Supplemental Appendix for

Integrating Militias Can Increase the Risk of Civil War Renewal

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This appendix proceeds in three parts. In the first section we discuss our data, including how we identified post-conflict contexts, how we defined and identified PGOs, how we coded each of our PGO integration variable, and our control variables. The second section provides case-based evidence in support of our theoretical claims. In the third section we then report and discuss in detail a large number of robustness models we estimate to illustrate the viability of our results.

Discussion of Data, Coding, and Variables

Defining post-civil war contexts

Considering our focus on VCA integration and these groups' relationships to conflict, the unit of analysis in our models is the *post-conflict-year*. In order to identify post-civil war contexts, we relied on the UCDP Conflict Termination dataset, created by Kreutz (2010). These data cover not only intense wars on the more extreme end of the spectrum (e.g., with 1,000 of more combatant deaths), but also low intensity wars defined as conflicts involving 25 or more combatant casualties according to Gleditsch et al. (2002), Pettersson and Wallensteen (2015).

Kreutz's (2010) dataset also covers interstate wars between two or more states, so to ensure that we focus only on civil wars, we subset out all interstate wars from the data. Additionally, the UCDP Conflict Termination dataset coverage goes only until 2005. Accordingly, we relied on Kreutz's (2010) guidelines, and the extension by Koren (2017), to identify all post-civil war cases up to 2014. Considering the extensive effort required to identify, collect, and clean information on PGOs and other relevant indicators (as discussed below), as well as data availability therein, we limit our temporal period to the years 1989-2014. We then extrapolate these data to the post-conflict year level, keeping each year when civil war did not renew (giving our *Conflict renewal* censoring indicator a value of zero therein), as well as the first year in which civil war renewed (giving our *Conflict renewal* censoring indicator a value of one), if such renewal has occurred. Considering our reliance of survival analysis framework, any subsequent year when conflict is still ongoing is omitted, but if conflict ends and peace resumes, we add all remaining peace years – again keeping the first year of conflict if it renewed and removing all subsequent conflict years – to the data, with 2014 serving as our right-censoring temporal marker.

The resulting sample accordingly includes 144 post-civil war contexts, 1,158 post-conflict years (although we were forced to omit some of these observations due to missing information on several of our controls), and 87 civil war renewals. In creating our specialized indicators for models 3a-3c, we then code as 1 only renewals that took place in post-civil war contexts where (i) the government was the clear victor (57 renewals), (ii) the rebels were the clear victors (11 renewals), and (iii) the conflict ended in a peace treaty (with and without a new country) or a clear ceasefire agreement (25 renewals).

To account the possibility of multiple conflict episodes occurring within the same country, we cluster our standard errors by country rather than by conflict – thereby achieving a more robust control for within-country heterogeneities compared with when conflict id is used – while employing country-specific frailty and stratified models for robustness below.

Identifying PGOs in post-civil war contexts

Considering that many conflicts involve PGOs, some important data collection efforts on such groups have been conducted before. One dataset, the PGMD, identifies active and present pro-government militias between 1981 and 2007 (Carey, Mitchell and Lowe, 2013), with a recent extension to 2014 for African militias (Magid and Schon 2018), and the PGM-Set, which relies on Armed Conflict Location and Event Data to identify pro-government organizations in Africa (Raleigh and Kishi 2020). The theoretical and empirical benefits provided by these datasets are important, but they leave out some secondary pro-government organizations that could play an important role in affecting post-civil war stability.

For example, one particularly relevant type of PGO, for our purposes, are rebel ally groups that fought on the winning side in secessionist or centrist wars where another rebel group – the primary one – was victorious. Because they are *formally treated as rebels during the war*, such

secondary victorious rebel groups are rarely included in the datasets mentioned above, which emphasize the role of non-government organizations fighting on the side of the government. Yet, as the case-based evidence section illustrates, civil wars often involve a coalition of multiple rebel groups, where one group is dominant (primary) and the rest secondary. If this coalition is victorious, then the other rebel groups that fought against the former government – i.e., on the side of the new government, which is formed by the primary rebel group – should be treated similarly to pro-government militias. For our purposes, they are distinct organizations that have fought as a secondary organization alongside what is now formally the military. Their staying power in the post-conflict environment (Aliyev 2016), their impact on peace and stability (Steinert et al. 2019) and – most importantly for our purposes – whether or not they are integrated into the security and/or government apparatus and how this impacts the probability of civil war renewal, or all akin to those of pro-government militias. Considering our inclusive definition of these groups alongside 'standard' pro-government militias, we hence rely on the empirical term pro-government *organizations* (PGOs) rather than pro-government *militias*.

Accordingly, in identifying and coding the presence of PGOs in each post-conflict context, we followed a specific set of guidelines to ensure we code these groups we deemed theoretically relevant. A pro-government organization (PGO) is thereby defined as an unregulated pro-state organization that is not an integral part of the state's military (although it can still be subjugated to the military command as long it is used as a distinct military auxiliary) or of the main rebel group that controls and builds up the state military after the war. So, for instance, the U.S. National Guard, the Italian *Carabinieri*, and the Soviet *Bogranishna* are *not* PGOs, as they are an integral part of the security apparatus, even though they might be considered pro-government militias or special security forces in other datasets. In contrast, the Indonesian terror groups in East Timor

(Timor Leste), the *Freikorps* in post-WWI Germany, the pre-Israeli *Irgun*, the Ugandan NRA, or the *Peshmerga* in Iraqi Kurdistan are all PGOs – individual, distinct organizations that fought alongside the government or the rebel group that formed the government after the war has ended. Note that considering our focus on post-civil war contexts, specifically, we did not include in our data organizations that disbanded or demobilized before the war has ended, although we did code a variable denoting whether organizations existed.

