APPENDIX C

Details of Survival Analyses

Appendix A described survival analysis as the analytical approach we used to answer questions about the duration of insurgencies and post-conflict peace intervals. This appendix details the application of survival analysis to our case data and provides the full results.

Analysis of Insurgency Duration

Figure C.1 shows the duration of each of the 71 insurgency cases. The median duration over all 71 cases was 118 months. On average, COIN wins took longer, with the median for 29 COIN wins being 132 months and the median for all losses being 95 months.

Figure C.2 shows the duration for each of the 59 core cases. For the 59 core cases, the median duration was 105 months. The median duration for core case COIN wins remains 132 months, while the median duration of COIN losses drops to 72 months.

Turning to the subpopulations, the 44 iron fist cases had a median duration of 94 months, while the 15 motive-focused cases had a median duration of 126 months. This stark difference is driven entirely by the fact that substantially more iron fist cases than were motive-focused cases were COIN losses, and losses take less time on average. The median duration of the few iron fist wins was 138.5 months, while iron fist losses took only 60 months on average. The median duration for motive-focused cases was 126 for both wins and losses.

The median duration for the 28 cases involving active external actors was 126 months. When external actors contributed only advis-

Figure C.1
Durations of 71 Insurgencies

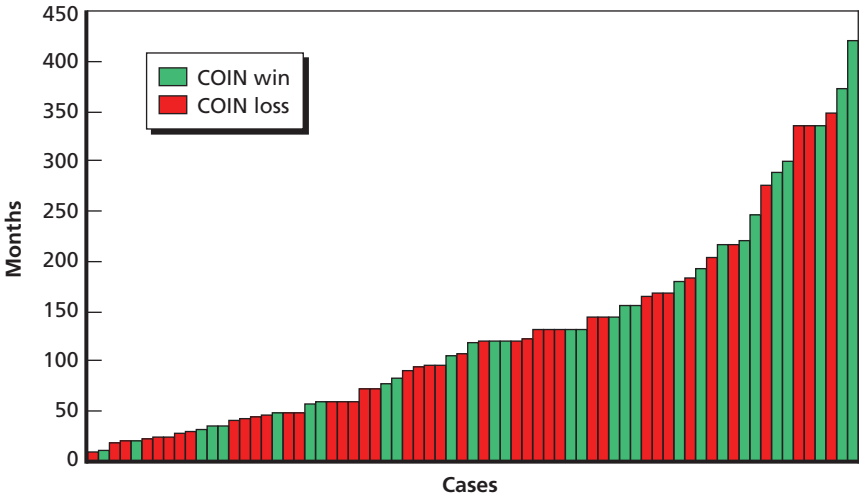

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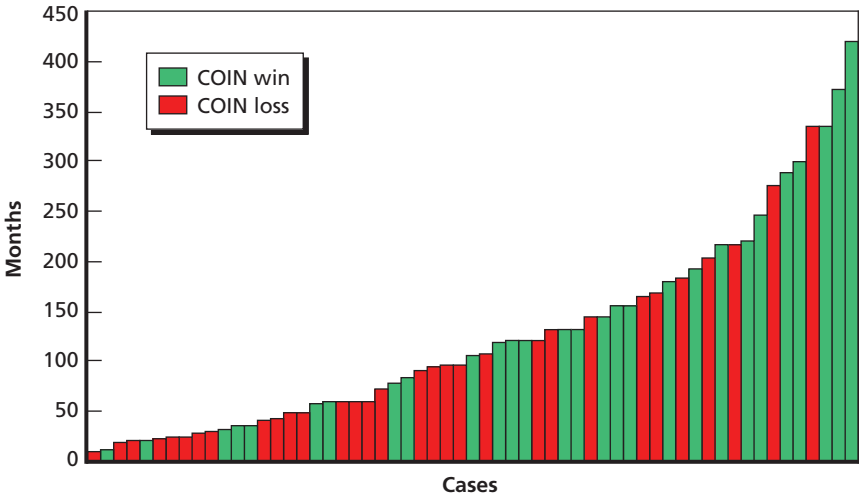
Figure C.2
Durations of 59 Core Cases of Insurgency



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ers, SOF, or air power (n = 13), wins had a median duration of 138 months and losses 108 months. When significant external ground troops supported the COIN effort (n = 15), wins had a median duration of 132 months, and losses averaged 117 months.

