Endogenizing Power-Sharing After Ethnonationalist Civil War*

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1 Introduction

Iraq, Afghanistan, Chechnya – conflicts fought in the name of ethnic groups are frequently among the longest, most violent and difficult to resolve in the long term (Wucherpfennig et al., 2011; Lacina, 2006; Chapman and Roeder, 2007). Indeed, one in four ethnic groups involved in ethnonationalist conflict will experience renewed violence within ten years following the settlement of a previous episode of conflict. This raises the important question under which conditions the recurrence of civil war can be contained effectively. In

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particular, can political arrangements help mitigate the risk of recurrence of such conflicts? Recent scholarship is skeptical.

In this paper I revisit the role of such political arrangements in the post-war environment, ethnic power-sharing in particular. Power-sharing has recently been severely criticized, suggesting that its disadvantages outweigh its benefits (Rothchild and Roeder, 2005), and that in direct comparison, victories tend to yield more stable peace (Toft, 2010). I argue that these conclusions are premature for two reasons. First, they are based on conceptualizations that focus on a single “snapshot”, namely the end of the war or the wake of peace. This disregards the dynamic context within which the effect of political arrangements must be evaluated as a response to ethnonationalist claims. Since ethnonationalist civil war is explicitly defined as violent struggle over control of the state, either fully or in some limited territory (Sambanis, 2004), it is crucial to assess the degree of control the belligerents were able to exercise prior to the war, and whether fighting altered their power position. In other words, rather than focusing on post-war conditions alone, I advocate a dynamic analysis of change that tracks the fate of the belligerents over time.

Second, I argue that where change occurs, it is generated endogenously as the result of strategic interaction in the face of recurrent conflict. Since war termination (short of complete eradication of the opponent) implies that both parties prefer peace over continued fighting, the post-war constellation of access to state power is also the result of anticipation of its prospects for peace. Put differently, changes in the political constellation as the result of war will occur where the chances for peace are slimmest to begin with,
that is where they are anticipated to be essential for peace. Consequently, post-conflict arrangements are endogenous to future conflict (cf. Christin and Hug, 2003, 2006). More generally, whereas current research treats such arrangement as purely exogenous, that is assigned randomly, little theoretical and empirical work has addressed the question under which conditions power-sharing arrangements are likely to be enacted.

The paper demonstrates that power-sharing is a strategy that is likely to be played under the most difficult conditions for peace. To show this, I develop an intuitive theoretical model that captures why and when post-conflict power-sharing occurs. The model demonstrates that power-sharing serves pacifying effect that is revealed only once the strategic interdependence between governments and challengers is properly accounted for. The model also hints at the importance of institutional constraints that help to make the promise of power-sharing credible.

The paper is organized as follows. In section 2 I begin with a brief literature review on the issue of civil war recurrence with a particular focus on war outcomes and political arrangements in the post-conflict setting. Criticizing the literature for being overly static and largely inconclusive, section 3 develops a formal model of power-sharing in post-conflict environments. I then turn to testing the model empirically at the level of ethnic groups. Section 4 introduces empirical data that allows for a dynamic tracking of the political fates of ethnic groups and describes my the seemingly unrelated bivariate probit as my main method. Section 5 carries out the empirical estimation, finding considerable support for the model. Section 6 concludes.
2 Civil War Recurrence

Civil war recurrence is a frequent phenomenon (Walter, 2004), in particular in the case of ethnic conflicts (Kreutz, 2010; Cederman, Wimmer and Min, 2010, though see Quinn, Mason and Gurses 2007; Walter 2004). Whereas recent research has found that ethnicity—when charged with nationalist grievances—not only makes conflict onset more likely (Cederman, Wimmer and Min, 2010), but also provides the motivations necessary to support long fighting durations (Wucherpfennig et al., 2011), the literature on how to prevent such violence during a post-conflict period is less clear. This paper aims to contribute to filling this gap in the literature.

In any case, the apparent frequency of civil war recurrence has given rise to a growing literature that assesses the conditions under which recurrent violence can be prevented effectively. In particular, the analytical focus has been on either on (1) how civil wars ended, or (2) the political arrangements following it. Examples of the former include military victory, ceasefires, and negotiated agreements, the latter include power-sharing, partition, and democratization. While the focus of this paper lies on power-sharing, I briefly review these two related literatures, criticize the literature where applicable, before laying out my own approach. In a nutshell, I argue that the two are strongly related, but that political arrangements following civil war are strongly endogenous to the prospects of peace.

