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Legacies of Violence: Conflict-specific Capital and the Postconflict Diffusion of Civil War

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Abstract

Civil wars have a tendency to spread across borders. In several instances of conflict diffusion, however, conflicts spread well after their cessation at home. Whereas existing diffusion research has not attached much importance to this observation, I argue that these conflicts are instances of a broader pattern of postconflict diffusion. Wars are particularly prone to spread after termination because the end of fighting generates a surplus of weapons, combatants, and rebel leaders whose fortunes are tied to the continuation of violence. Some of these resources circulate throughout the region via the small arms trade and through transnational rebel networks, making this a time at which it should be easier for nonstate groups in the neighborhood to build a capable rebel army. The results from two complementary statistical tests on global conflict data provide strong support for such a postconflict diffusion effect.

Keywords

civil wars, internal armed conflict, international security, rebellion

Civil wars are prone to spread across borders. This transnational dimension of internal conflict is supported by statistical evidence that conflict is more likely in states that border a country already at war (Salehyan and Gleditsch 2006; K. S. Gleditsch 2007; Buhaug and Gleditsch 2008). A fast-growing literature on conflict

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diffusion is dedicated to explaining this finding and to identifying the factors that influence whether and in particular where a conflict is likely to spread. Refugee flows, transnational ethnic and religious ties, external sanctuaries, regionally deteriorating living conditions, and motivation effects have all been associated with the diffusion of conflict (for a review, see Forsberg 2014a).

Despite these valuable contributions, existing research has overlooked a basic but intriguing observation about the *timing* of diffusion: in several instances of spillover, conflicts spread to their neighborhood well after their cessation at home. Perhaps the most prominent example is the Kosovo war, which has been widely linked to the subsequent rebellion of Albanians in Macedonia (Salehyan and Gleditsch 2006; K. S. Gleditsch 2007; Beardsley 2011; Forsberg 2014b). The conflict in Macedonia, however, started almost two years after the Kosovo war had come to an end. The same is true for other instances of conflict diffusion across the globe: of the 122 cases identified by Black (2013), a third happened in the postconflict period.

Previous studies of conflict diffusion have not attached much importance to this observation. In fact, most ignored the postconflict phase entirely, both in their theories and in the data sets used to analyze diffusion. The common approach has been to code the risk of spillover to be present only as long as the source conflict is ongoing.[1] As a result, many data sets fail to capture prominent cases commonly considered to be diffusion (Forsberg 2014a, 195). To account for these, some scholars (e.g., Beardsley 2011; Kathman 2011; Black 2013; Forsberg 2014b) have included lags of between one and five years into their neighborhood conflict coding. Their rationale for these lags was that conflict externalities may take time to exert their effect in recipient countries, and if conflicts spread after they have ended, this is because the risk of contagion takes time to taper off.

In this article, I go further. While I do not discount that some negative externalities linger on, I argue that the end of a conflict creates new and distinct risks to the stability of neighboring countries. Put differently, I believe that many civil wars do not spread *although* they are over, but exactly *because* they are over. Drawing on a large literature on postwar violence, I argue that the end of fighting generates a sudden surplus of weapons, combatants, and rebel leaders whose fortunes are tied to the continuation of violence. This oversupply of conflict-specific capital, as it has been called (Collier and Hoeffler 2004, 569), is unlikely to remain idle. Instead, some of these human and material resources circulate throughout the region via the small arms trade and through transnational rebel networks, making this a time at which it is easier for nonstate groups in the neighborhood to build a capable rebel army. The result, I argue, is a postconflict diffusion effect of civil wars: the end of conflict in one country should temporarily make the start of conflict in a neighboring country more likely.

This argument goes a long way toward explaining the timing of the Kosovo spillover. With a host of risk factors for diffusion present, the war start in early 1998 immediately triggered fears that the violence could spread to Macedonia, but only sporadic incidents took place while the Kosovo war was active. Not even the

refugee crisis in 1999 could plunge Macedonia into violence, even though it shifted the ethnic balance in a dangerous way and put a strain on an already weak economy (Salehyan and Gleditsch 2006). Instead, the Macedonian conflict escalated when former KLA leaders turned their attention to Macedonia after their careers were over in Kosovo, when KLA ex-combatants (including Macedonians *returning* from Kosovo) boosted the military capacity of local recruits, when redundant KLA stockpiles offered a ready source of weapons, and when the Albanian diaspora that had previously supported the KLA simply diverted these financial resources to the Macedonian conflict (Bellamy 2002; Grillot et al. 2004; Lund 2005; K. S. Gleditsch 2007).

This study tests whether the Kosovo–Macedonia case is representative of a broader pattern of postconflict diffusion. Two complementary statistical tests on global conflict data provide strong evidence for such an effect. States in the neighborhood of a country where conflict recently ended have a heightened risk of conflict themselves, and this risk is not a delayed effect of the ongoing war: the likelihood of spillover actually *increases* as a source conflict enters the postconflict phase. Striking is the magnitude of this increase: within the first year of peace, the probability of spillover more than doubles, before it slowly declines again. The results of additional tests to explore the underlying mechanism are compatible with the claim that a postwar surplus of conflict-specific capital contributes to diffusion during this time.

Below, I develop the theoretical argument that links redundant arms, combatants, and rebel leaders in one place to an increased risk of conflict in another. I draw on research on postwar violence but also on work by scholars who claim that access to war-fighting resources is a critical barrier to the successful launch of an insurgency. I then spell out the observable implications of the theory and outline the research design for the statistical tests before presenting the findings. In the concluding section, I suggest an extension of the diffusion research agenda into the postconflict period and discuss two policy implications that may be derived from the findings.

Toward a Theory of Postconflict Diffusion

The question of whether recently terminated conflicts are particularly prone to have spillover effects (and what would explain this propensity) touches on two strands of conflict research: the scholarship on conflict diffusion and research on violence in postwar societies. As mentioned before, the former has so far neglected the postconflict period of neighborhood conflicts. In fact, the question of *when* conflicts spread has not been the focus of this research at all. Instead, scholars sought to explain the large spatial heterogeneity in diffusion, that is, the question of why the externalities of an active conflict do not impact all neighboring countries equally. Explanations for this variation focused on the potential recipients of spillover and the ways in which domestic risk factors make them differentially *susceptible* to be infected (e.g., Braithwaite 2010; Bara 2014), and on the extent to which recipient countries are differentially *exposed* to a neighborhood conflict as a result of their

spatial and social proximity to the source country (for instance, Salehyan and Gleditsch 2006; Buhaug and Gleditsch 2008; Cederman, Buhaug, and Rød 2009; Black 2013; Forsberg 2014b).

