0.067)	(0.001)	(0.021)	(0.001)	(0.119)	(0.001)	(0.025)
Peace Years^2	0.000	0.005	0.000	−0.000	0.000	0.007	−0.000	−0.000
	(0.000)	(0.003)	(0.000)	(0.001)	(0.000)	(0.006)	(0.000)	(0.001)
Peace Years^3	−0.000	−0.000	−0.000	0.000	−0.000	−0.000	−0.000	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
constant	0.028	−0.763	−0.191*	−3.535*	0.028	−6.438	−0.210*	−3.475*
	(0.017)	(1.716)	(0.027)	(0.808)	(0.017)	(3.344)	(0.029)	(1.085)
N	1740	1740	2364	2364	1740	1740	2364	2364
R^2	0.058		0.149		0.058		0.146	
adj. R^2	0.053		0.146		0.053		0.143	
Resid. sd	0.041		0.078		0.041		0.078	
AIC		183.372		792.316		94.945		514.096
BIC		423.684		1046.112		335.257		767.893
log L		−47.686		−352.158		−3.472		−213.048

Standard errors in parentheses

* indicates significance at $p < 0.05$

Table 13: Dispersive power-sharing in pre- and post-war settings (new autonomy coding)

	auton. pop.	ethnic pre-war	auton. pop.	ethnic post-war	auton. pop.	terr. pre-war	auton. pop	terr. post-war
Dispersive PS	0.104*	−0.008	0.048*	−0.162	0.104*	−0.318	0.047*	−0.080
	(0.008)	(0.191)	(0.005)	(0.091)	(0.008)	(0.304)	(0.005)	(0.113)
Institution missing data	0.051*	0.188	−0.020*	0.179	0.051*	0.122	−0.025*	0.135
	(0.012)	(0.257)	(0.008)	(0.131)	(0.012)	(0.391)	(0.008)	(0.165)
Autonomous Pop. Share		0.067		0.820*		0.678		0.684
		(0.535)		(0.293)		(0.600)		(0.355)
Log(GDP p.c.)	0.023	−0.494	0.004	−0.270	0.023	−0.394	0.004	−0.382*
	(0.014)	(0.334)	(0.009)	(0.138)	(0.014)	(0.557)	(0.009)	(0.178)
Log(Population)	−0.073*	0.188	0.063*	0.397*	−0.073*	0.854	0.061*	0.501*
	(0.012)	(0.250)	(0.008)	(0.117)	(0.012)	(0.445)	(0.008)	(0.152)
British Colony	−0.064*	−3.866	0.035*	0.078	−0.064*	−3.772	0.027*	0.117
	(0.017)	(203.680)	(0.011)	(0.157)	(0.017)	(285.582)	(0.011)	(0.189)
French Colony	−0.035	0.158	−0.020	−0.120	−0.035	0.155	−0.015	−0.104
	(0.021)	(0.319)	(0.011)	(0.171)	(0.021)	(0.576)	(0.011)	(0.240)
Peace Years	0.001	−0.063	0.003*	−0.015	0.001	−0.175	0.005*	−0.041
	(0.004)	(0.078)	(0.002)	(0.025)	(0.004)	(0.153)	(0.002)	(0.031)
Peace Years^2	0.000	0.003	−0.000*	0.000	0.000	0.009	−0.000*	0.000
	(0.000)	(0.003)	(0.000)	(0.001)	(0.000)	(0.007)	(0.000)	(0.001)
Peace Years^3	−0.000	−0.000	0.000*	−0.000	−0.000	−0.000	0.000*	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
constant	0.394*	−1.793	−0.399*	−3.742*	0.394*	−6.831	−0.375*	−4.107*
	(0.108)	(2.100)	(0.065)	(1.019)	(0.108)	(4.073)	(0.070)	(1.384)
N	1612	1612	1880	1880	1612	1612	1880	1880
R^2	0.207		0.176		0.207		0.184	
adj. R^2	0.202		0.172		0.202		0.180	
Resid. sd	0.225		0.160		0.225		0.159	
AIC		153.208		573.984		84.756		392.207
BIC		390.158		817.701		321.706		635.924
log L		−32.604		−242.992		1.622		−152.103

Standard errors in parentheses

* indicates significance at $p < 0.05$

Table 14: Dispersive institutions and ethnic conflict (new autonomy coding)

	autonomy	ethnic conflict	autonomy	territorial conflict
Dispersive PS	0.083*	−0.019	0.083*	−0.029
	(0.005)	(0.081)	(0.005)	(0.104)
Institution missing data	0.028*	0.216	0.026*	0.171
	(0.007)	(0.116)	(0.007)	(0.146)
Autonomous Pop. Share		0.471		0.563
		(0.242)		(0.295)
Log(GDP p.c.)	0.035*	−0.357*	0.040*	−0.364*
	(0.008)	(0.123)	(0.008)	(0.158)
Log(Population)	−0.011	0.285*	−0.008	0.506*
	(0.007)	(0.108)	(0.007)	(0.139)
Prior Conflicts	0.014*	0.080*	0.014*	0.047*
	(0.002)	(0.017)	(0.002)	(0.018)
British Colony	−0.012	−0.340*	−0.011	−0.164
	(0.010)	(0.166)	(0.010)	(0.197)
French Colony	−0.017	0.037	−0.017	0.028
	(0.011)	(0.141)	(0.010)	(0.195)
Peace Years	0.001	−0.007	0.002	−0.038
	(0.002)	(0.024)	(0.002)	(0.029)
Peace Years^2	−0.000	0.000	−0.000	0.001
	(0.000)	(0.001)	(0.000)	(0.001)
Peace Years^3	−0.000	−0.000	0.000	−0.000
	(0.000)	(0.000)	(0.000)	(0.000)
constant	−0.036	−2.979*	−0.070	−4.464*
	(0.061)	(0.924)	(0.062)	(1.240)
N	3492	3492	3492	3492
R^2	0.166		0.166	
adj. R^2	0.164		0.163	
Resid. sd	0.196		0.196	
AIC		699.693		459.638
BIC		995.288		755.233
$\log L$		−301.846		−181.819

Standard errors in parentheses
* indicates significance at $p < 0.05$

Sensitivity analyses

As suggested by Imai, Keele, Tingley and Yamamoto (2011) we assess how our estimated mediation effect would change as a function of the correlation term of the errors of our two equations.