In general terms, pro-government organizations included in our data fell under one or more of four categories. The first category covers political armed organizations with ethnic or other local ties, sanctioned by the government. One examples of such organizations are the *Kamajors* and other Civil Defense Forces that operaed during the civil war in Sierra Leone. The second category includes strictly political militias, used by the political leadership in parallel with the regular official security apparatus (Stanliand 2015). Such organizations include, for example the German *Freikorps* in post-WWI Germany or the Indonesian 'death squads' that operated in Timor Leste. The third category includes independent (paid or unpaid) informal nonstate violent "contractors" of the political leadership, which are deployed in extreme situations or in particular regions (e.g., the *Janjaweed* in Sudan, *Interahamwe* in Rwanda). The final category, which we mentioned above, includes all secondary rebel organizations that operated independently and jointly with, but were not subjugated to, the political or military leadership of the primary rebel organization, which ended up forming the government and the military after winning the war. Examples of such groups include, among others, UNITA in Angola during the war against Portugal, the *Irgun* in Israel, and the FARK in Kosovo.

Our data contributions are therefore threefold: (i) we extend on definition used by extant research by including as PGOs all secondary winning rebel groups, (ii) which existed across all

post-civil war contexts, (iii) up to 2014. Generally, information on these organizations was obtained from both primary and secondary sources. Our main sources included CNN, Reuters, AFP, the AP, BBC, the New York Times, and All Africa (accessed through LexisUni, formerly LexisNexis Academic), as well as reports by human rights organizations (e.g., Amnesty International) and government agencies (e.g., the U.S. State Department). Other sources included country study guides, extant datasets (e.g., the PGMD) and the primary sources reported therein, and other country-, conflict-, and group-specific articles, books, and reports on a case-by-case basis. In total, our 1989-2014 sample contains a total of 160 PGOs, which were present in 699 – or 60% – of our 1,158 post-civil war years. Information on each organization and the sources used to code them will be made available online upon publication.

Coding security integration

While collecting information on all PGOs in our sample, we also retained all information pertaining to whether the PGO – if it existed during the war and persisted into the post-civil war period – was integrated into the security apparatus and, separately, into the political sphere. We defined *security* integration based on whether an organization experienced a de- or remobilization process along two (somewhat overlapping) categories. First, we focused on barriers former PGO troops might face in joining *the state military* after the war. Were the PGO's troops allowed to join the military? If the answer to this question was "yes," we moved on to examine if these groups faced any limitations on promotion, and whether they were barred from serving in any units (e.g., special forces). If the answers to at least one of the latter two questions was "no," then we recorded the PGO as fully integrated, and gave our *Security integration* variable a value of "1."

Not being able to join the military, however, did not completely negate the possibility of security integration. It is possible that PGO troops were limited in their ability to join the military

but were still given alternative venues to serve within the official state security apparatus (e.g., in the border guard or in intelligence agencies). Accordingly, our second security integration category covers integration into official state security organizations other than the military and local police precincts. In this case, we gave a value of "1" to our *Security integration* variable if PGO troops could join these organizations without limitations on promotions or the number of former PGO troops who could join. We also treated cases where an entire former PGO was incorporated into the state apparatus as a newly founded organization (e.g., as a new border guard regiment) as "1" on *Security integration*. All other cases received a score of "0" on *Security integration*. Adhering to these categories and definition, we strongly believe, provides us with a variable that very closely proxies our theoretical phenomenon of interest.

Coding political integration

Next, building on research on civil-military relations (e.g., Huntington 1981; Feaver 1999) as well as work on rebel power-sharing (e.g., Graham, Miller and Strøm 2017; Hartzell and Hoddie 2019), we defined *political* integration based on three overlapping categories. The first category covers a situation where PGO members faced no significant limitations in joining any of the existing parties in the post-conflict state. This category also includes ruling parties formed by the former primary winning rebel groups (e.g., Mapai in post-independence Israel, MPLA in Angola). If this was the case, we gave our *Political integration* variable a value of "1."

The second category includes all parties founded by former members of the PGO. Here, even if they were not allowed to join existing parties or the ruling party, if members of the PGO were allowed to form their own party without significant limitations, we gave our *Political integration* variable a value of "1." Finally, the third category included cases that were not covered by the first two categories, but still included some conditions for ensuring political participation,

or if the limitations faced by former PGO members were relatively minimal. For instance, even if former PGO members were not allowed to join parties freely or form their own parties, they might have enjoyed special political status in other ways, e.g., because the ruling party reserved some seats only for members of this former PGO. In these cases, we gave our *Political integration* variable a value of "1." All cases not covered by these three categories were given a score of "0" on *Political integration*.

It is important to emphasize that both types of integration (security and political) are qualitatively distinct, meaning that one can occur without the other within a given state during a given, or involve only some PGOs but not others. Indeed, there was surprisingly less overlap between the two types of integration than one might expect. Of the 144 post-conflict contexts, the raw Pearson correlation between security and political integration was only 0.43 (of the 1,158 post-conflict years, the raw Pearson correlation was an even smaller 0.27), suggesting that the two integration types vary greatly within and across contexts. In terms of post-civil war contexts and years, the distribution of PGO integration – aggregated and by type – is described in Table A1. Additionally, we report bivariate relationships between aggregated integration (i.e., both security and political), as well as security and political integration separately, in Table A.2.

Table A1. The Frequencies of Integration by Post-Civil War Context and Year

	Post-civil war contexts		***Post-civil war years***	
	Frequency	**Percentage**	**Frequency**	**Percentage**
Both	34	24%	233	20%
Security	22	15%	148	13%
Political	12	8.3%	85	7.3%

Table A2. Bivariate Logistic Regressions

	Aggregated	Disaggregated	Security	Political
Both types	0.295			
	(0.278)			
Security integration		0.042*	0.043*	
		(0.024)	(0.023)	
Political integration		0.007		0.022
		(0.031)		(0.030)
Constant	−3.184***	0.031*	0.032*	0.035**
	(0.288)	(0.017)	(0.017)	(0.017)
Observations	1,158	1,158	1,158	1,158
Log Likelihood	−305.001	-94.070	-94.099	-95.577
Akaike Inf. Crit.	616.001	198.14	196.197	199.155

Note: *p<0.1; **p<0.05; ***p<0.01. Values in parentheses are robust standard errors clustered by country.