The characteristics and dynamics of the *source* conflicts have received little attention. Only few studies explored whether all source conflicts are equally contagious for their neighborhood. Beardsley (2011), for instance, found that conflicts to which peace operations are deployed are less likely to spread than conflicts without peacekeepers, while Buhaug and Gleditsch (2008) showed that separatist conflicts are more contagious than conflicts over government. How the contagiousness of a source conflict varies over time, however, has not been studied. It is against this background that the question of how the risk of spillover develops when a conflict ends was not asked either.

Research on postconflict armed violence, on the other hand, has not had a strong transnational focus. Instead, scholars have been analyzing why civil wars so frequently recur after a period of peace (recently Rustad and Binningsbø 2012; Walter 2015). Moreover, they have sought to understand why the violence of war often transforms into other forms of violence in the postconflict period, such as communal riots, state-led violence, or violent crime (Collier 1994; Renner 1997; Muggah 2006; Kreutz, Marsh, and Torre 2012; Suhrke 2012). In explaining this multifaceted violence in the transition to peace, there are those who emphasize the conditions of the peace (e.g., the nature of the settlement, peacekeeping, and postwar institutions) and those who locate the roots of postwar violence in the legacies of the war (Suhrke 2012, 2). It is the latter perspective that may hold an explanation for why the shift from war to peace is not just a challenge for the societies in transition but also for countries surrounding them.

One particularly dangerous legacy of civil wars is a sudden surplus of conflict-specific capital. Conflict-specific capital denotes all material and human resources that are accumulated during wartime and that are of little use during peacetime (Collier and Hoeffler 2004, 569). It includes weapons and other military equipment, combatants, their skills and networks, rebel finance, and more. The primary focus of postwar research has been on the risks these legacy resources pose to the postwar societies themselves, but a number of scholars (Berman 1996; Knight and Özerdem 2004, 501-2; Nilsson 2005; Spear 2006, 174; Killicoat 2007, 258) have already suggested that the proliferation of weapons and the cross-border movement of ex-combatants may also threaten the stability of so far peaceful countries in the neighborhood. Muggah (2006, 200) even went so far as to warn of the "postwar contagion effects of armed violence."

Scholars of conflict diffusion have of course not been oblivious to the cross-border flow of cheap arms and mercenaries as one mechanism by which conflicts spread (Salehyan and Gleditsch 2006, 352; Buhaug and Gleditsch 2008, 222; Braithwaite 2010, 313; Forsberg 2014a, 192-93). In line with the general focus of diffusion research, however, most assume this mechanism to be at work explicitly during *ongoing* conflicts or do not pay attention to the time at which these

movements may be most pronounced.[2] In the following section, I thus draw on several strands of conflict and postconflict research to argue that the easy availability of weapons as well as trained and skilled combatants and rebel leaders is a particular feature of postconflict situations, that these resources circulate on regional markets, and that access to these resources can have a crucial impact on the timing of rebellion.

Conflict-specific Capital and Postconflict Diffusion

Nonstate groups intent on challenging the standing army of a government require war-fighting resources. They need motivated and qualified leaders, command and control structures, soldiers, weapons and other military equipment, as well as logistics for transportation, food, and medical support (Byman et al. 2001; Weinstein 2006; Hazen 2013). Only rarely are these resource needs met from domestic supply alone. Instead, rebels frequently rely on external sources, including black markets, neighboring governments, third-party patrons, and other rebel groups (Byman et al. 2001; Hazen 2013). Fluctuations in the availability of external resources accordingly shape the dynamics of rebellion in important ways. Continued access to external support makes the cessation of conflict less likely (for a more nuanced analysis, see Sawyer, Cunningham, and Reed 2015), whereas diminishing external supply can force rebels to the negotiation table for lack of other options (Hazen 2013). By extension, I argue that a sudden *surge* in the availability of war-fighting resources after the termination of a neighborhood conflict can facilitate the organization of a new rebellion.

This claim bears resemblance to the so-called feasibility hypothesis of civil war, which reads that where rebellion is financially and militarily feasible, it will occur (Fearon and Laitin 2003; Collier, Hoeffler, and Rohner 2009). I do not go so far. Collective grievances and preexisting organization likely shape both the extent to which groups have an incentive to and are able to make use of an influx of war-fighting resources. Hence, having the means to wage war may not so much determine *whether* rebellion occurs, but when an aggrieved and/or mobilized group can move from motivation to (violent) action. Below, I spell out this argument in greater detail for three essential elements of conflict-specific capital: weapons, combatants, and rebel leaders.

Weapons

The end of conflict generates a surplus of weapons that are of no more immediate military value to the former combatants. Although there is frequently an effort to collect some of these weapons within the framework of disarmament programs, large quantities of weapons still circulate within postconflict societies and their neighborhood for a while after conflict has ended (Renner 1997; Killicoat 2007; Kreutz, Marsh, and Torre 2012). The black market for small arms reacts to this

surplus: illicit small arms prices tend to plummet in the postconflict period of a civil war (Killicoat 2007; Chivers 2012; Spleeters 2012; Florquin 2013). This proliferation of cheap weapons, in turn, can facilitate the organization of rebellion elsewhere. Weapons scarcity is a defining feature of many nascent insurgencies, and many groups spend months and even years secretly acquiring weapons before they start their insurgencies (e.g., Silber and Little 1996, 105-18; Lecocq 2002, 224-31). Fluctuations in weapons availability may therefore crucially influence the *time* at which insurgencies are eventually launched.

The impact of this postconflict proliferation of weapons can only be fully appreciated whether we do away with the notion that an abundance of cheap arms is a general characteristic of conflict zones and their neighborhoods—a notion that was perpetuated in early work by small arms experts (e.g., Machel 1996; Renner 1997). Weapons are at least partially subject to the market forces of supply and demand, and there are large regional and temporal variations in the availability of weapons to opposition groups (Killicoat 2007; Marsh 2007; Jackson 2010; Bourne 2012; Hazen 2013). Importantly, there is no support for the idea that ongoing civil wars lead to an increased availability of cheap weapons. Arms prices typically increase dramatically in the early stages of conflict, reflecting a shortage of arms, and these soaring prices affect the entire neighborhood (Chivers 2012; Florquin 2013). Hence, although ongoing conflicts lead to the emergence of illicit arms markets in the first instance, the mere existence of these markets does not automatically translate into an increased availability of weapons, at least not until the end of a conflict leads to a market oversupply (Bourne 2012, 33-34).