Focusing on modes of termination, Toft (2010) aims to demonstrate that especially rebel victory leads to a more durable peace, a finding that roughly
matches Licklider (1995).\footnote{Quinn, Mason and Gurses (2007) and Kreutz (2010) find that government victories reduce the likelihood of recurrence.} Wagner (1995) was the first to articulate a possible theoretical mechanism for this finding: arguing that organization is the critical resource necessary for civil war, victory has the advantage that it allows the complete destruction of the opponent’s organization, thus removing the necessary means for mobilization. Although the argument is theoretically compelling, it is not without problems, especially in the case of ethnonationalist conflicts. First, it is not clear whether a group’s organization can really be destroyed to the point that it can no longer mobilize. For example, we know that DDR (demobilization, disarmament, and reintegration) is more than a difficult task, not least because the human capital of fighting know-how is hard to destroy in the first place. Moreover, it is also well known that civil war commonly leaves a path-dependent impact on local military markets: excess weapons, such as Kalashnikovs, in post-war environments lead to widespread availability and low prices, which in turn makes organization as the critical resource feasible. Thus, since many civil wars are fought as asymmetric insurgencies using such light arms (Fearon and Laitin, 2003), the destruction of an opponent’s organization may be difficult, if not impossible, in practice.

Second, the Wagner hypothesis focuses entirely on the opportunities to fight, but leaves out the role of grievances driving conflicts altogether. Indeed, from the viewpoint of emotions, losers should be inclined to seek revenge (Petersen, 2002). In any case, defeat is unlikely to soothe ethnonationalist grievances, especially since such grievances manifest themselves in everyday
life. If conflict is considered a means to an end, prevailing grievances can then at best be suppressed temporarily from becoming effective again.

In addition, promoting victories has obvious ethical implications in that fighting (killing) must endure until one party cries uncle. Terminating war short of ultimate defeat may therefore save lives, but the question remains whether the peace produced by agreements is less stable and could eventually lead to even more casualties because violence cannot be contained in the long run. Hartzell and Hoddie (2007) therefore analyze the contents of negotiated settlements, finding that the more aspects of power-sharing along various dimensions are contained in such settlements, the better the prospects for peace.

Arguing that it is too early for a judgement call, Jarstad (2008) points out some of the weaknesses of power-sharing, such that it may invite spoiler-groups, foster radicalism, impede democratization, and lead to international dependence (see also Rothchild and Roeder, 2005). However, even though the empirical validity of these concerns is far from clear, least because the authors do not compare relative impacts of power-sharing vis-à-vis modes of termination, especially Chapman and Roeder (2007); Rothchild and Roeder (2005) make the case that power-sharing agreements seem to break down easily and lead to renewed violence more often than does military victory.

Chapman and Roeder (2007); Rothchild and Roeder (2005) and Kaufmann (1996, 1998) therefore advocate a different strategy to deal with ethnonationalist conflict: partition. According to the argument, conflict hardens ethnic identities to the point where cooperation becomes difficult and the underlying conflict impossible to resolve. Separating the conflict parties from
one another physically, so the argument goes, is therefore the only feasible way of preventing renewed violence. Moreover, in the context of nation-building, partition presumably facilitates the process of nation-building.

Rothchild and Roeder (2005) argue that all other viable alternatives, in particular power-sharing, are likely to be fragile and the necessary conditions for success, such as strong governmental institutions, unlikely to be met in practice. Against these claims, Sambanis and Schulhofer-Wohl (2009) show that the empirical evidence in favor is weak. Reanalyzing the dataset by Chapman and Roeder (2007), they show, critically, that partition is actually no more effective than autonomy.

In sum, there remains strong ambiguity with regard to the type of advice that scholars should give to practitioners in the midst of ethnonationalist conflict. Given the strong implications that could potentially cost the lives of thousands, we need further evidence before calling the debate closed. In the next session, I therefore turn to the theoretical underpinnings of post-conflict power-sharing.