Discussion of control variables

Our models include variables to account for potential confounders and other relevant determinants. Considering our focus on post-conflict contexts, we divide our independent variables into three categories, accounting for PGO-, rebel-, and state-centric indicators. For our PGO variables, we include both our aforementioned integration indicators, our key explanatory variables, as well as a control for the number of PGOs present in the post-civil war environment, to account for the possibility that integration becomes more or less likely when there are more PGOs.

Next, recall from our theoretical argument that defeated or stalemated rebel groups are present in many post-civil war conflicts. The dynamics involving these groups, and especially the negotiations and political provisions, may affect how the government deals with PGOs (Walter 2009; Steinert et al. 2019). Accordingly, we include several indicators to account for the impact of these issues, rebel-side factors broadly, on civil war renewal. Here, we first account for whether post-war agreements with rebel groups included a *military* provision for disarmament, demobilization, and reintegration (DDR) using information in the Uppsala Conflict Data Program

(UCDP) Peace Agreement dataset (Wallensteen and Sollenberg, 1997, extended to 2011 by Högbladh 2011). By addressing the *security* aspects of rebel group reintegration into the state, this variable provides a rebel-centric proxy akin to our PGO-centric *Security integration* variable.

We also empirically account for any *political* provisions included in rebel power sharing agreements using information from Graham et al.'s (2017) power-sharing data based on whether a post-conflict agreement included any "inclusive arrangements that mandate the participation of several parties or groups in particular offices or decision- making processes" (Graham, et al. 2017, 688). Note that the original indicators in Graham et al. (2017) are coded only for democracies. Considering that our sample also includes authoritarian regimes where, as Graham et al. (2017, 688) argue, power sharing – if happens – is likely to involve channels other than democratic political participation, we give this variable a value of zero for those non-democratic regimes. Accordingly, this variable serves as the rebel-side equivalent of the PGO-centric *Political integration* variable. Descriptively, rebel DDR occurred in 22%, and rebel power sharing in about 6% of the post-civil war year sample.

In addition to these rebel-side proxies of our key independent variables, we added two controls for other rebel-side confounders. Here, we first account for the size of the rebel army that needs to be demobilized by including the number of rebel troops at the end of the civil war using information from the Non-State Actors in Armed Conflict Dataset (NSA) (Cunningham et al. 2013). Rebel groups with a high(er) number of troops may have more power during negotiation, or may be more likely to resume fighting, thereby reigniting the civil war. Another possibility is that civil wars will be more likely to reignite where there is a stronger history of rebellion. Accordingly, we add a control for duration of the previous conflict episode to our models using information from the UCDP/PRIO Armed Conflict Dataset (Pettersson et al. 2021).

In addition to rebel-side confounders, we also included several indicators to account for government-side factors that might shift the hazard of civil war renewal. Here, we include a set of often-used controls for population size and gross domestic product (GDP) in a given country during a given post-conflict year, both obtained from the World Development Indicators dataset (The World Bank, 2019), as well as the Polity2 index from the Polity IV project (Marshall, Gurr, and Jaggers 2015). Another potential confounder relates to the strength of the military, its ability to deter new rebellions, and potentially its impact on PGO integration. Accordingly, we include two indicators for military capacity. The first captures the military's wealth and resources we code an indicator, *Military expenditure*, which captures the average amount (in constant US dollars) spent on national security by a given country during a given post-conflict year. Second, we account for the role of the size of the military in potentially impacting the risk of civil war renewal by including a control, *Military personnel*, which measures the total number of people employed in national security during a given post-conflict year. These military expenditure and military personnel data were obtained from the Correlates of War (COW) project (Singer et al. 1972). Finally, it is possibile that conflict renews in these post-war contexts due to intensified competition over primary commodities. We account for this possibility by including a control for oil production from the Oil and Gas Data set (Ross 2011). Summary statistics for all variables discussed in this data section and in the main note are reported in Table A3.

Table A3. Summary Statistics

	Min	Median	Mean	Max	Std. Dev.
Conflict renewal	0	0	0.075	1	0.264
Conflict renewal (gov. vic.)	0	0	0.050	1	0.218
Conflict renewal (reb. vic.)	0	0	0.010	1	0.097
Conflict renewal (barg. out.)	0	0	0.022	1	0.145
Security integration	0	0	0.128	1	0.334
Political integration	0	0	0.073	1	0.261
Peace duration	1	6	7.667	26	6.166
N. PGOs	0	1	1.107	10	1.435
Rebel DDR[3]	0	0	0.219	1	0.413
Rebel power sharing	0	0	0.061	1	0.238
Rebel troops[1,3]	5.017	8.294	8.323	11.184	1.616
War duration	1	1	4.858	51	6.662
Population[1]	12.898	16.010	16.170	21.034	1.409
GDP[1]	16.525	26.908	26.854	36.981	3.219
Polity2	-9	5	2.752	10	5.823
Rents from Oil (% GDP)	0	0.001	4.252	62.442	10.458
Military expenditure[1,2]	0	12.117	12.507	18.447	2.220
Military personnel[1,2]	0	3.332	3.515	7.755	1.584
Lag UN troops[1]	0	0	0.082	5.3258	0.574
Lag UN police[1]	0	0	0.0219	2.638	0.190
Rebel victory	0	0	0.1865	1	0.3897
ELF	0.011	0.493	0.490	0.984	0.265

[1] Natural log.
[2] Available only 1989-2012.
[3] Available only 1989-2011.