Combatants

The demobilization of rebels, militias, and government forces at the end of conflict creates a large pool of unemployed combatants, many of whom have difficulties reintegrating into the postconflict society. They frequently lack the skills that would qualify them for employment in an already difficult postconflict labor market (Collier 1994; Renner 1997; Spear 2006). Child soldiers in particular had their education cut short and never entered the workforce at all (Nilsson 2005). Ex-combatants are thus susceptible to turn to violent crime or reenlist in rebel armies at home to make a living (Kreutz, Marsh, and Torre 2012; Themnér 2013; Kaplan and Nussio 2016). At times, however, they travel across borders to lend their military skills to state and nonstate actors in the neighborhood (Renner 1997, 16; Knight and Özerdem 2004, 502; Nilsson 2005, 18-19; Spear 2006, 180; Themnér 2013). Perhaps the best-known example of this phenomenon is the "regional warriors" of West Africa (Human Rights Watch 2005): rebels—many of whom forcibly recruited as children in the wars in Liberia or Sierra Leone—lived precarious existences when those conflicts ended and participated in several subsequent wars in the region.

The inflow of skilled and experienced fighters may boost the military capacity of a nonstate group in a recipient country. Although recruits are not usually a scarce

resource in the way that weapons are, the challenge of recruitment is to attract committed fighters with military skills (Byman et al. 2001, 95; Weinstein 2006, 8-9; Forney 2015, 826). This includes combat experience or the particular skills needed to operate complex weapons systems (Byman et al. 2001, 92; Jackson 2010, 140-41; Hazen 2013, 13). Former combatants have this know-how, which makes for a battlefield impact that is disproportionate to the usually small number of foreign combatants in any insurgency (Malet 2013, 6). Here again, it is active conflicts that create a pool of combatants with war-fighting experience in the first place, but the availability of these skills for neighboring groups increases primarily in the post-conflict period.

Rebel Leaders

The end of conflict leaves behind not only large numbers of ordinary combatants but also rebel leaders who suddenly find themselves at the sidelines. Many of them have gained wealth through wartime economic opportunities and attained positions of power and influence. The termination of conflict threatens their status and privileges. Some leaders who believe that they benefit from the continuation of violence try to undermine the peace process at home (Stedman 1997; Hazen 2013, 37-41). Others, however, pursue their agendas in neighboring countries. War economies are usually transnational economies and profit from instability, in general, and many ideological, religious, or ethnic agendas transcend state boundaries (Byman et al. 2001, 71).

Surprisingly, the transnational movement of rebel leaders and its impact on the spread of conflict have received little attention so far (but see Themnér 2013). Yet, nonstate groups need leaders who are willing and capable to do the planning, acquisition, and recruitment for insurgency. Case studies are replete with examples in which such leaders "spilled over" from a conflict abroad. The case of Macedonia has already been discussed, but there are many more: one of the two leaders who initiated the civil conflict in Uzbekistan in 1999 was previously a top commander in the Tajik civil war, until the peace process started there in 1997 (Torjesen and Macfarlane 2009). The leaders of the rebel group that entered Rwanda from Uganda in 1990 had all previously held senior positions in the army that brought Yoweri Museveni to power in Uganda in 1986 (Prunier 1995). And many senior leaders of the Islamic State in Syria are former officers of Saddam Hussein's army in Iraq, marginalized after the US-led invasion in 2003 (Sly 2015). In all these cases, the time at which the respective rebel leaders moved on was closely linked to a break in their career path caused by the reconfiguration of power that is characteristic of postconflict periods.

Empirical Implications

Besides weapons, combatants, and rebel leaders, there may be other elements of conflict-specific capital (financial resources, for instance) that exhibit a similar path

when conflicts end. Common to all these parallel processes is that they are not amenable to direct testing for lack of global data on the cross-border movement of such resources. What can be tested, however, is the observable implication of these processes: the end of conflict in a source country should make the start of conflict in neighboring countries more likely. "More likely," in turn, can refer to two different effects, and both of them should be observed if the theory is plausible. The first is *cross-sectional*:

> **Hypothesis 1:** Countries with one or several neighbors in which a conflict recently ended are more likely to have conflict onset than countries that do not border a postconflict society.

This first hypothesis merely states that postconflict situations are contagious at all. To ascertain that such an association is not simply a delayed effect of the ongoing war (a gradual petering out of spillover risk as diffusion researchers have assumed), but a new and distinct risk that deserves the attention of scholars and policy makers alike, we need to analyze how the risk of spillover changes as a source conflict moves from the ongoing into the postconflict phase. If the risk of contagion starts decreasing immediately after a conflict ends, the theoretical argument above loses plausibility. The second hypothesis therefore posits a *temporal* effect:

> **Hypothesis 2:** The contagiousness of a source conflict temporarily increases right after it has ended, and then decreases again as the legacy of war-fighting capital depreciates.

What has been ignored in the discussion so far is that source conflicts differ in terms of how much conflict-specific capital accumulates, depending on how long they lasted, how severe they were, and what weapons were used. We should also expect variance in the propensity of surplus capital to leave the postconflict country. Inclusive postconflict institutions, economic prospects for former combatants, or third-party peacebuilding efforts may well reduce the incentive of combatants to pursue their military careers elsewhere and may dampen the impact of excess weapons. This variance and its impact on postconflict diffusion will be exploited to further explore the plausibility of the posited causal mechanism.

Research Design

The two hypotheses above are tested using global conflict data between 1960 and 2012. Due to their different focus (spatial vs. temporal variation), each requires a somewhat different data setup and a different class of statistical models, which are described in turn below.

Testing the First Hypothesis

The first hypothesis is the exact postconflict analogue of the diffusion hypothesis tested in previous research, which focused on the spillover of active neighborhood conflicts. I therefore replicate and extend an analysis conducted by Buhaug and Gleditsch (2008)—a seminal study in the scholarship of conflict diffusion. The authors demonstrate both that countries bordered by neighbors with ongoing civil wars have a higher risk of onset and that this effect does not disappear when the regional clustering of conflict risk factors is taken into account. I create a data set very similar to theirs and test whether recently terminated conflicts, just like active ones, also have this effect.[3]

The dependent variable for the binary logistic regression is whether a civil conflict (new or recurring) started in a recipient country in any year, using conflict data from the Uppsala Conflict Data Program (UCDP)/Peace Research Institute Oslo (PRIO) Armed Conflict Dataset (ACD), v.4-2015 (N. P. Gleditsch et al. 2002). In sticking with the coding rules employed by Buhaug and Gleditsch (2008, 223), conflict episodes with less than two calendar years of inactivity between them are collapsed into one single conflict, that is, new onsets are only coded after two years of inactivity. The main independent variable in the original study, neighborhood conflict, is a dummy variable with a value of 1 for every year in which a conflict was active in at least one contiguous country.[4]

