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Replication extension assignment

I. Introduction

In "Terrorism, Spoiling, and the Resolution of Civil Wars," Findley and Young (2015) argue that terrorism lengthens the duration of civil wars and shortens the time until their reoccurrence. They demonstrate their claims using survival models of war termination and recurrence with the incidence of terrorist activity as the independent variable. Previously, I replicated two of their models using weighted measures of terrorist activity in the current and preceding time periods (month and year). In this extension assignment, I augment these models with measures of terrorism-related death tolls to test how the deadliness of attacks affects the duration and recurrence of civil wars. In addition, I test separate models for suicide terrorism and all types of terrorism, and attacks targeting civilians and all attacks. I find that higher death tolls from suicide attacks lengthen the duration of civil wars but delay their recurrence. I find also that higher death tolls from terrorist incidents are associated with longer times until recurrence.

II. Replication of Findley and Young (2015)

In the previous assignment, I reproduced Findley and Young's results for models 2 and 4 from Table 1 of their Empirical Analysis section. Both were parametric survival models assuming a lognormal distribution. In models 1 and 2, the event variable was war termination and the time variable was country-war-month. In models 3 and 4, the event variable was war recurrence and the time variable was country-year. The independent variable was the incidence of terrorism in each region-war-month or region-year time frame, sourced from the Global Terrorism Database. All four models included 6-7 control variables including population, GDP, and ethnic fractionalization.

The only difference between models 1 and 2 is that model 1 uses a lagged measure of terrorism that accounts for terrorism occurring in the previous month, whereas model 2 uses a smoothed measure that weights terrorism in the previous month and the current month. Likewise, model 3 uses a lagged measure of terrorism that accounts for terrorism in the previous year and model 4 uses a smoothed measure weighting terrorism in the previous and current years. Models using a smoothed measure (models 2 and 4) yielded more significant results. I reproduce the findings below:

Model 2: Duration model with smoothed terrorism measure

		Hazard (War Ending)
_t	War-related terror (log-smooth)	0.566 (2.55)*
	Population (log)	0.363 (3.03)**
	Ethnic fractionalization	-0.255 (0.33)
	GDP (log)	-0.237 (1.32)
	Number of actors	0.857 (4.51)**
	Battle deaths (log)	0.115 (1.22)
	Mountainous terrain	0.000 (0.03)
	Security guarantee	-6.310 (2.32)*
	Constant	-0.429 (0.22)
N		6,897

* $p<0.05$; ** $p<0.01$

Model 4: Recurrence model with smoothed terrorism measure

		Hazard (War Recurrence)
_t	War-related terror (log/smooth)	-0.609 (5.05)**
	Population (log)	-0.059 (0.41)
	Ethnic fractionalization	0.706 (1.17)
	GDP/capita (log/lag)	0.681 (2.57)*
	Instability	-1.004 (2.74)**
	Democracy in region	0.127 (2.51)*
	No third-party peacekeepers	-0.843 (1.84)
	Constant	10.865 (4.57)**
N		616

* $p<0.05$; ** $p<0.01$

III. Extending Findley and Young (2015)

While Findley and Young (2015) find a significant association between terrorism and both civil war duration and recurrence, their models do not account for the intensity, deadliness, or psychological impact of terrorism. They acknowledge the importance of investigating in this direction, noting that "the intensity of the [terrorist] attack or its symbolic value may have differential impacts." They note also that different types of terrorism may have different effects in that each employs a particular logic and operates in particular circumstances (Findley and Young 2015). For example, suicide terrorism is associated with nationalist backlash against perceived or actual foreign occupation (Pape 2005). Thus, for this assignment I decided to extend Findley and Young's analysis with augmented versions of models 2 and 4, incorporating measures for terrorism death tolls as additional independent variables. I tested separate models for lagged and current measures of death tolls, suicide terrorism and terrorism in aggregate, and attacks targeting civilians and attacks in aggregate, and combinations thereof.

IV. Analysis

I obtained casualty counts (deaths only) from terrorist attacks worldwide occurring between 1970 and 2008 from two sources: the Global Terrorism Database (START 2016) and the Suicide Attack Database (CPOST 2016). The Global Terrorism Database (GTD) includes information on broad categories of terrorist activity including hostage-taking and kidnapping, while the Suicide Attack Database (SAD) only considers confirmed suicide attacks. Both databases allow filtering for target type (civilian and otherwise) and identify time of incidents to at least a year-month precision.

Using this data I used R to create 8 measures of terrorism-related deaths, 4 at the country-month level and 4 at the country-year level to match the war termination/duration and war recurrence datasets from Findley and Young's replication files. Within each group 2 included deaths from suicide attacks and 2 included deaths from all terrorist attacks. Suicide attack measures were sourced from SAD and aggregate terrorism measures were sourced from GTD, and each dataset was re-shaped separately.