Case-Based Evidence

Several examples support the logics regarding PGO security and political integration's impact on civil war renewal. For example, in the Democratic Republic of Congo (DRC), the government took an approach bent on co-opting militias via integration rather than disintegrating them, which – again – created frictions between these integrated PGOs and the military (Zena 2013). This meant that "there were several instances of militias opting for integration into the armed forces, only to defect and return to violence, as they believed other militias were being treated more favourably" (Strachan 2018, 3). Integrated PGOs now had "an incentive to engage in violence, as by doing so they were viewed as a more significant threat by the government...The result in DRC was the emergence of parallel power structures within the armed forces" (Strachan 2018, 3). Moreover, even if they did not desert, "[m]any that remained within the FARDC have been ineffective, notorious for human rights abuses, and loyal to their former militia leaders rather than the FARDC chain of command" (Zena 2013, 5), which has contributed to conflict persistence and intensification. Integration of Russian-backed separatists and militias (operating in Ukraine) into Russia's national defense forces by Putin's government did not stop these militias from engaging in atrocities and violence particularly in Eastern Ukraine (Weaver, 2014; Aliyev, 2019).

The same is true not only of pro-government militias – which fall under the standard definitions used in research – but also of secondary winning rebel groups, which we also include under our PGO definition. For instance, when the Ugandan dictator Idi Amin has been defeated by forces loyal to the former president Milton Obote in 1979, this joint effort involved two main military organizations: Kikoosi Maluum (Special Unit), led by Milton Obote, and the Front for National Salvation (FRONASA), led by Yoweri Museveni (Weinstein 2006, 64). Yet, having taken over the state, internal struggles at the political and military levels, culminating with

accusations of a stolen elections, pushed the forces of Museveni, now officially part of the military, into taking up arms against their former (and stronger) allies, who now controlled the military apparatus. Similarly, the 1983-2005 war in South Sudan involved one major group – Sudan People's Liberation Movement/Army (SPLM/A) – in addition to multiple smaller groups that fought along the SPLA's side. Following the 2005 agreement, which established the SPLM as the government and the SPLA as the official military of the new entity, which were to become the state, the SPLA has signed agreements with several of the rebel groups that fought on its side, integrating them into the official military (Warner 2016). During this integration process, "leaders of armed groups took advantage of the fact that the government was willing to make significant compromises in the militia integration process to achieve stability. They used force or the threat of violence as a bargaining chip, entering a cycle of defection and reintegration, to improve their own positions or personal wealth" (Strachan 2018, 2-3).

Evidence also illustrates how integrated PGOs may reignite civil war by targeting former rebels. For instance, Aliyev (2019, 68), finds that, "a peace agreement between the government and rebels is often tantamount to the defeat and betrayal of ethnic interests. Similar to right-wing militia battalions ('Right Sector') in present-day Ukraine, Serb militias during Yugoslav wars and Afghan Uzbek Junbesh-e-Milli have acted as committed peace spoilers, determined to prevent incumbents from making concessions to rebels."

Finally, there is also case-based support for the potentially positive benefits of political as opposed to security integration, at least with respect to the case of rebel victories (model 3b) (see Sprinzak 1999, 17-50). For instance, the three Jewish groups that fought the British mandate in Palestine – the main Hagana and the two smaller groups, the Irgun and the Lechi (Lochamei Cherut Israel, or the Stern Gang) – were fractious and often used violence against each other, even during

the war. After independence in 1948, the government under the ruling party used a combination of carrots and sticks to ensure compliance from the two more extreme groups. While members of the Irgun and Lechi were allowed – indeed required – to join the military, they faced challenges in promotion and in their ability to influence key decisions and were practically banned from serving in key combat units (e.g., the paratroopers). This was especially true of the Lechi, which was officially outlawed, and many of whose members were arrested as terrorists by the new government. Nevertheless, eschewing military careers due to said limitations, many members of the two groups have turned to form key political parties. Indeed, both the former Irgun commander Menahem Begin and the former Lechi commander Yitzhak Shamir (who was facing a warrant for his arrest in 1949 by the newly-formed Israeli government) served as Prime Ministers during the 1970s and 1980s. These achievements were the result of a much more effective political as opposed to military integration of these groups, which created for their members long-term stakes in participating in and ensuring the viability of a functioning democratic government as opposed to serving in a military that originated in the Hagana, an organization most members of both PGOs left back in the 1940s.

Robustness Models and Sensitivity Analyses

In this section we illustrate the robustness of our findings to a battery of sensitivity analyses accounting for modeling and data selection choices as well as potential selection biases, which correspond to the full specification from Table 1 from the main paper. The estimates from these sensitivity analyses are reported in Tables A4 – A5.

Reduced form models

One possibility is that our results are driven by the inclusion of both PGO integration indicators together in the same model. This approach could, under some conditions, create biased inferences, although – as we mentioned above – considering the relatively low raw correlation between *Security integration* and *Political integration* – we believe this possibility is unlikely. Nevertheless, to illustrate our results are robust to this concern, we report two reduced-form models, which add each integration (security and political) separately to the models (Models 4 and 5). As these models illustrate, the coefficient estimates remain almost completely unchanged in substantive terms, and the statistical error estimates and significance hold therein, suggesting our choice to include both PGO integration indicators in the same model is not driving our results.

Accounting for country-specific effects and multiple conflict renewals

Another concern relates to the pooled nature of our dependent variable. For instance, while 29 countries in our data experienced no conflict renewal, only 15 experienced conflict renewal only once; the rest of the countries in our sample (24) experienced multiple civil war renewals. All our main analysis models rely on clustering by country to account for heterogenous pooling on our dependent variable, which is the standard approach in studies that rely on survival models such as the Cox PH (e.g., Box-Steffensmeier and Jones 2004).

