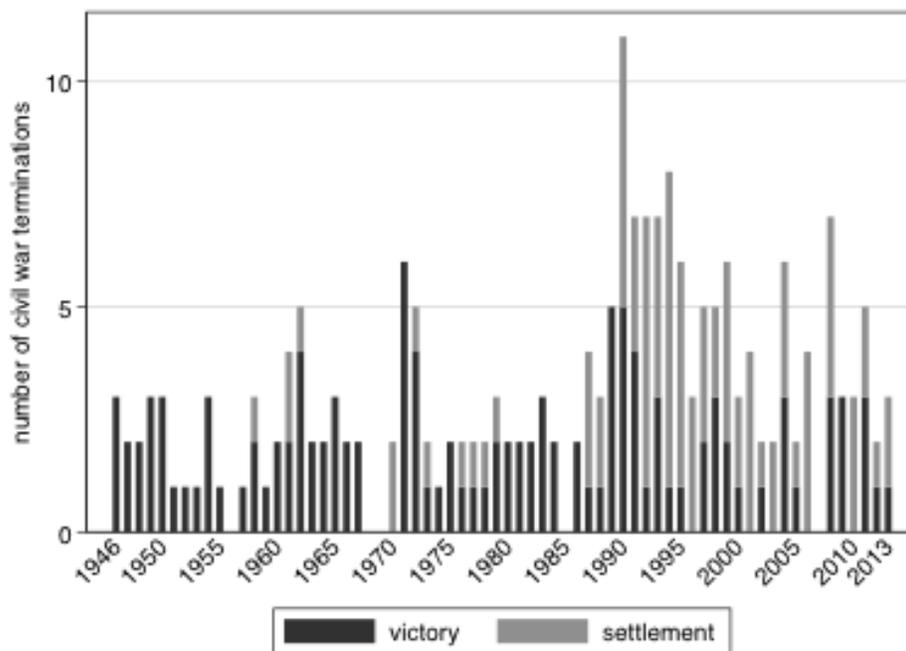


## Online Appendix, “How Civil Wars End” Lise M. Howard and Alexandra Stark

### 1) Dependent Variable: How Civil Wars End

The analysis in “How Civil Wars End” uses data on civil war termination from the UCDP/PRIO Armed Conflict Termination Dataset (v.2-2015).<sup>1</sup> Figure A1, below, illustrates the trends in civil war termination that we discuss in more detail in the article, showing patterns in the total number of annual victories versus negotiated settlements over time.

Figure A1. Number of Victories and Negotiated Settlements Annually



<sup>1</sup> Joakim Kreutz, “How and When Armed Conflicts End: Introducing the UCDP Conflict Termination Dataset,” *Journal of Peace Research* Vol. 47, No. 2, (2010), pp. 243-250.

Table A1 and Figure A2 both show the percentage of all ongoing civil war-years that ended versus the percentage that did not end, by time period. In time period 1, about 15 percent of civil war-years were terminations, but this figure rose to 26 percent in time period 2. In contrast, about 19 percent of civil war-years were coded as ending in time period 3.<sup>2</sup>

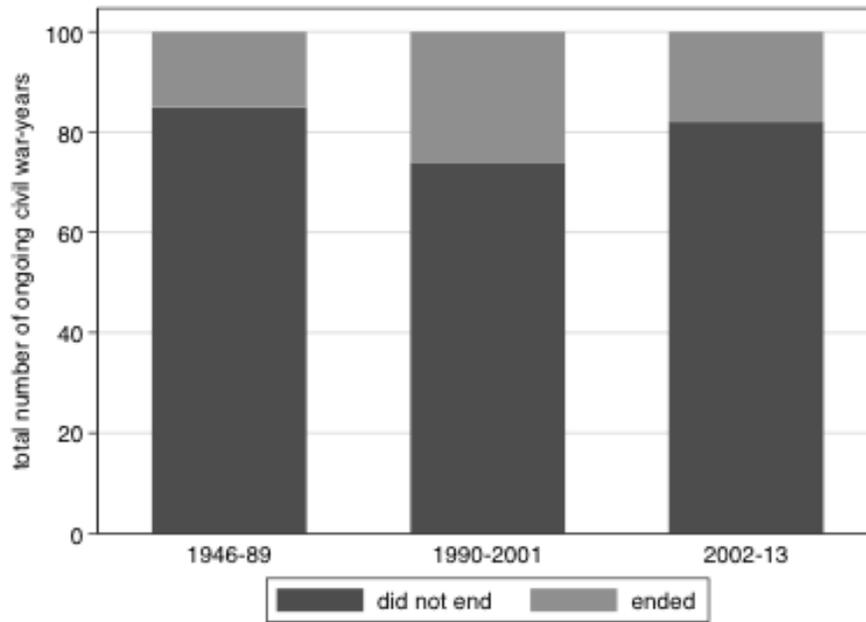
Table A1. How Civil Wars End

Outcome	Period 1 (1946-1989)	Period 2 (1990-2001)	Period 3 (2002-2013)	Total
Negotiated settlement	17 (11.49%)	49 (37.98%)	23 (31.51%)	89 (25.43%)
Victory	82 (55.41%)	23 (17.83%)	16 (21.92%)	121 (34.57%)
Low activity	49 (33.11%)	57 (44.19%)	34 (46.58%)	140 (40.00%)

Pearson  $\chi^2 = 55.9050, p < 0.001$

Figure A2. Percent of Ongoing Civil Wars that Ended and Did Not End, by Civil War-Year

<sup>2</sup> The p-value of a Pearson chi-squared test comparing only time periods 1 and 2 is less than 0.001 ( $\chi^2 = 48.1948$ ).