For the new postconflict variable I add to this study, I code a dummy that indicates whether a conflict has recently (in the past three years) ended in any of the neighboring states. Several alternative specifications of "recently" (one, two, and five years) are tested and presented in the Online Supplemental Document (OSD), Table B.1. I also include a count of the *number* of conflicts that ended in the past three years. More surplus capital should be available if several conflicts end simultaneously and we should see the risk of postconflict spillover increase even further.[5]

Regarding confounders, I stuck to the original study and included the recipient countries' gross domestic product (GDP) per capita and population size (K. S. Gleditsch 2002), their Polity IV score and squared term to account for regime type and institutional consistency (Marshall, Jaggers, and Gurr 2016), a count of the years a country has been at peace along with its square and cube to control for nonlinear time dependence (Carter and Signorino 2010), a dummy to differentiate between country-year observations pre– and post–cold war, and the average value of all neighboring countries' GDP per capita and regime characteristics to account for the regional clustering of risk factors.

Testing the Second Hypothesis

In the second test, the focus shifts away from the recipients of spillover to the countries that are the source of diffusion (see Forsberg 2014a, 190). Unit of analysis are postconflict periods of conflicts that ended between 1960 and 2012, using the

same conflict data as in the first test (ACD v.4-2015). Each postconflict period lasts five years starting from the first month after termination, and postconflict periods are cut short if a conflict recurs within that time frame. Time, the main "explanatory variable" in this test, is measured in months.[6]

The dependent variable is whether any country in the immediate neighborhood of a source conflict (all countries sharing a land border with the conflict country) experiences conflict onset in a particular month of the source conflict's postconflict phase.[7] Due to the source country focus of this study, this variable is coded collectively for all countries making up the neighborhood, that is, source conflicts are not matched dyadically with each potential recipient country separately. Simultaneous onsets in neighboring countries are hence coded as one onset. Onset refers to the start of an entirely new conflict with at least twenty-five battle deaths per year or the resumption of a conflict that was active previously.[8]

Because this hypothesis posits a temporal effect, I use duration models.[9] These allow us to analyze how the probability of onset in the neighborhood changes over the course of a source conflict's postconflict phase when all covariates are held constant. This change in risk over time, which should reflect the changing contagiousness of a source conflict, is presented in the hazard curve. To retrieve this curve, I employ a flexible parametric duration model known as Royston–Parmar (RP) model (Royston and Parmar 2002; Lambert and Royston 2009).

RP models are often used in the medical sciences, where estimates of risk over time (such as mortality rates in different years after diagnosis) can be of vital interest to doctors and patients alike. They are an extension of the Cox proportional hazards model for situations in which the analyst has a substantive interest in the hazard curve. In Cox regression, this hazard is left unspecified. This ensures that coefficient estimates are not biased by a misspecification of the underlying hazard but often results in noisy and overfitted hazard curves (Box-Steffensmeier and Jones 2004, 88-89). RP models avoid this problem: rather than leaving the hazard completely unspecified, the curve is modeled in a flexible manner using restricted cubic splines.[10] This yields a more informative (smooth) estimate of the hazard curve, but one that is not forced into any of the rigid distributions available in parametric duration models.

Hazard curves are sensitive to model specification, because a dynamic hazard rate over time picks up any effects we do not know about, or cannot measure. If we could measure all the phenomena that *cause* a change in risk over time, time dependence would be "modeled away" (Beck, Katz, and Tucker 1998, 1283). In this study, I exploit this very nature—more often considered a nuisance—of time dependence: given that I cannot measure the transnational movement of conflict-specific capital directly, I use time as a proxy to pick up the effect of these unobserved conflict externalities. It is therefore important that the hazard curve does not pick up the effect of other factors that shape a source conflict's contagiousness over time. Independent of the flow of conflict-specific capital, source conflicts may not always be equally contagious for the neighborhood. Escalating violence, for instance, may

generally produce more of the externalities that have been associated with the spread of conflict, that is, more refugees, more visible demonstration effects, or a greater disruption of the regional economy (Kathman 2011, 857). In the postconflict phase, of course, battlefield violence should have ceased by definition, but there may still be instability that affects the neighborhood. To proxy for this time-variant instability, I include the annual number of refugees that still live outside the postconflict country.[11] On average, this number declines over the course of the postconflict period as refugees return, and we need to account for this decline in order not to mistake it as a reduction in the impact of conflict-specific capital.

Hazard curves can also be distorted by spatial heterogeneity in diffusion. The reason is that the most susceptible (vulnerable) recipient countries, or those that are most exposed to a neighborhood conflict, may also be the first ones to react to spillover effects. This yields a hazard curve that gradually declines over time after the most likely instances of spillover have happened early on in the risk period—a decline we may again mistakenly attribute to a diminishing contagiousness of the source conflict (Zorn 2000, 368). I therefore control for factors that have been found to influence countries' conflict propensity, including the average GDP per capita and total population of all neighboring countries (K. S. Gleditsch 2002), and a variable that measures how many percentage of all neighboring countries have semidemocratic ("anocratic") regimes.[12] In addition, I include a count of how many countries make up the neighborhood at risk. There is a limited number of conflictive cleavages in each country, and in neighborhoods with more members there is a higher chance that some of these cleavages are not yet "activated" into violent conflict, making them more vulnerable.

Finally, I include a count of active conflicts in the neighborhood. The number of already ongoing conflicts could impact the timing of spillover in opposite directions. On the one hand, a high number of conflicts indicate a general vulnerability of a region and failing to account for that would yield the sort of spurious time dependence described above. On the other hand, most rebel groups are constantly looking for more resources, hence active conflicts could soak up newly available war-fighting resources and reduce the risk that these become available for the start of a new civil war (thus making a region less vulnerable to a new onset).[13]

To control for variance in neighboring countries' exposure to the source conflict, I count the countries that have ethnic or religious ties to the group(s) associated with the source conflict rebels (Vogt et al. 2015). Transnational ties have been found to increase the likelihood that conflicts spread (e.g., Buhaug and Gleditsch 2008; Forsberg 2014b), and they seem to matter in the postconflict phase as well. Combatants may be more likely to join rebellions by their coethnics either out of solidarity or because the network facilitates cross-border movement. Rebel leaders need to be acceptable to a new constituency, which is more likely in the presence of such ties. And analyses of transnational black markets have highlighted that social networks based on ethnicity, religion, or ideology play an important role even in the cross-

Table 1. List of Control Variables and Their Means.