Nevertheless, to illustrate our results are robust to this decision, in Models 6 and 7 we make additional empirical adjustments to ensure any estimates related to peace spell duration and the hazard of conflict renewal are unbiased. First, we report a model that accounts for country frailties (Model 6), which "are used, ostensibly, to account for unobserved heterogeneity that occurs because some observations are more failure-prone – and hence, more 'frail'– than other observations in a data set" (Box-Steffensmeier and Jones 2004, 142). In effect, frailties are akin to random effects in linear and logistic regression models and take into consideration the possibility that some country's post-conflict contexts are more conflict prone (that is more 'frail'), than others. In our sample, therefore, country-level heterogeneities can include not only issues related to the fact that some of our variables report unchanging values over time for each state, which using clustered standard errors accounts for, but also because some states are inherently more likely to experience renewal. The use of frailty models accounts for that later possibility.

In addition to this frailty model, which account for country-specific effects uncaptured by our variables, we also account for the possibility that some countries have different baseline risk of renewal than others. To this end, we additionally estimate and report a model where the hazards are stratified by country (Model 7). Briefly, stratified models allow different groups within the sample (in our case, countries) to each have *its own baseline hazard rate*, while restricting the coefficients to be the same across each stratum (country). This, in effect, allows our model to incorporate the possibility that each country is under a *different risk* of experiencing civil war renewal. So, for example, some countries have inherently different reasons that lead them to experience shorter peace spells and be at a higher hazard of civil war renewal. These impacts are latent, and as such, cannot be captured by our independent variables.

Note that this modeling approach is not the same as using frailties. In Model 6, each group (i.e., country) has a different baseline *probability* (α) of experiencing conflict; in Model 7, each group (i.e., country) has a different *risk* ($h_0(t)$) for peace terminating (that is, conflict renewing) at a given time. Indeed, another key advantage of the stratified model is that experiencing new or renewed conflict in a given country is conditional on the number of past renewals, as (Box-Steffensmeier and Jones 2004, 161) explain, "an observation is not at risk for the *k*th event until the *k*th−1 event has occurred." It is important to also emphasize, however, that such stratified models can 'soak in' much of the variance, thereby leading to potential type 2 errors (that is, a false acceptance of the null). By the same token, however, if the results hold in these stratified then this suggests they passed an even higher bar than usual.

In model 6 (frailty), our results are very robust – *Security integration*'s coefficient is positive (i.e., increasing the risk of renewal) and statistically significant to the p<.05 level, while *Political integration* maintains its negative coefficient sign, although – like in our main models – it is not significant. Turning to model 7 (stratified), our results hold for *Security integration* – although it is statistically significant only to the p<.1 level (p=.06, two-tail test). However, we do see the sign of our political integration variable's coefficient switching to positive, although it is far from reaching any threshold of statistical significance (p=.31).

Using a discrete time method

All our analyses rely on survival models, and particularly the Cox PH model, which research shows is preferred to – and more robust than – other binary dependent variable models within a panel-duration framework (e.g., Kropko and Harden 2020; Box-Steffensmeier and Jones 2004). However, it is possible that our choice of modeling strategy could affect our model estimates and their viability therein. Accordingly, we estimate a logit model – most often used within binary

dependent variable settings – using our censoring indicator, *Conflict renewal*, as the dependent variable. To account for temporal dependence and approximate duration's impact on civil war renewal, we employ the method recommended by Carter and Signorino (2010), we include in these models linear, quadratic, and cubic terms of peace duration. As model 8 shows, our results are robust to this decision, as the size, direction, and statistical significance of the coefficients on our PGO integration variables remain unchanged from the Cox PH model.

Accounting for zero inflation

Finally, we also recognize that it is possible some post-civil war contexts may be more predisposed to experiencing both PGO integration and civil war renewal due to the same factors that might also affect the duration of peace. In other words, there might be a selection concern whereby our focus on the impact of PGO integration types on the hazard of civil war renewal ignores the possibility that some factors may make countries unlikely to experience war – and integration – in the first place. Researchers offered some modeling solutions to these issues, such as the Heckman selection model, where two equations are estimates: one equation accounting for the ability of a given observation to "select" into the category where variations on the dependent variables can be observed, and other equation estimates the effect of the covariates on the dependent variable, conditional on these selection determinants. For our purposes, the Heckman model is unfitting – it is designed to handle continuous dependent variables rather than event duration within a survival panel data framework, and it requires one to rely on an instrument in the selection stage that fulfils an exclusion restriction.

Instead, we rely on a cure model to condition the effect of our covariates of interest on the risk of civil renewal. Cure – or split-population – models have been originally developed in the health sciences to account for the inclusion of immune or cured populations in sample. Such

populations have been cured and are therefore no longer at risk of ultimately experiencing the disease, which can bias standard duration models, which assume all observations will eventually fail (Box-Steffensmeier and Jones, 2004). In our sample, the "cured" populations are post-conflict contexts that have come out of civil war and are no longer at risk of experiencing renewal due to factors such as democratization, improved development, rebel and PGO integration, etc. The 'immunity' of such states to conflict renewal might also decide whether or not security integrated PGOs will hasten the risk of renewal while their political integration will reduce it.

As is common practice in such analyses, we rely on the split-population Weibull model (Ward and Beger 2017), which accounts for the possibility that some states are more likely to 'select' into conflict risk separately from the effect of different covariates within states that are at risk on the duration of peace and civil war renewal. One advantage of these models is that they can be reported in accelerated failure time (AFT) form, which essentially tells one the effect of each covariate in the duration stage on the actual time (in years, in our case) before conflict begins rather than on the hazard on conflict renewal. While the two are directly related (one can infer the shift in the hazard from AFT models), one implication is that *the coefficient sign in these AFT cure Weibull models has the opposite interpretation from the proportional hazard interpretation* used in the Cox model – here, a *negative* coefficient means *less* time until renewal, that is *a greater hazard of conflict renewal*, while a *positive* coefficient means the covariate *increases the time* until conflict renewal, that is has a *negative* impact on the hazard.