3 A Model of Post-Conflict Power-Sharing

I rely on a simple game-theoretic model to demonstrate the strategic logic of power-sharing after civil war. The model builds heavily on the work of Acemoglu and Robinson (2006) and assumes complete and perfect information. The extensive form of the model is displayed in Figure 1. The game features two actors: the government (denoted as G), and a challenger that I refer to as the rebels (denoted as R). The two actors fight over a metaphorical pie $\Pi$. 
that symbolizes the incompatibility or stakes of the conflict. Substantively, the value of \( \Pi \) differs depending on whether the conflict is fought over control of the full state, or control over some limited territory. In the game the government moves first and can either maintain the status quo or concede to the rebel’s demands by granting a share \( x \) of its power to the rebels. Note that I assume a fixed value for \( x \), such that there are three possible divisions of \( \Pi \): \{\( \Pi \), 0\}, \{\( \Pi \) – \( x \), \( x \)\}, and \{0, \( \Pi \)\}. Subsequently, the rebels can either accept the government’s move and settle for the status quo, or fight. Thus, the sets of possible actions are \{\( SQ \), \( PS \)\} for the government, and the \{\( \neg F \), \( F \)\} for the rebels.

Figure 1: Extensive Form

The payoffs are assigned as follows: If the government does not offer a concession, it keeps the full \( \Pi \) and the challenger receives a payoff of 0. Naturally, this is the preferred outcome for the government. However, the rebels may not accept the status quo and challenge the incumbent by fighting, which is modeled as a costly lottery. In this case we observe a recurrence of conflict. If the challenger chooses to fight, with probability \( p \) she gains the...
full Π, whereas G’s probability of winning is $1 - p$. Moreover, both actors have to bear a cost of fighting, denoted as $c_i > 0, i \in \{G, R\}$.

The right side of the tree captures scenarios under which the government gives up some of its control over the state and is willing to grant a power-sharing concession to the rebels. I denote this concession as $x \in (0, \Pi]$. If the rebels are not satisfied with this arrangement, they can resort to fighting $\{PS, F\}$. As under the status quo, this is modeled as a costly lottery. The payoffs for the challenger are the same as for fighting under the status quo, but the government has to pay an additional reputation cost denoted by $r_g$. Here, the logic is that governments have an incentive not to give up their power because doing so may lead other potential challengers (third parties) to conclude that challenging the state can yield beneficial returns, which could lead to state erosion (see Walter, 2009).

I now turn to the most part of the model that is most insightful. In case the rebels choose not to fight after having been granted a concession, power-sharing, they are faced with a commitment problem that their concession may be revoked, i.e. the government will be able to renege on the arrangement. This is modeled in a continuation game which captures the core problem that it is not in the government’s immediate interest to share power, since the government would prefer to own the entire Π, rather than just a share of it. In other words, the government’s promise to share power may be void. Intuitively, the problem arises when the challenger agrees to peace and power-sharing and demobilizes, that is gives up its fighting capacity and lays down arms. Given the “wrong” circumstances, the challenger then runs the risk that the government could then renege on the current arrangement and
monopolize state power, rather than sharing it. Following Acemoglu and Robinson (2006), this is modeled as an exogenous move by nature, which determines the probability $q$ that G’s offer is credible. If $q = 1$, the commitment problem is non-existent and the government’s offer to share state power is entirely credible so that the rebels have nothing to fear. If $q = 0$, however, the government is entirely unable to commit to power-sharing, and any arrangement is non-binding. The relevant payoffs are therefore the following: if the government gets to renege on the power-sharing arrangement the challenger gets 0, whereas the government receives $\Pi - r_g$. If the offer is credible, the rebels obtain $x$, and the government $\Pi - x - r_g$. These payoffs are then scaled by $q$ and $1 - q$, respectively.

Since $q$ and $1 - q$ are complementary and sum up to one, the payoffs determined by nature’s move are a convex combination. The key insight is then that it is possible to derive the expected payoffs at the time the government offers to make a concession. Nicely, after some simple math, the rebel’s payoffs reduce to just $qx$, whereas the government receives $\Pi - qx - r_g$. In other words, the critical insight is that $q$ determines the likelihood with which the rebels would get to keep their share. Note that the value of $q$ is known to both players, i.e. there is no private information. Substantively, this means that both the government and the challenger can infer the value of $q$ by observing the circumstances in which the game is played. Thus, Figure 2 shows a slightly simplified structure of the game.
4 Solving the Game

Given complete and perfect information, the model can be solved by backwards induction. Thus, I assume that each player knows the other’s payoffs, and vice-versa. The solution concept is therefore the subgame perfect equilibrium. The key is that we need to understand what keeps the rebels from fighting. The central intuition is that whether or not we will observe fighting depends on the credibility of the government when making an offer to share its power with the rebels. Institutional constraints that prevent the government from reneging in the future are therefore of central importance.