Survival Analysis

To ascertain what factors have helped reduce the duration of insurgencies and to identify factors that have extended insurgencies (and thus should, if possible, be avoided), we conducted survival analysis on our data (as described in Appendix A). We quickly realized, however, that considering all 71 cases would not be useful. Not only did we restrict the analysis to the 59 core cases as the best learning examples, but we further confined the analysis to the 28 wins for two reasons: First, factors that influence the duration of insurgencies may vary depending on which side wins; second, factors that help insurgents win faster are not really of interest here.

To choose factors to consider, we reviewed all factors in the data (289) and all factor stacks representing COIN concepts (25) looking for any that could plausibly affect duration when present, either hastening a conflict toward its conclusion or delaying its progress. This initial selection led to a list of approximately 110 factors or factor stacks.

We then calculated a Cox regression for each of these roughly 110 factors or factor stacks individually for the 28 core case wins. Although Cox regression will allow multiple covariates (that is, multiple independent variables at a time), we had no strong hypotheses about multiple factors and their multivariate relationships with duration, and we also wanted to be mindful of the relatively modest statistical power and degrees of freedom in the 28 cases, so we chose to test each individually. Table C.1 lists the 23 factors or factor stacks for which the hazard ratio for the presence of the factor against the absence of the factor was found to be significantly different from 1 at at least the $p < 0.05$ level. Factors are sorted by hazard ratio, so above the line are those with the highest hazard ratios and most strongly associated with an increased probability of the event (the end of the insurgency) when present (so, associated with decreasing duration), while below the line (and below 0) are those with hazard ratios associated

Table C.1
Factors and Factor Stacks with Statistically Significant ($p < 0.05$) Hazard Ratios for Conflict Duration

Factor/Factor Stack	Hazard Ratio	p
At least three tangible support factors reduced	23.055	0.003
COIN force of sufficient strength to force insurgents to fight as guerrillas (or to prevail in the preponderance of conventional engagements, should overmatched insurgents choose to give battle)	8.27	0.000
Insurgents' ability to replenish resources significantly diminished	8.214	0.000
Flow of cross-border insurgent support significantly decreased or remained dramatically reduced or largely absent	5.493	0.003
Insurgents unable to maintain or grow force size	4.136	0.001
At least two strategic communication factors	3.927	0.000
Important internal support to insurgents significantly reduced	3.502	0.001
COIN force or government actions did not contribute to substantial new grievances claimed by the insurgents	3.306	0.000
All three grievance redress factors	3.117	0.001
At least four "beat-cop" factors	2.826	0.004
No parts of the area of conflict were no-go or otherwise denied to the COIN force	2.716	0.005
All of clear, hold, and build	2.482	0.003
Important external support to insurgents significantly reduced	2.464	0.03
Significant ethical/professional/human rights–related military reforms since onset of conflict	2.289	0.004
Insurgents made critical strategic errors, failed to make obvious adaptations, or voluntary exited the conflict	1.983	0.024
Significant government or military reforms in phase	1.965	0.029
Significant government reforms since onset of conflict	1.902	0.023
Reforms recognized/appreciated by population in area of conflict	1.869	0.027
Government maintained weak policing capacity and infrastructural power	0.441	0.035
Terrain played a major role because it allowed insurgents to avoid/overcome COIN force firepower or vehicle advantages	0.428	0.024
Government repression and/or exclusion of significant societal groups from state power or resources	0.3888	0.005
Government sponsorship or protection of unpopular economic and social arrangements or cultural institutions	0.342	0.004
Insurgent leadership competent, able to develop and change strategy, and ensure succession	0.289	0.000

with a decreased probability of the event when present (associated with increasing duration).

The factors and hazard ratios in Table C.1 that are particularly noteworthy are called out in Chapter Five.