Figures 10, 11 and 12 depict the results of these sensitivity analyses for the mediated effect of inclusive, respectively constraining and dispersive institutions. As the figures show, our results are in general quite sensitive to the mission of a confounder which might influence both power-sharing practices and conflict on-

sets. If the omitted confounder induces a particular relationship among the error terms in these two equations, already a small change in correlation would render our estimated mediated effect insignificant or even inverse its sign. Only for the the mediated effect of inclusive power-sharing institutions through inclusion on infighting do we find for a large interval of correlation coefficients the same direction and significance (i.e. for ρs in the range of -1 to approximately 0.2.

Figure 10: Sensitivity analyses for mediated effect of inclusive power-sharing institutions (H1a and H1b)

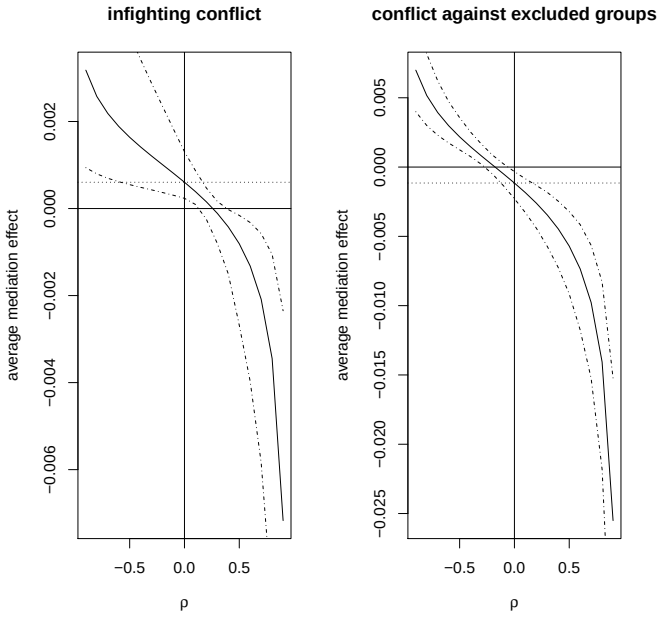


Figure 11: Sensitivity analyses for mediated effect of constraining power-sharing institutions (H2)

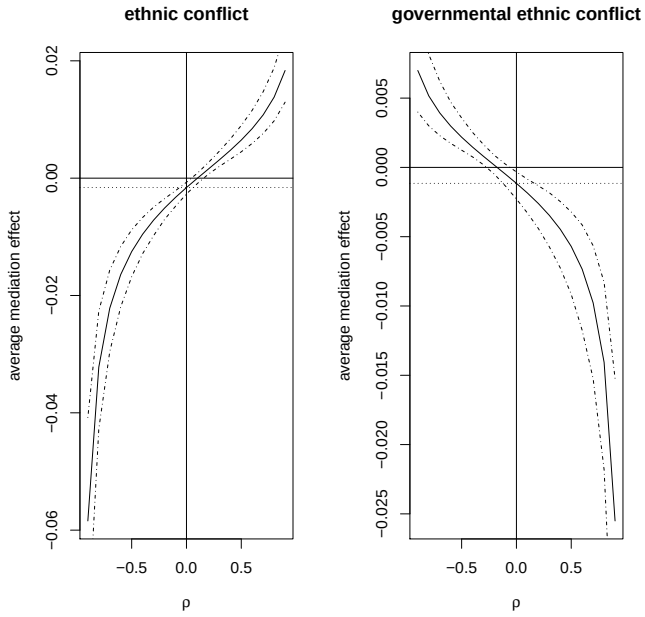
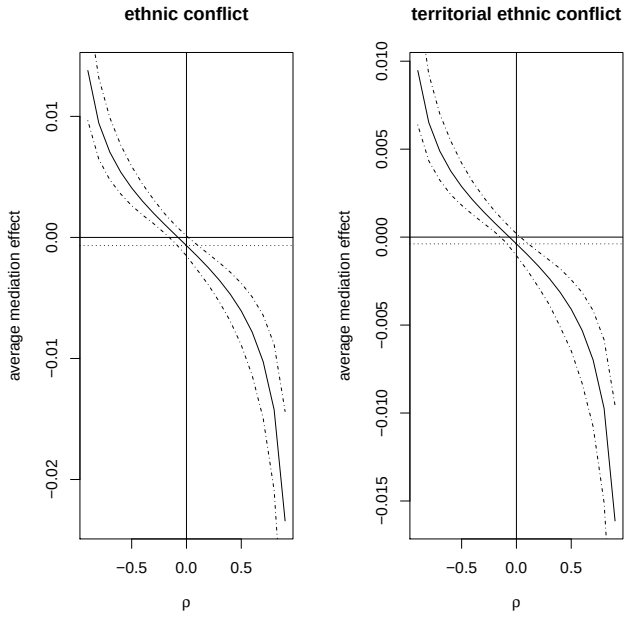


Figure 12: Sensitivity analyses for mediated effect of dispersive power-sharing institutions (H3)



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