A summary of the equilibrium results is given in Table 1. The table considers the possible equilibrium paths that government and rebels can take following the logic of backwards induction. The far left column of the table lists the actions that the rebels can take, along with the formal conditions for this path to be optimal in the adjacent column. The remaining two columns on the right list the optimal paths for the government, including the formal
conditions, given that the rebels play a given the strategy denoted on the left.

\[
\begin{array}{l}
\text{Table 1: Summary of Results} \\
\hline
\text{R always fights if} & \frac{c_r + px}{\Pi} > \frac{p}{\Pi} & \Rightarrow & \text{G maintains SQ if} & r_g > 0 \\
\text{R fights if SQ if} & \frac{c_r + px}{\Pi} > \frac{p}{\Pi} & \Rightarrow & \text{G adopts PS if} & x < \frac{p\Pi - r_g + c_g}{q} \\
\text{R never fights if} & \frac{c_r + px}{\Pi} < \frac{p}{\Pi} & \Rightarrow & \text{G always maintains SQ} & \\
\hline
\end{array}
\]

The rebels’ threshold for fighting, \( p \), depends on how large the costs of fighting, \( c_r \) and expected value of power-sharing, \( qx \) are relative to the value of the incompatibility under dispute, \( \Pi \). Indeed, the ratio \( \frac{c_r}{\Pi} \) that expresses the costs relative to the potential gains is part of all three conditions under which the rebels fight. Specifically, as is shown in the first two rows of Table 1, the rebels will always fight as long as the probability of being defeated by the government is low compared to the costs of fighting relative to the stakes. If the condition is met that the rebels will always fight, the government will always maintain the status quo. This result is intuitive in the sense that if the rebels anticipate to win stakes that are highly valued with high certainty, while at the same time the fighting is not too costly and the gains from powersharing are associated with uncertainty, then fighting is always the preferred option. In the words of Walter Sobchak, why settle for twenty grand if one can keep the entire million? Uncredible power-sharing occurs when institutional constraints cannot guarantee that the offer of powersharing is not void and will not be reneged on. Both rebels and governments know that such conditions lead to fighting, and so governments simply avoid reputation costs \( r_g \) by maintaining the status quo, but are forced into the costly lottery of war.
However, if governments want to prevent war with certainty, they have to offer the concession of power-sharing. Doing so is only possible credibly if the institutional context can guarantee that the arrangement will prevail. This result is given in the second line of Table 1 and effectively states that powersharing can raise the rebels’ threshold for fighting. In this case the rebels will not fight under power-sharing, but only under the status quo because power-sharing enjoys a minimum level of credibility. For the government, the question is then under which conditions peaceful power-sharing will be acceptable. This will happen in the following case:

\[
EU(\text{power-sharing}) > EU(\text{status quo}) \tag{1}
\]

\[
\Pi - qx - r_g > \Pi - p\Pi - c_g \tag{2}
\]

\[
\frac{p\Pi - r_g + c_g}{q} > x \tag{3}
\]

The key here is to note that power-sharing becomes the preferred strategy as \( q \to 0 \). Thus, power-sharing is attractive under difficult conditions. Governments have therefore incentives to implement power-sharing where they expect a possibility to be able to renege on the agreement given the right circumstances to come. This is also reflected in the numerator, which is increasing as \( p \), the probability the government will lose the lottery of war, and the cost of war, \( c_g \), increases.

Finally, the bottom row of Table 1 lists the conditions under which the rebels will never fight. Again this depends on the ratio of the costs relative to the stakes, which has to be to higher than the probability of winning. Intuitively, if the rebels never fight, the government’s preferred strategy is to
maintain the status quo, since doing so avoids reputation costs.

In sum, the analysis of the game shows that the strategy of power-sharing will be played only in the “middle” category, that is not where the rebels always fight, nor where they never fight. Moreover, paradoxically, although institutional safeguards to make power-sharing more credible make it more attractive to rebels, the opposite is true for government. Indeed, where power-sharing is a feasible option, governments benefit if the promise of power-sharing is likely to be void.