To account for the probability some states are more likely to 'select' into renewal, that is are less likely to be immune to it, we estimate three separate models. We begin by including in the selection stage all our state-side factors determinants in model 11. The next model (model 10) then

adds all rebel-side factors into the selection equation, followed by model 13, where all the indicators from the duration stage are added into the selection stage as well.

The results of these three models are directly in line with our Cox PH models from the main note, thereby suggesting that it is highly unlikely our results are driven by selection biases and the possibility some states are 'immune' to experiencing renewal. The coefficient of *Security integration* maintains its size across all three models, is in the expected (negative, i.e., decreasing the time until civil war renewal according to the AFT interpretation, even after the role of different determinants in creating renewal 'immunity' are taken into account) sign, and is statistically significant to at least to $p<.05$ level. This effect holds even in model 11, where all variables are included in both stages, and where *Security integration*'s coefficient is the only statistically-significant coefficient in the entire model. *Political integration*'s coefficient similarly maintains roughly the same size as in the Cox PH models, is in the expected (positive, i.e., increasing time until civil war renewal according to the AFT interpretation, even after the role of different determinants in creating renewal 'immunity' are taken into account) sign, and is not statistically significant in any of the models.

Specification choices

Moving to Table A5, we report a series of robustness checks designed to verify our findings are not driven by additional confounders and omitted variables. Here, we are first aware of the possibility that both security and political PGO integration will be harder where the government has more PGOs to integrate. While we account for this possibility in our model by including our *N PGO* indicator, it is possible that these effects are *conditional* – as the number of PGOs increase, so may the effect of integration hazard of conflict renewal, as more PGOs vie for more power, creating a 'race to the bottom' scenario. Accordingly, the first model in Table A5 (model 12), adds

interaction terms for *N. PGOs X Security integration* and *N. PGOs X Political integration*. As model 12 estimates show, not only does the hazard of either integration type does not noticeably change with a higher number of PGOs (both interaction term coefficients are statistically insignificant), but also – importantly for our argument – the coefficients of each of our integration constitutive terms remains substantively and statistically unchanged.

Another possibility is that the change in the hazard of conflict renewal caused by each integration type is moderated by political openness. For instance, as political openness increases, it is possible that the impact of both security and political integration will lessen as integrated organizations have less reasons to resort to violence to solve any potential commitment problems they face. Accordingly, we add the interaction terms *Polity2 X Security integration* and *Polity2 X Political integration* to model 13. Again, both interaction term coefficients are statistically insignificant, while the coefficients of each of our integration constitutive terms remains substantively and statistically unchanged.

The next model (model 14) then accounts for the possibility that some omitted controls are driving the results. Here, we add additional controls for whether rebels won the war – which might explain each integration type's impact on the hazard of civil-war renewal – as well as controls for the number of UN troops and specifically UN police troops (lagged one year considering the time peacekeeping might take to influence the hazard of renewal) from Hultman et al. (2013). Again, adding these controls does not substantively change our results, although our *Security integration* coefficient is now only significant to the $p<.1$ level ($p=0.054$, two-tail test).

The ensuing model (model 15) then accounts for the possibility that integration under rebels – if victorious – will be more likely to increase the hazard of civil-war renewal. Accordingly, we add to model 15 the interaction terms *Rebel victory X Security integration* and *Rebel victory X*

Political integration. Our results regarding the constitutive terms of *Security integration* and *Political integration* remain unchanged from the main model (model 3) in terms of sign, size, and statistically significance, although the *Rebel victory X Political integration* is negative and statistically significant, suggesting that PGO rebel coalitions are especially less likely to experience conflict renewal. Again, the size of the coefficient suggests monotone likelihood error which—as suggested in the text of our main paper—is not surprising in the context of our civil war renewal event data. Stated more technically, in fitting a Cox PH model, the phenomenon of monotone likelihood mentioned here occurs if the likelihood converges while *at least* one entry of the parameter estimate diverges (Firth, 1993; Heinze and Schemper, 2001).

Further, in the case of monotone likelihood, it is not merely the parameter estimate but also the standard error that diverges. This implies that statistical inference based on standard errors is The occurrence of divergent parameter estimates noted above can, as suggested by Firth (1993), be avoided by adding an asymptotically negligible penalty function to the log-likelihood. Indeed, for estimating canonical parameters in the exponential family distributions, Firth (1993) suggested multiplying the likelihood by the Jeffreys prior to obtain a maximum likelihood estimate that is first-order unbiased. The penalized likelihood is (thus) of the form,

$$L_p(\boldsymbol{\beta}) = L_p(\boldsymbol{\beta})\,|I(\boldsymbol{\beta})|^{0.5} \tag{A.1}$$

where $L(\boldsymbol{\beta})$ is the unpenalized likelihood, I is the Fisher information matrix (corrects the small sample bias of maximum likelihood estimates), and $\boldsymbol{\beta}$ is a vector of regression parameters. Firth's (1993) penalized likelihood procedure is a very useful technique for empirical applications to not just reduce bias but to also correct for monotone likelihood. Additional formal details of the Firth (1993) correction procedure as the asymptotic properties as well as the benefits of the Firth-corrected Cox model is provided in Anderson et al. (2020). Importantly, note that after employing

the Firth correction (unreported models, available upon request), we find that the statistical findings remain unchanged while the coefficient size of the interaction terms becomes smaller.