## 2) Logistic Regression Model

In the article, we refer to the results of our logistic regression model that demonstrates that even controlling for other relevant variables, time period still predicts whether a civil war-year is likely to experience at least one mediation effort: compared to time period 2, civil war-years in both time period 1 and time period 3 are less likely to experience a mediation attempt, and this finding is statistically significant in a variety of different model specifications.

Table A2, below, presents summary statistics and a description of the variables included in the logistic regression models. Table A3 presents the logit models themselves. In the following models, the observation is the conflict-year. Again, we use UCDP's coding for whether a civil war ended in a given year. The dependent variable in the logit models is the dichotomous coding of whether a civil

war-year experienced a mediation attempt, from the CWM data (see Table 3 in the article). Our explanatory variable is a categorical variable indicating the time period in which the civil war-year falls.

Additionally, the models include dummy variables for whether a third party intervened militarily in favor of either side A (the government), “Side A intervention,” or side B (the rebels), “Side B intervention,” according to UCDP/PRIO’s Armed Conflict Dataset (v.4-2015).<sup>3</sup> We include a dummy variable coded for the presence of a UN peacekeeping operation in that year, “UNPKO.”<sup>4</sup> We also include several variables related to the dynamics of the civil war itself. From the Non-State Actor dataset,<sup>5</sup> we include “rebel strength,” the relative capabilities of rebel forces, and “conflict type,” a typology of civil war types (e.g., ethnic conflict, secessionist conflict). Additionally, the models control for “cumulative intensity,” a dummy that equals one when the civil war has exceeded 1,000 battle-related deaths since onset, and *incompatibility*, which indicates whether the conflict is over control of territory or the government, both from UCDP/PRIO’s Armed Conflict Dataset (v.4-2015).<sup>6</sup> We include “duration” in years, as well as “duration<sup>2</sup>” and “duration<sup>3</sup>” to

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<sup>3</sup> Melander, Pettersson, and Themnér, “Organized Violence, 1989–2015”; and Gleditsch et al., “Armed Conflict 1946–2001.”

<sup>4</sup> Information about the presence of UN peacekeeping operations comes from UN Peacekeeping “Past Peacekeeping Operations” (New York: UN, n.d.), <http://www.un.org/en/peacekeeping/operations/past.shtml>.

<sup>5</sup> David E. Cunningham, Kristian Skrede Gleditsch, and Idean Salehyan, “It Takes Two: A Dyadic Analysis of Civil War Duration and Outcome,” *Journal of Conflict Resolution*, Vol. 53, No. 4 (August 2009), pp. 570–597, doi:10.1177/0022002709336458.

<sup>6</sup> Melander, Pettersson, and Lotta Themnér, “Organized Violence, 1989–2015”; and Gleditsch et al., “Armed Conflict 1946–2001.”

control for potential nonlinear effects. We also include a variable for “conflict ID” to control for structural variables that are constant within conflicts.

Table A2: Summary Statistics

<b>Variable</b>	<b># of obs.</b>	<b>Mean</b>	<b>Std. Deviation</b>	<b>Min.</b>	<b>Max.</b>	<b>Description</b>
Mediation attempt	1,878	0.14	0.34	0	1	0=no mediation effort 1=at least one mediation effort (CWM dataset)
Side A intervention	1,878	0.11	0.32	0	1	0=no military intervention supporting Side A (gov't) 1=military intervention supporting Side A (UCDP/PRIO dataset)
Side B intervention	1,878	0.04	0.19	0	1	0=no military intervention supporting Side B (non-state actor) 1=military intervention supporting Side B (UCDP/PRIO dataset)
UNPKO	1,878	0.06	0.23	0	1	0=no UN peacekeeping operation present 1=UN peacekeeping operation present
Rebel strength	1,848	4.65	1.44	1	6	6 categories: much weaker (i.e., Side B is much weaker than the incumbent gov't); weaker; parity; stronger; much stronger; NA (NSA dataset)
Conflict type	1,848	6.16	2.46	1	10	Categories of conflict, e.g. ethnic, secessionist, terrorist, etc. (NSA dataset)

Cumulative intensity	1,878	0.71	0.45	0	1	0=less than 1,000 battle-related deaths since onset  1=at least 1,000 battle-related deaths since onset (UCDP/PRIO dataset)
Incompatibility	1,878	1.49	0.50	1	2	1=conflict over control of territory  2=control of gov't (UCDP/PRIO dataset)
Duration	1,878	8.49	9.14	1	50	Duration in years
Duration^2	1,878	155.60	328.30	1	2,500	Duration in years squared
Duration^3	1,878	4,115.58	12,868.86	1	125,000	Duration in years cubed