5 Empirical Implications

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6 Statistical Analysis of the Game

I use a QRE estimator developed by Signorino (1999) to test the model. The basic intuition of strategic estimation is that one derives a statistical estimator directly from an underlying game theoretic model, rather than fitting an off-the-shelf model by merely selecting a dependent variable and covariates. The major advantage is then that the statistical estimator directly incorporates the strategic interdependence between the players’ decisions. As Signorino (1999); Signorino and Yilmaz (2003) demonstrate, neglecting strategic interdependence can lead to serious bias.

Whereas the game-theoretic model works deterministically according to the Nash best response logic, McKelvey and Palfrey (1995, 1998) derive the
proposition that players make mistakes in their actions. The concept of quantal response equilibrium then states that higher utilities simply raise the likelihood that a given strategy will be played. Curiously, this is in line with the notion of bounded rationality.

Noting that this concept involves a stochastic element, Signorino (1999) shows that assuming a distribution of the extent of bounded rationality allows the analyst to construct a statistical estimator. Put simply, I assume that the players make mistakes, and that large errors occur less frequently than small ones. Moreover, both players know that the other player makes mistakes, but they are aware of the distribution of such behavior, as is the analyst. The elegance of strategic estimation lies in the fact that covariates can be used to estimate the utilities directly from empirical data. The task of the analyst is then to assume a particular distribution of the error term, and to assign relevant covariates for the utilities.

The strategic estimator I employ thus follows the strategic logic of the power-sharing game and is based on the same logic of backwards induction. I use a package called games by Signorino and Kenkel (2011) for the statistical language R. In order to accommodate the software, and to ensure identification of the statistical model, it is necessary to normalize certain payoffs to zero. This is displayed in Figure 3. Accordingly, I estimate three utilities for the government, and two utilities for the rebels: $U_G(SQ, F), U_G(PS, \neg F), U_G(PS, F), U_R(SQ, \neg F),$ and $U(PS, \neg F)$. All estimated utilities are therefore to be interpreted relative to these baselines that are set to zero. In testing the model empirically, we are then interested in whether the covariates assigned for with each payoff component and utility
show an effect that is in the hypothesized direction.

Figure 3: Normalized Payoffs

\[
\begin{array}{c}
G \\
\sim F \\
\text{SQ} \\
\text{R} \\
\text{F} \\
0 \\
-p\Pi + c_r \\
-p\Pi - c_g \\
-qx - r_g \\
-\sim F \\
\sim F \\
\text{PS} \\
\text{R} \\
\text{F} \\
-qx - p\Pi + c_r \\
-qx - r_g \\
0 \\
\end{array}
\]

7 Data and Specification of the Model

To test the theory, I require disaggregated data that captures the interaction between governments and rebels, including information on power-sharing and fighting in civil wars. Fortunately, for the context of ethnic politics, such data is available. Thus, I analyze a dataset called Ethnic Power Relations (EPR) analyzed Cederman, Wimmer and Min (2010). EPR identifies all politically relevant ethnic groups around the world in all years from 1946 to 2005 and measures in how far they differ in terms of access to state power. Thus, unlike alternative sources, EPR does not mainly focus on mobilized minorities, but also provides the complete ethnic constellation of power in the political center.
7.1 Dependent Variable: Recurrent Conflict

Although EPR comes with a coding of ethnonationalist conflict, this coding is not suitable for the purposes of this paper because of a rule that omits any conflict onsets which occurred within a ten year window following the end of a previous conflicts as to avoid interdependent onsets. This is, however, precisely what makes recurrent conflict.

In order to measure recurrent conflict, I therefore draw on a new data project that systematically codes the linkage between ethnic groups and rebel organizations (see Wucherpfennig et al., 2011) EPR to the Non-State Actor (NSA) dataset by Cunningham, Gleditsch and Salehyan (2009), derived from Gleditsch et al. (2002). Thus, rather than determining whether a given conflict is ethnic or not, the dataset focuses on the explicit linkage between rebel organizations and ethnic groups. Two criteria were used in order to establish an ethnic linkage. The first criterion assesses the ethnicity of the fighters. In other words, we coded from which ethnic groups, if any, a particular rebel organization recruits their fighters. This requires a significant number of the group members to actively participate in the organization’s combat operations.