In the next two models (models 16 and 17) we turn to evaluate the possibility that any effects observed by our integration variables is driven by ethnic differences and fractionalization. Here, we first add the ethnolinguistic fractionalization (ELF) index by Roeder (2001) to our full specification (model 3) in model 16, in addition to its interaction terms *Rebel victory X Security integration* and *Rebel victory X Political integration*, which account for the possibility that the effect of each integration type on the hazard of conflict renewal increases or decreases in higher fractionalization societies. In model 17 we then add the same controls as in model 16 to additionally account for the effect of other confounders. In both models we find that the effect of the constitutive terms of *Security integration* and *Political integration* is not only unaffected by ethnic fractionalization, but in fact – especially in the case of security integration – becomes much stronger. Indeed, it seems that the effect of security integration on conflict renewal noticeably declines in states with higher levels of ethnolinguistic fractionalization, as illustrated by the fact that the *Rebel victory X Security integration* coefficient is negative and statistically significant in both models 16 and 17. In contrast, the coefficients of both *Political integration* and *Rebel victory X Political integration* is not statistically significant, suggesting the effect might be constrained to the security apparatus of highly ethnically-fractionalized states.

The next model (model 18) then incorporates all controls and interaction terms included in models 12-17. Again, the very large size of some coefficients suggests monotone likelihood bias in this model, so we estimated a Cox model with a Firth correction (available upon request) to account for these issues. Most importantly, in both models, the coefficients of *Security integration* and *Political integration* are statistically significant (the former to the $p<.001$ and the latter to the

p<.1 level) and have the expected sign. Model 18 therefore provides an effective illustration that our findings are highly unlikely to be driven by omitted potential confounders.

Finally, while the Cox model accounts for variations in the hazard over time, it is possible that some specific period-wide shifts or shocks with respect to integration and civil war over the 1989-2014 period. In model 19 we illustrate that all primary findings are robust to such issues by including year fixed effects alongside our covariates.

Overall, then, the results of all sensitivity analyses reported in Table A4-A5 support our main theoretical expectations and empirical results from the main research note. Across all of these robustness checks our key conclusions do not change.

Table A4. Sensitivity Analyses

	Sec. (4)	Pol. (5)	Frail. (6)	Strat. (7)	Logit (8)	Selc. 1 (9)	Selc. 2 (10)	Selc. 3 (11)
Duration Determinants								
PGO-side factors								
Security integration	1.225***		1.250**	3.455*	1.404**	-1.167***	-1.174***	-1.174**
	(0.531)		(0.630)	(1.857)	(0.611)	(0.327)	(0.396)	(0.575)
Political integration		−0.644	-0.519	2.234	−0.750	0.487	0.487	0.486
		(0.801)	(0.909)	(2.173)	(0.903)	(0.387)	(0.611)	(0.713)
N. PGOs	0.036	−0.008	0.102	0.162	0.032	0.056	0.033	0.037
	(0.112)	(0.110)	(0.144)	(0.367)	(0.119)	(0.082)	(0.091)	(0.138)
Rebel-side factors								
Rebel DDR	−0.700	−0.006	-0.858	−2.722*	−0.816	0.742*	0.740	0.740
	(0.511)	(0.404)	(0.592)	(1.606)	(0.570)	(0.447)	(0.694)	(0.717)
Rebel power sharing	0.261	1.153**	0.625	−2.256	0.824	-6.225	-0.628	-0.628
	(0.626)	(0.861)	(1.038)	(2.395)	(1.007)	(0.532)	(0.789)	(0.658)
Rebel troops[1]	−0.038	−0.023	-0.052	0.027	−0.043	0.040	0.048	0.046
	(0.090)	(0.092)		(0.120) (0.290)	(0.101)	(0.050)	(0.056)	(0.061)
War duration	0.016	0.018	0.032	−0.006	0.014	0.002	0.001	0.001
	(0.022)	(0.022)	(0.025)	(0.059)	(0.090)	0.013	(0.017)	(0.016)
Government-side factors								
Population[1]	0.052	0.099	0.145	−5.241	0.051	-0.028	-0.023	-0.022
	(0.202)	(0.203)	(0.271)	(3.691)	(0.220)	(0.155)	(0.143)	(0.207)
GDP[1]	−0.023	−0.014	-0.069	−0.082	−0.030	0.019	0.027	0.027
	(0.054)	(0.054)	(0.068)	(0.273)	(0.058)	(0.047)	(0.058)	(0.067)
Polity2	−0.073***	−0.069**	-0.106***	−0.011	−0.068**	0.045	0.039	0.0393
	(0.027)	(0.027)	(0.037)	(0.093)	(0.033)	(0.029)	(0.036)	(0.045)
Military expenditure[1]	0.203*	0.126	0.242	0.277	0.204	-0.102	-0.117	-0.118
	(0.128)	(0.130)	(0.167)	(0.473)	(0.148)	(0.070)	(0.085)	(0.099)
Military personnel[1]	−0.118	−0.109	-0.176	0.648	−0.115	0.014	0.013	0.014
	(0.197)	(0.198)	(0.254)	(0.975)	(0.216)	(0.114)	(0.182)	(0.195)
Rents from Oil (% GDP)	0.007	0.008	-0.003	−0.079	0.009	-0.001	-0.004	-0.0004
	(0.010)	(0.010)	(0.013)	(0.052)	(0.011)	(0.008)	(0.018)	(0.020)
t					1.157***			
					(0.311)			
t^2					−0.155***			
					(0.044)			
t^3					0.004***			
					(0.002)			
Constant					−6.124**	2.347	2.346	2.346
					(3.070)	(1.765)	(1.570)	(2.162)
Selection Determinants								
PGO-side factors								
Security integration								0.017
								(1.862)
Political integration								0.006
								(3.031)
N. PGOs								0.070
								(0.259)
Rebel-side factors								
Rebel DDR							0.009	0.008
							(1.053)	(1.569)
Rebel power sharing							0.011	0.011
							(1.200)	2.046
Rebel troops[1]							-0.019	-0.021
							(0.173)	(0.225)
War duration							-0.009	-0.011
							(0.041)	(0.046)
Government-side factors								
Population[1]						0.030	0.029	0.028
						(0.372)	(0.360)	(0.442)
GDP[1]						-0.009	0.005	0.003
						(0.106)	(0.113)	(0.116)
Polity2[1]						-0.052	-0.061	-0.058
						(0.056)	(0.057)	(0.067)
Military expenditure[1]						0.040	0.028	0.028
						(0.251)	(0.258)	(0.351)
Military personnel[1]						-0.014	-0.015	-0.015
						(0.345)	(0.476)	(0.450)
Rents from Oil (% GDP)						0.040	0.033	0.034
						(0.035)	(0.061)	(0.075)
Constant						0.003	0.003	0.003
						(4.387)	(3.672)	(5.380)
Observations	742	742	742	742	742	742	742	742
Log Likelihood	−242.796	−244.985	-216.974	−30.733	−178.437	-191.396	-190.630	-190.412
Akaike Inf. Crit.					392.874			