Variable	Mean[a]
Total source country refugees (ln)	8.10 (3,280 refugees)
Number of neighbors with ethnic ties to the source conflict	0.92 = 1 neighbor
Neighborhood population in 1,000 (ln)	11.94 (153 million people)
Neighborhood gross domestic product/capita (ln)	7.99 (US $2,950)
Anocracies in the neighborhood (%)	0.32
Number of ongoing conflicts in the neighborhood	1.16 = 1 ongoing conflict
Number of neighbors	4.93 = 5 neighbors

[a]Rounded real values corresponding to the values of logged variables in parentheses.

border exchange of illicit goods such as weapons because they generate trust in an otherwise unregulated environment (e.g., Kinsella 2006).

Table 1 lists all variables included in the main model to test Hypothesis 2 together with the means of these variables, which are used for the prediction of the hazard curves below.

Results

The end of one conflict increases the risk that a new conflict starts elsewhere. This is the key result of the first test reported in Table 2. Model 1 does not yet include the postconflict variables and instead replicates the analysis of Buhaug and Gleditsch (2008, 226) for active conflict spillover.[14] Even for a slightly different time period and with updated conflict data, their findings hold. As indicated by the positive coefficient on the neighborhood conflict dummy, countries bordering at least one state with an ongoing conflict are more likely to have conflict onset. Model 2 introduces the postconflict dummy with a significant and strong positive coefficient for the effect of conflicts that terminated in the past three years. This is clear support for Hypothesis 1, which posited that countries in the neighborhood of a postconflict country have an increased risk of conflict themselves.

To illustrate the substantive impact of a terminated conflict in the neighborhood, I computed the predicted probability of conflict for a hypothetical but rather average recipient country (all control variables set to their means) if there are no active or recently terminated conflicts in the neighborhood. Such a country has a 3.1 percent chance of conflict in any year.[15] Faced with at least one neighbor in which a conflict ended in the past three years, the onset risk for this country is 5.4 percent—a 71 percent increase.

This effect becomes stronger as more conflicts in a neighborhood end around the same time, as model 3 shows. While one postconflict situation in the neighborhood already heightens the risk of onset, this risk again increases if two, or three and more conflicts end at the same time. This lends some plausibility to the claim that

Table 2. Onset of Civil Conflict, 1960 to 2012.

	(1)	(2)	(3)	(4)
Active NC	0.316**	0.218	0.196	
	(2.09)	(1.41)	(1.26)	
NC ended in the past three years		0.548***		0.497*
		(3.95)		(1.71)
Count of NC that ended in the past three years				
One NC ended			0.434***	
			(2.71)	
Two NC ended			0.722***	
			(3.54)	
Three or more NC ended			0.768***	
			(3.15)	
Active conflict at home or in neighborhood				0.077
				(0.35)
Interaction active/terminated conflicts				0.090
				(0.27)
Neighborhood democracy[a]	−0.028	−0.023	−0.022	−0.024
	(1.46)	(1.18)	(1.14)	(1.22)
Neighborhood democracy squared[a]	−0.008*	−0.007*	−0.008*	−0.008*
	(1.74)	(1.65)	(1.74)	(1.75)
Neighborhood GDP/capita (ln)[a]	0.123	0.136	0.144	0.132
	(1.08)	(1.18)	(1.25)	(1.15)
Democracy[a]	−0.010	−0.009	−0.008	−0.009
	(0.70)	(0.63)	(0.62)	(0.67)
Democracy squared[a]	−0.005*	−0.005*	−0.005*	−0.005*
	(1.89)	(1.84)	(1.87)	(1.80)
GDP/capita (ln)[a]	−0.194**	−0.196**	−0.194**	−0.201**
	(2.02)	(2.00)	(1.98)	(2.06)
Population (ln)[a]	0.331***	0.301***	0.290***	0.305***
	(8.13)	(7.43)	(7.07)	(7.43)
Post–cold war	0.312**	0.218	0.166	0.233
	(1.98)	(1.35)	(1.00)	(1.44)
Peace years	−0.052**	−0.050*	−0.049*	−0.048*
	(1.97)	(1.88)	(1.85)	(1.75)
Peace years^2	0.001	0.001	0.001	0.001
	(0.93)	(0.95)	(0.93)	(0.88)
Peace years^3	−0.000	−0.000	−0.000	−0.000
	(0.85)	(0.90)	(0.87)	(0.83)
Constant	−5.255***	−5.225***	−5.135***	−5.119***
	(6.69)	(6.66)	(6.48)	(6.45)
N	6,851	6,851	6,851	6,851

Note. Logit estimates with robust absolute *z* scores are in parentheses. ln = natural logarithm; GDP = gross domestic product; NC = neighborhood conflict.
[a]Variable lagged one year, except in the first year of observation.
*$p < .1$.
**$p < .05$.
***$p < .01$.

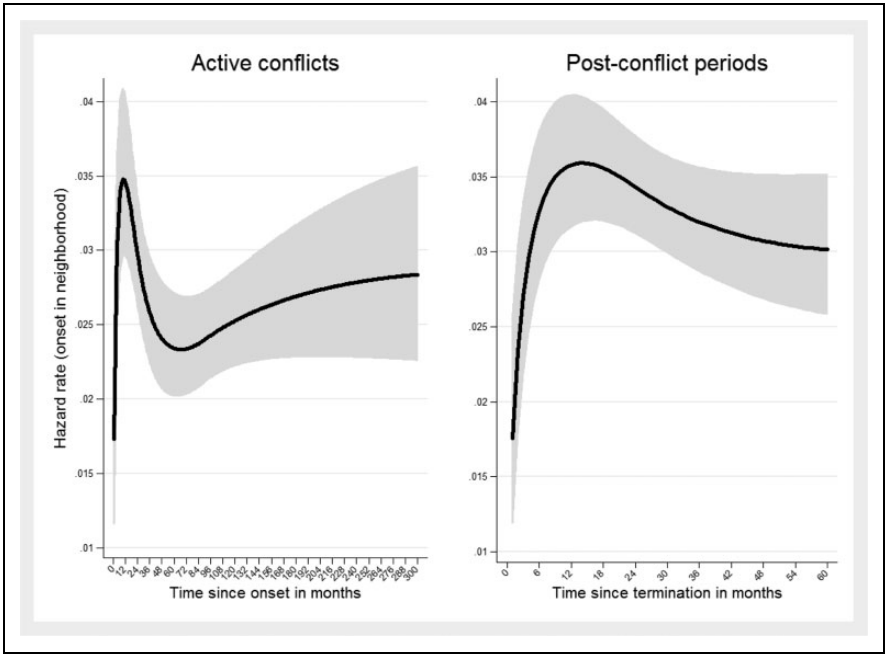

Figure 1. Probability of conflict in the neighborhood as a function of source conflict time.

postconflict spillover is due to an oversupply of conflict-specific capital, as more resources accumulate in multiple conflicts.