Yet, while not all rebel organizations recruit along ethnic lines, recruitment alone is insufficient because it may be merely the result of local availability of rebel soldiers. Depending on where a rebel organization is active, agency may not be deliberate; it may have little to do with the organization’s actual agenda other than coinciding with the ethnic demography of the relevant area. The second criterion is therefore whether a given rebel
organization publicly announces to operate on behalf of the relevant ethnic
group, that is whether it pursues an interest that is directly linked to the
group’s fate. If recruitment and claim occur jointly, a rebel group was coded
as ethnic.

In converting this dataset to the level of ethnic groups, I then determined
the earliest onset and the latest termination dates for a given group active–
through rebel organizations as their agents–in a given conflict period. Only
the post-conflict period is kept in the dataset. The format of the data is
therefore post-conflict-ethnic-group-government-dyad-year.

7.2 Ethnonationalist Claims: Access to Central Power

In terms of coding access to state power, EPR is an expert survey that focuses
exclusively on executive power. Depending on the country, executive power
is either the presidency, the cabinet or senior posts in the administration,
including the army. Additionally, it is noteworthy that EPR is time-variant
in its coding, i.e. it captures major shifts in the power constellation across
time. This makes EPR particularly suitable for a dynamic tracking of the
political fates of ethnic groups.

EPR distinguishes between three major types of access to power: absolute
power, power sharing regimes, and exclusion from political power. Each of
these comes with a number of subcategories.

1. **Absolute Power:** no significant sharing of power
   
   - *Monopoly:* complete exclusion of other ethnic groups
- *Dominance:* only limited inclusion of “token” members of other groups

2. **Inclusion:** any division of power (formal or informal) among elites from multiple ethnic groups
   
   - *Senior Partner:* superior partner in a power sharing agreement
   
   - *Junior Partner:* inferior partner in a power sharing agreement

3. **Exclusion from Central Power:** no access to central power by elites claiming to represent particular ethnic groups
   
   - *Regional Autonomy:* no access to central power, but some limited autonomy at the sub-state level, e.g. in provinces
   
   - Separatist Autonomy: local authority due to self-declaration of independence of territory
   
   - *Powerless:* group members do not hold central power
   
   - *Discrimination:* group members do not hold central power because of active, intentional and targeted discrimination (formal or informal)

### 7.3 Measuring Power-Sharing: Upgrading

In order to derive a measure of power-sharing, I assume that the above list of categories of power statues is ordinal, i.e. can be rank-ordered meaningfully. Since power-sharing in the game-theoric model implies an improvement in the status quo, I use a group’s pre-war status as a baseline. This allows me to
Figure 4: Measuring Power-Sharing

construct a binary measure indicating whether a group enjoyed an improved relative political status during the year following the termination of a conflict \((t_1)\), compared to the group’s status during the year preceding the onset of the conflict \((t_0)\). The procedure is visualized in Figure 4.

With regard to the ordinality of the scale, the logic is as follows: Clearly, discriminated groups are worst off, since compared to powerless groups, the state takes active measures to prevent the group from political representation. Separatist groups exert some local power, but compared to groups with regional autonomy, they do not enjoy political legitimacy from the political center. For the remaining categories, the rank-ordering is self-explanatory.

### 7.4 Assigning Covariates

In this section I discuss how the utilities from the game theoretic model are expressed in terms of covariates. Following the logic of backwards induction, I begin with the rebels’ utilities. Here, the utilities for fighting, \(U_{R}(SQ, F)\) and \(U_{R}(PS, F)\) were normalized to zero as to accommodate the statistical software. Thus, we have to specify the regressors for \(\neg F\) under both the status quo and power-sharing. The model with regressors is depicted in Figure ??.
Under the status quo, the rebels’ utilities depend on their probability to win in the event of war \((p)\), the value of the stakes \((\Pi)\) and the cost of fighting \((c_r)\). To operationalize \(p\), I use the outcome of the previous conflict. The data distinguish between four types: rebel victories, agreements, low activity and government victories. Assuming cardinality, I create a four-value scale, ranging from 0 to 1. The rationale is that rebels that previously won are also more likely to win in the future, while they should be least likely to win if previously defeated by the government. Agreement inform about the fact that defeat was not possible for either side, but at least a process of active bargaining took place. Conflicts that terminated in low activity are placed in between. According to the payoff structure, \(p\) scales \(\Pi\). However, I do not include a measure of \(\Pi\) because the measure of conflict outcomes is already coded relative to the incompatibility (from the perspective of the rebels). I measure the cost of fighting by the logged duration of the previous conflict, as
well as by the logged GDP p.c. (lagged). The utility is therefore as follows:

\[ U_R(SQ, \neg F) = X_{23} \beta_{23} + \epsilon_{23} \]

\[ = \beta_{23.0} + \beta_{23.1} \text{termination} + \beta_{23.2} \log(\text{duration}) \]

\[ + \beta_{23.3} \log(GDP_{p.c., t-1}) + \epsilon_{23} \]