Note: *p<0.1; **p<0.05; ***p<0.01. Values in parentheses are robust standard errors clustered by country, excluding in models 6 and 7. [1] In natural log form.

Table A5. Sensitivity Analyses – Continued.

	N PGOs (12)	Polity (13)	Cont. (14)	C. Reb. (15)	Eth. (16)	C. Eth. (17)	All (18)	YFE (19)
PGO-side factors								
Security integration	1.984**	1.082**	1.041*	1.056**	4.513***	4.633***	5.401***	1.488***
	(0.824)	(0.574)	(0.593)	(0.595)	(2.013)	(2.113)	(2.318)	(0.589)
Political integration	−0.739	−0.576	−0.508	−0.380	−0.747	−2.150	−7.375**	−0.819*
	(0.884)	(0.855)	(0.813)	(1.089)	(3.333)	(3.672)	(7.520)	(0.906)
N. PGOs	0.131	0.023	0.001	−0.006	0.003	−0.039	0.058	0.038
	(0.129)	(0.113)	(0.117)	(0.117)	(0.122)	(0.132)	(0.143)	(0.114)
Security integration × N. PGOs	−0.355						−0.486	
	(0.277)						(0.371)	
Political integration × N. PGOs	0.103						−0.086	
	(0.281)						(0.511)	
Rebel-side factors								
Rebel DDR	−1.130*	−0.599	−0.462	−0.428	−1.038**	−0.772	−1.029	−0.785
	(0.650)	(0.542)	(0.555)	(0.549)	(0.562)	(0.602)	(0.740)	(0.560)
Rebel power sharing	0.906**	0.999*	0.932	0.860	0.193	0.566	1.872	0.816
	(0.872)	(0.977)	(0.996)	(1.212)	(1.054)	(1.094)	(2.461)	(0.961)
Rebel troops[1]	−0.023	−0.047	−0.041	−0.047	0.076	0.076	0.095	−0.057
	(0.091)	(0.092)	(0.093)	(0.093)	(0.094)	(0.096)	(0.100)	(0.092)
War duration	0.012	0.018	0.018	0.015	0.006	0.010	−0.005	0.023
	(0.022)	(0.022)	(0.022)	(0.022)	(0.022)	(0.023)	(0.026)	(0.023)
Rebel victory			0.698	0.925		0.455	0.823	
			(0.521)	(0.559)		(0.575)	(0.641)	
Security integration × Rebel victory				−0.715			−1.676	
				(1.551)			(2.442)	
Polity integration × Rebel victory				−15.504***			−15.260***	
				(1.293)			(1.704)	
Government-side factors								
Population[1]	0.116	−0.004	0.067	0.058	0.008	0.020	0.074	0.087
	(0.207)	(0.213)	(0.213)	(0.215)	(0.202)	(0.212)	(0.233)	(0.202)
GDP[1]	−0.038	−0.008	−0.012	−0.010	−0.093	−0.084	−0.105	−0.039
	(0.056)	(0.055)	(0.056)	(0.056)	(0.057)	(0.060)	(0.067)	(0.056)
Polity2	−0.073***	−0.071**	−0.065**	−0.064**	−0.069***	−0.063**	−0.068**	−0.067**
	(0.028)	(0.028)	(0.027)	(0.027)	(0.028)	(0.028)	(0.032)	(0.029)
Military expenditure[1]	0.175	0.181	0.196	0.190	0.355**	0.360**	0.356*	0.141
	(0.134)	(0.132)	(0.137)	(0.138)	(0.150)	(0.159)	(0.169)	(0.138)
Military personnel[1]	−0.114	−0.074	−0.079	−0.060	−0.038	−0.023	−0.027	−0.026
	(0.203)	(0.197)	(0.212)	(0.212)	(0.187)	(0.200)	(0.211)	(0.210)
Rents from Oil (% GDP)	0.008	0.008	0.010	0.009	0.0003	0.002	0.0003	0.012
	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.010)	(0.011)	(0.011)
Lag UN troops[1]			−0.304	−0.210		−0.450	−0.417	
			(0.378)	(0.374)		(0.464)	(0.565)	
Lag UN police[1]			0.540	0.367		0.669	0.142	
			(0.902)	(0.917)		(1.025)	(1.284)	
ELF					3.366***	3.393***	3.455***	
					(0.917)	(0.940)	(0.946)	
Security integration × Polity2		0.061					0.034	
		(0.077)					(0.081)	
Political integration × Polity2		−0.165					−0.124	
		(0.199)					(0.257)	
Security integration × ELF					−4.462**	−4.906**	−4.984***	
					(2.456)	(2.621)	(2.830)	
Political integration × ELF					0.601	2.308	8.648**	
					(4.346)	(4.750)	(4.383)	
Observations	742	742	702	702	742	702	702	742
Log Likelihood	−241.566	−241.979	−229.055	−228.429	−234.122	−220.838	−218.183	−227.955

Note: *p<0.1; **p<0.05; ***p<0.01. Values in parentheses are standard errors clustered by country.

[1] In natural log form.

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