Analysis of Peace Intervals and Win Durability

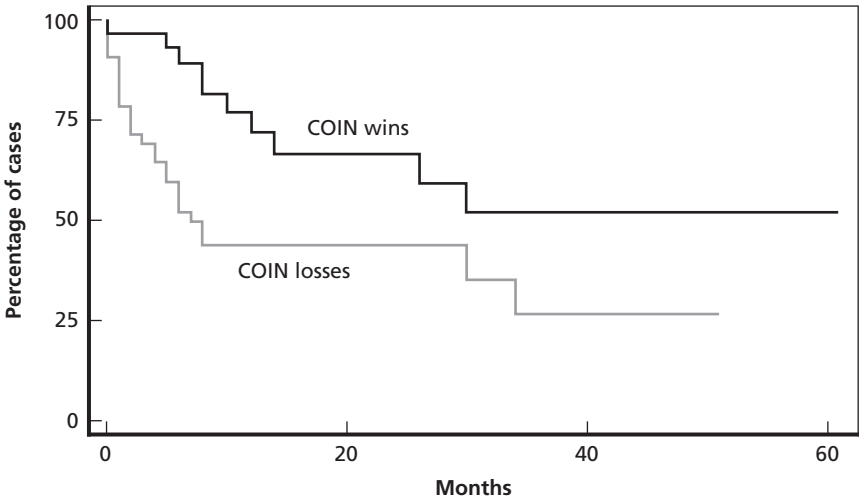
One of the observations from the original *Victory Has a Thousand Fathers* study was that some countries were repeatedly plagued by insurgencies. Questions arose about these "serial" insurgencies. Ideally, a government facing an insurgency would seek ways not only to defeat that insurgency but also to reduce the prospects for a similar insurgency in the future. The resilience or durability of the outcome of an insurgency can be thought of in terms of the peace interval, the amount of time between the end of the first conflict and the start of the next (if there is a next). We approached this problem in two ways: first, with survival analysis and, second, with bivariate comparisons against holistically assessed win quality/win durability.

Of the 71 cases, 35 had their peace interval ended by another internal conflict before the end of 2011; the other 36 were still in their peace interval at the end of 2011 and are thus "right-censored," as discussed in Appendix A. For the 35 cases that were not right-censored, the average (mean) length of the peace interval was 7.33 years, and the median was five years. For those that were right-censored, the average (mean) time until right-censoring was 20.9 years.

Survival Analysis

Figure C.3 shows the survival functions for the peace intervals for all 71 cases, divided into COIN wins and losses. Neither curve reaches 0 on the vertical axis (proportion of cases) due to right-censoring; roughly half the cases in the data did not reach the event (end of the peace interval) prior to the end of 2011. Together, the two curves show that cases in which the government won, on average, have lower probabilities of experiencing the event (in this case, end of the peace interval, or a new conflict) at every time point. Put another way, the analysis of

Figure C.3
Survival Functions for the Peace Intervals of COIN Wins and Losses (n = 71)



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duration showed that (on average) beating an insurgency takes longer than losing to it, and this shows that once an insurgency is beaten, the ensuing peace will last longer (on average) than when the insurgents win.

Similar to the survival analysis of case durations, we began by isolating factors and factor stacks that might plausibly affect the durability of postconflict peace intervals. This proved to include roughly 60 factors or factor stacks. We conducted exploratory analyses of the relationships between these 60 factors or stacks with peace intervals for all 71 cases. We were not too surprised to find no interesting or statistically significant relationships across all 71 cases. As we had anticipated (but still wanted to confirm), the processes that lead to longer or shorter peace intervals differ depending on whether the conflict ends in favor of the government or the insurgents. So, we restricted subsequent analyses to the core cases in which the government prevailed (n = 28).

We ran Cox regressions for each of the 60 factors individually against peace intervals for the 28 core cases that were COIN wins. Disappointingly, only three factors proved to have hazard ratios that statistically significantly ($p < 0.05$) differed from 1. These factors (and their

hazard ratios) are presented in Table C.2. The small number of contributing factors is primarily a function of statistical power; the relatively small number of cases and the relatively low variation in peace intervals precluded all but the most extreme hazard ratios from achieving statistical significance. Remember that longer peace intervals are preferred, so factors that are associated with lower hazards are preferred, as they indicate the decreased probability of the event (end of peace interval) occurring at any time point.