Note that as we account for postconflict situations, the effect of *active* neighborhood conflicts becomes statistically indistinguishable from zero. Given that in almost half of the observations in which there was an active neighborhood conflict, another conflict in the neighborhood had just ended, previous diffusion studies might have mistakenly attributed the spillover effect of postconflict situations to those active conflicts instead. But perhaps active civil wars and postconflict situations mutually influence each other and testing for their independent effect biases our results. As discussed above, active conflicts may soak up surplus war-fighting resources and reduce the risk that these become available for the start of a new conflict. To test this, model 4 introduces an interaction term between the terminated conflict dummy and a dummy variable indicating whether the recipient country itself or any country in the neighborhood has an active civil war that could absorb conflict capital. But neither is this interaction significant nor does it alter the effect of the postconflict dummy from model 2.

I now turn to the results of the second test, in which the contagiousness of source conflicts is traced over time in order to analyze this postconflict spillover effect in more detail. The main result is presented in Figure 1. Using 90 percent confidence intervals, the graph on the right plots the predicted probability of conflict onset in the

neighborhood of a just terminated conflict as a function of the time since that conflict ended.[16] The prediction is made for the risk emanating from a hypothetical but rather average source conflict in an average neighborhood: all predictors are set to their means (see Table 1).[17]

As posited in Hypothesis 2, there is an immediate increase in the risk of conflict onset as a civil war in the neighborhood enters the postconflict period. The risk reaches its peak after fourteen months and slowly declines thereafter. This pattern is fully consistent with the proposition that the postconflict period of a source country is *particularly* dangerous in the sense that the termination of a conflict creates new risks to the stability of neighboring countries. Surprising is the magnitude of this postconflict spillover effect: within the first year of peace, the probability of spillover more than doubles from 1.76 percent to 3.58 percent.

For the sake of comparison, the graph on the left illustrates how the risk of spillover develops over the course of active source conflicts that started (rather than ended) between 1960 and 2012. This risk is likewise not constant. It increases steeply right after the start of a source conflict but quickly drops to a relatively low level again.[18] This pattern is compatible with a temporary inspiration effect that diminishes once the attention of citizens and the media in the neighborhood is directed elsewhere (Hill and Rothchild 1986, 720), and with a finding by Murdoch and Sandler (2004) that economies seem to be able to recover from the disruptive impacts of a neighboring civil war in the longer run. The pattern may also come to the rescue of previous research that found active conflicts to be contagious—a finding that was not corroborated in the first test further above. It seems that active civil wars are indeed contagious but primarily in their early years. In the first test, these conflicts were observed over a long time without differentiating between their contagiousness in the early and later stages, hence the not-so-contagious later years might have rendered the effect of active civil wars on the neighborhood statistically insignificant.

The most striking result from the comparison of the active and postconflict hazard curves is that the peak risk of spillover is not while a conflict is ongoing, but right after it has ended. It appears in fact that over their entire life span, conflicts are most likely to spill over when they are over. This finding is robust to various alternative sample and model specifications. I have excluded the European region from the analysis to verify that the results are not driven by the several conflicts that started when the Soviet and Yugoslav empires collapsed. In the same vein, I have included regional dummies to test whether the postconflict spillover phenomenon is specific to certain world regions, which is not the case. In addition, I have examined whether the scale or shape of the hazard changes when peacekeepers are present in the postconflict society, given that Beardsley (2011) found peacekeeping to mitigate the risk of contagion at least for active civil wars. For postconflict contagion, however, I found no such effect. In addition to these tests—the results of which are presented in the OSD, section B.2—the finding is robust to the inclusion of additional control variables (including information on whether source conflicts are

ethnic, or whether they are over territory or government) and to the omission of control variables altogether.

Probing the Mechanism

The results presented so far are robust evidence of a postconflict spillover effect of civil war. What they say little about is whether this effect is indeed the result of surplus conflict capital that circulates throughout the region and facilitates rebellions elsewhere. To explore the plausibility of this mechanism, I have therefore conducted a number of additional tests. These analyze the variance in postconflict spillover that results from different source country characteristics. If surplus war-fighting resources *are* at the heart of postconflict spillover, we should see more spillover (a) after conflicts in which more war-fighting resources have accumulated, (b) in postconflict settings where little is done to prevent the circulation of these resources, and (c) when groups willing to start a rebellion are comparatively more dependent on the influx of such resources from abroad.

These relationships are tested by introducing dummy variables for various characteristics of the source conflict (or its postconflict context) to the main model presented in Figure 1.[19] Each dummy is interacted with postconflict time in order to allow both the scale and shape of the hazard curve to vary between differentially spillover-prone source conflicts. This is important because the Cox model and its extension by Royston and Parmar (2002) assume proportional hazards, that is, they assume that the effect of a variable does not change over time (Box-Steffensmeier and Zorn 2001). Under this assumption, the contagiousness curves of different conflicts would be on higher or lower levels but run parallel to each other. The second hypothesis, however, made an explicit statement about the shape of the hazard; hence, we need to permit this shape to differ between situations in which conflict-specific capital is assumed to play a smaller or bigger role, respectively. Figure 2 presents the results of these tests for the same hypothetical case that was used to predict the postconflict hazard in Figure 1. The gray shaded area illustrates the time range during which the effect of the dummy variable is statistically significant on a 90 percent level across all possible values of the other covariates (i.e., not just the hypothetical predicted case; see Licht 2011).[20]

Starting with the last source of variance discussed above, I test whether postconflict spillover is more pronounced after the end of the cold war. Several scholars (e.g., Byman et al. 2001; Ballentine and Sherman 2003, 1-2; Hazen 2013, 2) have pointed out that rebellions have become increasingly "self-financing" in nature since then, given that they cannot rely on the type of superpower support that was common during the cold war. The availability of arms and combatants left over from a terminated conflict in the neighborhood should accordingly play a bigger role for nonstate groups since 1989, and we should see a stronger postconflict diffusion effect. Graph 2a supports this proposition. Although the risk of spillover increases both for conflicts that ended before 1989 and conflicts that ended later, the