In model 1, table A3, the coefficients of time period 1 and time period 3 are both negative and statistically significant ( $p < 0.001$  and  $p = 0.001$ , respectively), suggesting that mediation attempts are less likely in both time period 1 and time period 3 (time period 2 is the base category). Substantively, holding all other variables constant, the odds of a civil war-year in time period 1 experiencing a mediation effort are about 0.34 compared to time periods 2 and 3 (i.e., the odds ratio is 0.34;  $p < 0.001$ ), whereas the same odds are 0.49 for time period 3 ( $p = 0.001$ ), providing evidence for our hypothesis that civil wars were less likely to experience mediation attempts in time periods 1 and 3.

We conduct robustness checks in models 2-5 in table A3. First, model 2 drops the variable conflict ID. Second, in order to correct for the independence assumption of the logit model, model 3 includes standard errors clustered on conflict ID and Model 4 is a fixed effects model with panels identified by conflict ID. This hierarchical

model also helps to control for structural variables within conflicts and sources of unobserved heterogeneity across conflicts that are fixed over time. Finally, model 5 uses the “jackknife” estimation technique to ensure that the results are not driven by outlier observations. This resampling technique excludes one observation at a time, running the analysis on each  $n-1$ -sized subsample, then generates an average of the calculations. Even in these alternatively-specified models, the coefficients of time period 1 and time period 3 are still negative and statistically significant, providing further support for our argument.

Table A3. Time Period Predicts Mediation Attempts

	(1) Mediation attempt	(2) w/o Conflict ID	(3) Clustered SEs	(4) Fixed effects	(5) Jackknife
Time period 1	-1.075*** (0.170)	-1.129*** (0.169)	-1.129*** (0.261)	-0.944*** (0.248)	-1.075*** (0.177)
Time period 2	(base)	(base)	(base)	(base)	(base)
Time period 3	-0.709*** (0.198)	-0.722*** (0.198)	-0.722** (0.315)	-0.546** (0.259)	-0.709*** (0.211)
Side A intervention	0.529** (0.239)	0.569** (0.239)	0.569* (0.310)	0.214 (0.319)	0.529** (0.249)
Side B intervention	0.575* (0.341)	0.564 (0.343)	0.564 (0.409)	0.274 (0.451)	0.575 (0.344)
UNPKO	1.880*** (0.238)	1.870*** (0.236)	1.870*** (0.336)	1.166*** (0.372)	1.880*** (0.240)
Rebel strength	0.182*** (0.056)	0.200*** (0.055)	0.200** (0.0877)	0.150 (0.105)	0.182*** (0.0548)
Conflict type	-0.0347 (0.037)	-0.040 (0.037)	-0.0397 (0.0666)	-0.0613 (0.0855)	-0.0347 (0.0388)
Cumulative intensity	0.356* (0.200)	0.325 (0.199)	0.325 (0.323)	0.589 (0.393)	0.356 (0.198)
Incompatibility	-0.616*** (0.193)	-0.646*** (0.192)	-0.646*** (0.192)	-0.646** (0.312)	-0.616*** (0.176)
Duration	-0.0146 (0.047)	0.001 (0.989)	0.000664 (0.0890)	0.0561 (0.0626)	-0.0146 (0.0471)
Duration <sup>2</sup>	0.000870 (0.003)	0.0002 (0.003)	0.000248 (0.005)	-8.07e-05 (0.003)	0.000870 (0.003)
Duration <sup>3</sup>	7.01e-06 (7.01e-06)	1.117e-05 (4.19e-05)	1.17e-05 (7.26e-05)	7.30e-06 (5.23e-05)	7.01e-06 (0.0000436)
Conflict ID	-0.003** (0.001)				-0.003** (0.002)
Constant	-1.286** (0.574)	-1.546*** (0.558)	-1.546 (0.967)		-1.286** (0.572)
Observations	1,848	1,848	1,848	1,072	1,848
Pseudo R <sup>2</sup>	0.1239	0.1208		0.1208	0.1239
Log pseudo-likelihood	-654.50244	-656.79488	-656.79488	-368.749	-654.50244
# of groups				57	

Standard errors in parentheses  
Robust SEs reported for models 3 & 5  
Log likelihood reported for model 4  
\*\*\* p<0.01, \*\* p<0.05, \* p<0.1

Figure A3 is the same as Figure 2 in the article, except that it layers the total ongoing number of civil wars over the total number of civil wars that experienced mediation attempts. Notably, although the number of ongoing civil wars remained fairly steady in the third time period, the number of civil wars with mediation declined over the same period. This provides evidence that it is not just the overall number of ongoing civil wars driving trends in whether civil wars experience mediation attempts.

Figure A3. Total number of ongoing civil wars and civil wars that experienced a mediation attempt on an annual basis