Holistic Assessment of Win Durability

The other approach we employed to identify factors leading to more durable wins involved returning to simple bivariate analysis of various factors or factor stacks against a simple outcome. Rather than using the length of the peace interval as the dependent variable (as we had for the survival analysis) or using who won or lost (as we had for most of the other analyses), we wanted a binary outcome indicator assessing the quality or durability of the COIN win. With that in mind, for each of the 28 cases won by the government, each case analyst was asked to score the following factor as present or absent: "COIN force won in a stable, lasting way." We confirmed these holistic assessments by mechanically assessing durability based on peace duration: A win was considered durable if the peace interval lasted at least ten years, or if the peace lasted until the end of 2011 if the case ended within the past five years. The mechanical assessment matched the holistic assessment in all but two of the 28 cases. We removed Sri Lanka from the analysis based on the case analyst's advice that it is too soon to tell whether or not the

Table C.2
Factors and Statistically Significant ($p < 0.05$) Hazard Ratios for Peace Intervals

Factor/Concept	Hazard Ratio	p <
Significant government reforms during conflict	0.235	0.032
Significant ethical/professional/human rights–related military reforms during conflict	0.216	0.049
Conflict caused significant host-nation economic disruption	0.192	0.033

win would be durable. This left 27 cases, 21 of which were scored as good, or durable, wins and six of which were scored as poor, or fragile. Seeking to identify which COIN concepts lead not only to victory but also to durable peace, we evaluated the relationship between the 24 COIN concepts presented in Chapter Four and win durability. Table C.3 presents the summary results. Note that many of the concepts that are strong predictors of COIN success do little to discriminate win durability, as they are present in all or almost all wins, whether the peace intervals were durable or fragile.

Tables C.4 through C.13 provide cross-tabulations for the factor stacks representing these concepts against win durability.

Table C.3
Summary of Concepts Correlated with Win Durability (n = 27)

Concept	Factor/Factor Stack	Correlation with Win Durability
Development	at least two of four development factors	Strong correlation
Pacification	at least two of six pacification factors	Strong correlation
Legitimacy (use of force)	at least four of six legitimate use of force factors	Modest correlation
Reform	at least four of five reform factors	Strong correlation
Democracy	at least one of three democracy factors	Modest correlation
Strategic communication	at least three of five strategic communication factors	Strong correlation
Field Manual 3-24 (*Counterinsurgency*)	at least four of nine FM 3-24 factors	Strong correlation
Clear, hold, and build	all three of clear, hold, and build	Strong correlation
"Boots on the ground"	at least three of six "boots on the ground" factors	Modest correlation
Criticality of intelligence	at least one of two intelligence factors	Strong correlation

Table C.4
At Least Two Development Factors Versus Win Durability

		Win Duration	
		Poor Win	Durable Win
At least two development factors	Yes	1	11
	No	5	10

Table C.5
At Least Two Pacification Factors Versus Win Durability

		Win Duration	
		Poor Win	Durable Win
At least two pacification factors	Yes	2	15
	No	4	6

Table C.6
At Least Four Legitimate Use of Force Factors Versus Win Durability

		Win Duration	
		Poor Win	Durable Win
At least four legitimate use of force factors	Yes	2	12
	No	4	9

Table C.7
At Least Four Reform Factors Versus Win Durability

		Win Duration	
		Poor Win	Durable Win
At least four reform factors	Yes	1	10
	No	5	11

Table C.8
At Least One Democracy Factor Versus Win Durability

		Win Duration	
		Poor Win	Durable Win
At least one democracy factor	Yes	3	17
	No	3	4

Table C.9
At Least Three Strategic Communication Factors Versus Win Durability

		Win Duration	
		Poor Win	Durable Win
At least three strategic communication factors	Yes	1	11
	No	5	10

Table C.10
At Least Four COIN FM Factors Versus Win Durability

		Win Duration	
		Poor Win	Durable Win
At least four COIN FM factors	Yes	2	17
	No	4	4

Table C.11
Clear, Hold, and Build Versus Win Durability

		Win Duration	
		Poor Win	Durable Win
All three of clear, hold, and build	Yes	0	7
	No	6	14

Table C.12
At Least Three "Boots on the Ground" Factors Versus Win Durability

		Win Duration	
		Poor Win	Durable Win
At least three "boots on the ground" factors	Yes	2	15
	No	4	6

Table C.13
At Least One Intelligence Factor Versus Win Durability

		Win Duration	
		Poor Win	**Durable Win**
At least one intelligence factor	**Yes**	3	18
	No	3	3