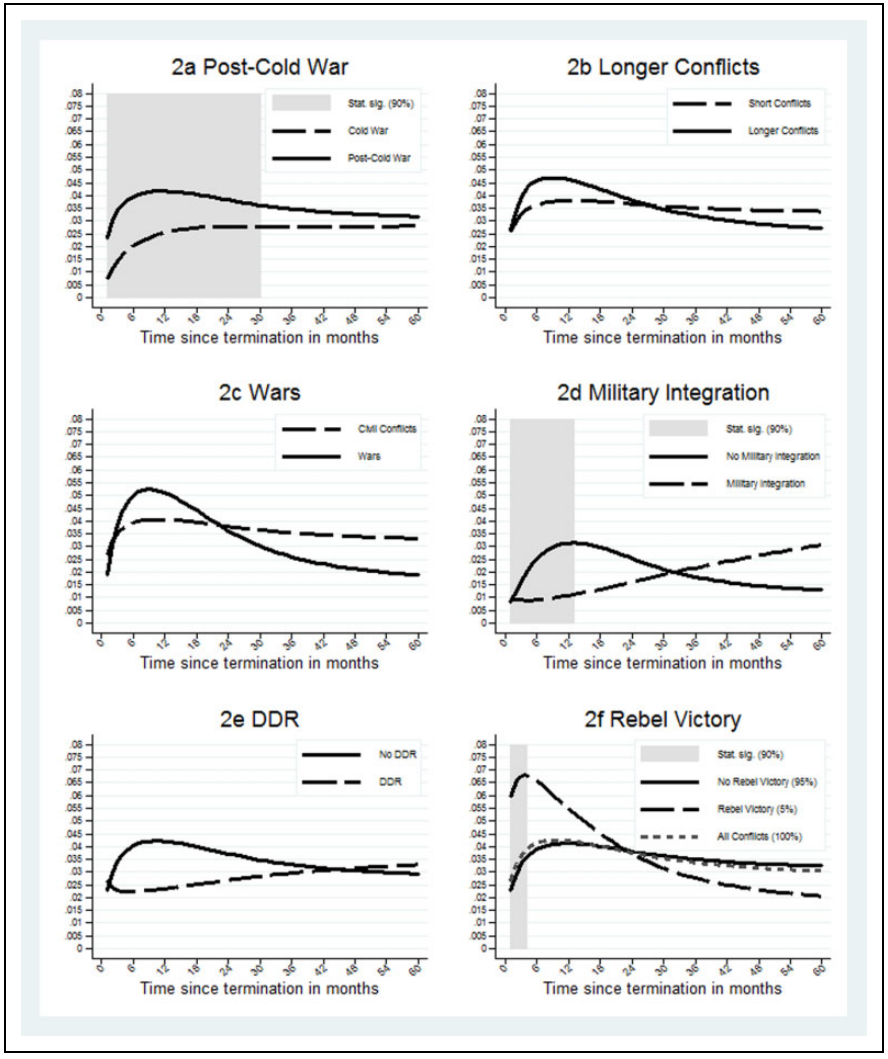

Figure 2. Variance in postconflict spillover.

characteristic spillover peak of Figure 1—with a steep increase and later decline—seems to be typical for postconflict situations after the end of the cold war, and this difference is statistically significant up until thirty months into the postconflict period. Because of this pattern and due to limited data availability for some of the variables below, the remaining tests are run only for the post–cold war period.

In terms of how much conflict-specific capital accumulates, we should see that longer and more severe conflicts are associated with a more pronounced spillover

peak when they end. Longer conflicts require larger weapons stocks, they put combatants out of civilian employment for longer with declining chances of social and economic integration, and they permit leaders to establish wartime economies they will want to sustain in one way or another. In the same vein, more military resources may be employed in more frequent or more lethal battles. The hazard curves in graphs 2b and 2c show exactly this pattern of a flatter spillover peak after conflicts that lasted less than a year if compared to longer ones, and a much more extreme peak after wars (conflicts that caused at least 1,000 battle-related deaths in any year)[21] if compared to lower-intensity conflicts. In both cases, however, the difference is not statistically significant.

Regarding variance in the likelihood of surplus resources to leave the postconflict country, the postconflict context (rather than the characteristics of the war) should matter. If rebels are integrated into the military and security structures (professions for which they are qualified), they may have less of an incentive to join rebellions abroad or to sell their weapons in order to make some immediate cash, and we should see less postconflict spillover in these situations. To test this relationship, I made use of a new data set on post–civil war power sharing (Gromes and Ranft 2016) and created a dummy that takes on the value of 1 if both warring parties participate substantially in the postwar army and police forces and 0 otherwise.[22] The result presented in graph 2d fully supports the proposition: there is no peak in postconflict spillover in situations of military integration (which unfortunately happens in only 20 percent of observations in my sample), and this difference is statistically significant at least in the first year of the postconflict period.[23]

There may be a similar pattern if there is a national or international disarmament, demobilization and reintegration (DDR) program with the aim to collect redundant weapons, demobilize the armies, and assist with the reintegration of ex-combatants. However, existing research on DDR programs is not overly optimistic about their effectiveness: in terms of weapons only fractions of the arms estimated to be in the possession of fighters are usually turned in; many rebels remain unemployed or underemployed even after reintegration programs and often maintain close links to their former unit; and there is a particular challenge reintegrating rebel leaders, whose postconflict needs differ from those of rank-and-file soldiers (e.g., Berman 1996; Human Rights Watch 2005; Nilsson 2005; Muggah 2006; Spear 2006; Humphreys and Weinstein 2007; Torjesen and Macfarlane 2009; Gilligan, Mvukiyehe, and Samii 2013). With these microlevel findings in mind, the relationship between the presence of a DDR program and the severity of postconflict spillover is nevertheless tested using (annual) DDR data by Banholzer (2014). Interestingly, the pattern in graph 2e shows spillover variance very similar to that of military integration but is not statistically significant.

Taken together, the picture emerging from these tests is compatible with a mechanism of postconflict spillover that centers on a surplus of war-fighting resources, although not all relationships presented above are statistically significant. Moreover, the spillover-dampening impact of military integration substantially

weakens what I consider to be the most plausible alternative explanation that is consistent with the observed pattern, namely, that the postconflict peak reflects a motivation effect instead: if the outcome of the war is favorable for the rebels, this may inspire groups abroad to take up arms as well. Military power sharing is arguably a relatively positive outcome; hence, if these motivation effects were at work, we should see *more* spillover after military integration, not less. Of course, there is at least one better outcome from a rebel perspective and that is an outright victory. I therefore conduct a last test to exclude this alternative explanation by comparing spillover after rebel victories to spillover after other outcomes.[24] Graph 2f shows that after rebel victories, there is a very high risk of spillover right at the beginning of the postconflict period, but only a small increase and quick decline thereafter. While this "rough start" may be interesting to explore further, rebel victories are not what drive the finding of postconflict spillover. On the contrary, if we exclude rebel victories (which make up only 5 percent of cases in the sample), the increase in spillover risk after the cessation of a source conflict is much stronger (80 percent in the first year as compared to 59 percent when including rebel victories). This result additionally bolsters the main finding of this study: the oversupply of conflict-specific capital at the end of a civil war creates a considerable conflict risk for neighbors of the society in transition to peace.