Next, I consider the rebels' utilities under power-sharing. Here, the only difference is that in addition I need to operationalize the probability that power-sharing is credible. As argued above, this is most likely to be the case in particular institutional contexts. In particular, constraints that prevent the government from reneging on its offers should signal such credibility to the rebels. I here consider two such scenarios. First, I use the polity component \( X_{\text{Const}} \), which measures executive constraints on a scale from -3 to 3. This avoid endogeneity issues of other polity dimensions (Vreeland, 2008). Moreover, I replaced values of -66, -77 and -88 with the minimum score (Gleditsch and Ruggeri, 2010) in order to maximize the number of data points in the analysis. My second measure of credibility builds on a triadic logic (see Chiba and Reed, 2011). Here, the idea is that governments that already form a power-sharing arrangement are more credible because (i) they demonstrate the capacity and willingness to uphold such an arrangement, and (ii), perhaps more importantly, a triadic constellation in the center cannot monadically revoke a previous offer. Put differently, in order to renege on a power sharing agreement with the rebels, a government consisting of two parties faces the problem that doing so signals to the remaining partner that an arrangement is not necessarily binding, and so each partner will be less inclined to renege,
and perhaps even be hindered to do so by the remaining partner. Thus, for each group I code in a dummy variable whether the government consisted of at least other two partners in the previous period. The utility is then specified in the following way:

\[ U_{R}(PS, \neg F) = X_{25} \beta_{25} + \epsilon_{25} \]

\[ = \beta_{25.1} \text{termination} + \beta_{25.2} \log(\text{duration}) \]
\[ + \beta_{25.3} \log(\text{GDP}_{p.c.t-1}) + \beta_{25.4} X_{\text{Const}} \]
\[ + \beta_{25.5} \text{prior powersharing} + \epsilon_{25} \]

For the government, I need to specify three regressor terms, since only \( U_{G}(SQ, \neg F) \) has been set to zero. I begin with the utility of fighting under the status quo. To recall, the payoff components are shown in Figure 2. I use the same measure of \( p \) as before, namely the scale of previous outcomes. Since these are coded from the perspective of rebel objectives, to capture differences in the value of the incompatibility, I include a dummy that denotes whether the previous conflict was over control of the state, (i.e. a governmental conflict), or over control of some limited territory (see Buhaug, 2006). To capture costs, I include GPD and mountainous terrain (logged). For governmental conflicts, I set the latter variable to zero as capture the fact that the difficult terrain argument should apply mainly to conflicts that are fought in the periphery (Buhaug, 2006). Thus, the government’s utility of fighting
under the status quo is:

\[ U_G(SQ, F) = X_{14} \beta_{14} + \epsilon_{14} \]

\[ = \beta_{14.1 \text{termination}} + \beta_{14.2} \log(\text{duration}) \]

\[ + \beta_{14.3} \log(\text{GDPp.c.}_{t-1}) + \beta_{14.4} \log(\text{mountains}) + \epsilon_{14} \]

The remaining utilities to be specified in terms of regressors concern the government in the case a power-sharing concession has been granted. In this case, the government faces reputation costs, since it overtly demonstrates that concessions are possible. I measure these costs through a proxy of the number of ethnic groups in country. Here, the rationale is that more groups imply more potential challengers that could pose demands. Whether the promise of power-sharing is void or not is again proxied by existing power-sharing arrangements and Polity. Since the size of power-sharing is assumed to be constant in the theoretical model, no measure is included. The utility of not fighting under power-sharing is therefore specified as follows:

\[ U_G(PS, \neg F) = X_{15} \beta_{15} + \epsilon_{15} \]

\[ = \beta_{15.1 \text{groups}} + \beta_{15.2 \text{prior powersharing}} \]

\[ + \beta_{15.3 \text{Polity}} + \epsilon_{15} \]