Conclusion

This study started from the observation that several conflicts considered to be instances of conflict diffusion began only after the source conflict had ended. The results I present suggest that these instances are part of a broader pattern of postconflict diffusion due to a regional circulation of surplus of war-fighting resources. This stands in stark contrast to an unquestioned assumption of previous diffusion research, namely, that active conflicts are most dangerous for their neighborhood. It may not surprise scholars of peacebuilding and small arms proliferation, who have been more attuned to the regional dimension of postconflict risks. This study substantiates their claim that leftover weapons and demobilized fighters are not just a national but a regional security risk, with statistical evidence on a global scale.

The findings have several implications for the scholarship on conflict diffusion and for policy makers trying to prevent the spread of civil war. First, they suggest an extension of the diffusion research agenda into the postconflict period. The question of when conflicts are most likely to spread, answered in this study, can be fruitfully linked with the *where* question that drove previous diffusion research: which recipient countries have the highest risk of being affected by these postconflict spillover processes? Some countries may be less exposed to the influx of weapons and combatants either because of border control or due to weak links between their own population and the neighboring rebels, or they may have institutions in place that help to reduce the risk posed by the easy availability of these resources. The structure of the data set used in this study was not conducive to explore these relationships

between the timing *and* destination of spillover in detail, and future research would profit from a dyadic source–target data setup (see Forsberg 2014b) by which the interaction between recipient country vulnerability and the time-variant contagiousness of the source conflict can be modeled directly.[25]

Second, the findings open up avenues for research that link the scholarship of conflict diffusion with research on conflict recurrence and peacebuilding. The legacies of war increase the risk of violence both in the postconflict society itself and in its neighborhood, and research on the effectiveness of policies designed to reduce this risk (such as peacekeeping, DDR, security sector reform, or power sharing) should adopt a broad spatial perspective when assessing the success of these measures.

For policy makers, two recommendations follow from this study. First, when allocating limited resources for conflict prevention to countries that border a potentially contagious conflict, these resources may be most needed in the early years of the neighborhood conflict (when active conflict spillover peaks), and in the years right after its termination. Second, this study serves as a reminder that third parties frequently contribute to the buildup of war-fighting capital in the first place when arming and training "friendly" rebels in active civil wars. The most recent example is the—by now suspended—US "train-and-equip" program designed to build up a force of moderate Syrian rebels who should fight the Islamic State (Shear, Cooper, and Schmitt 2015). Such strategies frequently backfire even while conflicts are ongoing, as foreign-trained rebels switch sides or weapons end up in the wrong hands. In addition, however, the findings of this study suggest that such strategies may be detrimental for regional security long after a conflict ends, as more conflict-specific capital circulates throughout a neighborhood.

Author's Note

Replication data are available at the journal's home page.

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Supplemental Material

Supplemental material is available for this article online.

Notes

1. I use the term "source conflict" for a conflict that could spill over into the neighborhood, and "recipient country" for a country at risk of spillover.
2. Forsberg (2014a) is the only author to suggest that leftover arms and unemployed rebels *after* failed disarmament, demobilization, and reintegration processes may contribute to spillover.
3. The Online Supplemental Document (OSD), section A.1, offers more detailed information about the data.
4. Contiguity data are from the Correlates of War Project (2016; see also Stinnett et al. 2002).
5. This count is skewed and thus recoded into a factor variable with four categories (0/1/2/>3 conflicts ended).
6. Detailed information about the data is presented in the OSD, section A.2.
7. See note 4.
8. No episode collapsing was done in these data, but the main result does not change when excluding cases in which conflict resumed within less than two years of the postconflict phase (see OSD, figure B.2.6).
9. For an introduction, see Box-Steffensmeier and Jones (2004).
10. This resembles a common approach in conflict studies to model time dependence by including the number of peace years with splines (Beck, Katz, and Tucker 1998).
11. Data from the UNHCR (2016), complemented by United Nations Relief and Works Agency data on Palestinian refugees (taken from Rüegger and Bohnet 2015).
12. I have recoded the disputed Polity IV data (Marshall, Jaggers, and Gurr 2016) into xpolity (Vreeland 2008).
13. As the OSD, figure B.2.3, illustrates, the former seems to be the case.
14. More specifically, model 4 in their table 1, p. 226.
15. Calculated using the CLARIFY, version 2.1, package in Stata (King, Tomz, and Wittenberg 2000).
16. The Akaike and Bayesian information criteria were used to choose the number of knots needed for the splines (see Royston and Parmar 2002, 2183). The postconflict hazard has two degrees of freedom and the ongoing conflict hazard has three. The default knot locations in the *stpm2* Stata, version 2016, package were used (Lambert and Royston 2009, 268). In the OSD, figures B.2.7 and B.2.8, I plot the hazards with different degrees of freedom.
17. The estimates of the control variables (hazard ratios) are reported in the OSD, section B.2.

18. Thereafter, the predictions become increasingly uncertain as ever fewer conflicts remain in the sample. Because less than 5 percent of all observations remain to analyze durations of between twenty-six and forty-eight years, the entire ongoing analysis was censored at twenty-five years duration.
19. Due to space constraints, detailed information on these variables is presented in the OSD, section A.2.
20. This was assessed by plotting the relative hazards (hazard at value 0 vs. hazard at value 1 of the variable) over time (Licht 2011, 231). These plots are presented in the OSD, figure B.2.5.
21. The information for the war dummy is from the intensity-level variable of the Armed Conflict Dataset.
22. Unfortunately, these data are only available for a subset of the postconflict periods in my sample, namely, those following wars in which at least 1,000 died.
23. Whether this relationship really reverses later (not statistically significant here) may be worth exploring in the context of the long-term satisfaction with such power-sharing measures.
24. In the OSD, figure B.2.15, I repeat this test for other conflict outcomes, with no significant effects. Data on how conflicts ended are from the UCDP Conflict Termination Dataset, v.2-2015 (Kreutz 2010).
25. An interaction of ethnic ties and time to assess whether postconflict spillover along ethnic lines follows a different temporal pattern than spillover in cases where such ties are not present showed no such difference (presented in the OSD, figure B.2.2). This link, however, should be analyzed with appropriate dyadic data.

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