Finally, the government’s utility for fighting under powersharing is operationalized through the same variables as under the status quo, except that
the reputation costs have been added. They are therefore as follows:

\[ U_G(SQ, F) = X_{16} \beta_{16} + \epsilon_{16} \]

\[ = \beta_{16,1} \text{termination} + \beta_{16,2} \log(\text{duration}) \]

\[ + \beta_{16,3} \log(\text{GDPp.c.}_{t-1}) + \beta_{16,4} \log(\text{mountains}) \]

\[ + \beta_{16,4} \text{groups} + \epsilon_{16} \]

Finally, note that the constant terms have been dropped for \( U_R(PS, \neg F) \) and \( U_G(PS, \neg F) \), since no term can be included in every utility, including constants, for the model to be identified.

8 Preliminary Results

I estimated the model using maximum likelihood as a probit parameterization, i.e. the error term is assumed to be follow a normal distribution. The standard errors were obtained through bootstrapping (1000 replications). The estimation results are given in 2, which shows coefficients along with standard errors in parentheses below. In general, for the statistical model to be consistent with the formal model, the coefficients associated with each payoff component should show the same sign as in Figure 2. To ease interpretation, coefficients that show the expected sign are listed in bold. Eyeballing reveals that on the whole, the theoretical model is largely supported, since roughly three quarters of all estimated coefficients show the expected sign. Moreover, it turns out the majority of these is also statistically significant at \( p < .1 \), which is denoted by an asterisk.
In the discussion of results, I focus on the variables associated with the main parameters of interest, that is $p$ and $q$. Following the logic of backwards induction, I begin with the rebels’ utilities. These are given in the two right columns (sorry for the disarrangement!). Starting with $U_R(SQ, \neg F)$, I find, unsurprisingly, that powerful challengers are more likely to fight again if the government maintained the status quo and did not concede. In line with the commitment problem argument, I find that prior power-sharing and governmental constraints have a pacifying effect where a power-sharing
is implemented.

Turning to the government, although one can compare the signs of the coefficients to the signs predicted by the theoretical model, the difficulty of interpretation hinges on the fact that the government’s decision making is interdependent on how it anticipates the rebels to respond to a given action. Thus, I resort to visual interpretation. Figure 6 shows the predicted probabilities that governments will play power-sharing for a series of covariates. The top left panel displays that power-sharing is most likely to occur where neither side was able to defeat the other, that is in case of parity. A somewhat similar relationship also holds for the potential costs of fighting. Governments either grant power-sharing immediately, or make it contingent on costly fighting.

Interestingly, a curvilinear relationship also holds for the probability that the promise of power-sharing is binding (lower left panel). Knowing that powerful rebels will never accept void offers, governments will refrain from offering them in the first place, since doing so implies reputation costs. At the same time, as suggested by the theoretical model, governments have incentives to offer power-sharing exactly under those circumstances where power-sharing is a void promise, since they will benefit from being able to renege in the future. Consequently, at high levels of institutional credibility, governments will prefer to maintain the status quo and accept the risk of fighting. However, the empirical data do not display such a relationship for executive constraints, as measured by XConst.
9 Conclusion

This paper presents a first attempt to model formally and empirically the strategic logic of power-sharing after civil war. Rather than assuming that power-sharing after civil war occurs god-given in some cases, but not others, I demonstrate that the prospect of recurrent conflict play an important role
in determining where power-sharing occurs. Moreover, the paper highlights the importance of the institutional circumstances in which power-sharing arrangements are implemented. The theoretical model suggests that governments have incentives to offer power-sharing where this promise is likely to be void, whereas this is exactly the scenario under which power-sharing is meaningless to the challenger. Thus, power-sharing arrangements are highly endogenous to the stability of post conflict peace. Empirically, it is likely to occur where neither side can easily defeat the other, and where power-sharing arrangements are neither fully void, nor fully credible.

Given this strong and apparent endogeneity, critiques of power-sharing as a strategy to maintain and secure peace are likely to be premature and mislead by the false assumption that power-sharing is exogenous to post-conflict peace. What remains to be done is to evaluate the average treatment effect of power-sharing on the stability of peace. This includes the counterfactual scenario of power-sharing where it was not implemented. Closer attention will also be given to more direct tests of the theoretical model, i.e. better operationalizations of the underlying parameters.
References