Finally, I filtered each dataset to distinguish between attacks targeting civilians and attacks targeting non-civilians. SAD includes a target type variable with four categories: security, political, civilian, and unknown. I downloaded two versions of SAD, one with all categories checked (aggregate) and the other with only the civilian category checked (civilian target). GTD does not allow for filtering before downloads, but has a variable for target type with 22 categories. After loading GTD into R, I made two separate dataframes with the data, one including all categories (aggregate) and the other excluding all observations marked "government" (or variation thereof), "police", "military", "terrorists/non-state militia", "tourists", or "violent political party," or "unknown." I excluded tourists from the civilian category because they are generally foreigners (in hindsight, this was a mistake as SAD does not distinguish between domestic and foreign targets).

After creating lists of logged current death counts for each country-month or country-year (the month or year in which the attacks occurred), I exported them as .dta files. I then imported them

into Stata and created the lagged measures by adding 1 to month or year for each observation. I saved these as separate .dta files. I then merged the .dta files to the duration or recurrence datasets, as appropriate. I assumed, for the purpose of analysis, that there were no terrorism-related deaths for a particular observation unless it had a match in GTD or SAD. Thus, observations in the original dataset that did not have a match in the death toll dataset were given values of 0 (log of 1) for the death toll measures. Finally, I ran the survival models in Stata after adding the death toll variable to the original specifications.

In all, I tested 16 models, and I report the results of four below. The following chart depicts the design of the death toll measure in each model, with specifications that yielded significant results shown with a *.

Dependent variable	Time period	Terrorism type	Target type
Duration	Current	Suicide	Civilian*
			All
		All	Civilian
			All
	Lagged (Previous month)	Suicide	Civilian*
			All*
		All	Civilian
			All
Recurrence	Current	Suicide	Civilian
			All
		All	Civilian
			All
	Lagged (Previous year)	Suicide	Civilian
			All*
		All	Civilian
			All*

Code and data used for this part of the assignment are available at:

https://github.com/kimswchi/findley_young2015_extension

In the next pages I show the output for four models using lagged measures of death tolls. The non-lagged models did not yield statistically significant results for the death toll measure, save for the non-lagged duration model for suicide attacks on civilians.

Duration model with lagged terrorism death toll measure (suicide attack, all targets)

_t	War-related terror	0.561
	(log/smooth)	(2.40)*
	Population (log)	0.361
		(2.68)**
	Ethnic fractionalization	-0.248
		(0.30)
	GDP (log)	-0.237
		(1.28)
	Number of actors	0.856
		(4.87)**
	Battle deaths (log)	0.115
		(1.12)
	Mountainous terrain	0.000
		(0.06)
	Security guarantee	-6.252
		(2.00)*
	Terrorism-related deaths	10.327
	(log/lag, suicide, all targets)	(9.66)**
	Constant	-0.423
		(0.22)
N		6,897

* $p<0.05$; ** $p<0.01$

Duration model with lagged terrorism death toll measure (suicide attack, civilian targets)

_t	War-related terror	0.566
	(log/smooth)	(2.44)*
	Population (log)	0.362
		(2.68)**
	Ethnic fractionalization	-0.253
		(0.31)
	GDP (log)	-0.238
		(1.29)
	Number of actors	0.856
		(4.86)**
	Battle deaths (log)	0.115
		(1.12)
	Mountainous terrain	0.000
		(0.04)
	Security guarantee	-6.295
		(2.01)*
	Terrorism-related deaths	10.575
	(log/lag, suicide, civilian target)	(9.99)**
	Constant	-0.417
		(0.22)
N		6,897

* $p<0.05$; ** $p<0.01$

Recurrence model with lagged terrorism death toll measure (all attacks, all targets)

_t	War-related terror (log/smooth)	-0.617 (4.93)**
	Population (log)	-0.026 (0.17)
	Ethnic fractionalization	0.844 (1.53)
	GDP/capita (log/lag)	0.634 (2.69)**
	Instability	-1.008 (2.64)**
	Democracy in region	0.105 (2.28)*
	No third-party peacekeepers	-0.786 (1.88)
	Terrorism-related deaths (log/lag, all terrorism, all targets)	1.117 (2.00)*
	Constant	10.107 (4.14)**
N		616

* $p<0.05$; ** $p<0.01$

Recurrence model with lagged terrorism death toll measure (suicide attack, all targets)

_t	War-related terror (log/smooth)	-0.617 (5.00)**
	Population (log)	-0.051 (0.31)
	Ethnic fractionalization	0.667 (1.20)
	GDP/capita (log/lag)	0.667 (2.72)**
	Instability	-0.970 (2.54)*
	Democracy in region	0.120 (2.66)**
	No third-party peacekeepers	-0.853 (2.03)*
	Terrorism-related deaths (log/lag, suicide, all targets)	2.764 (6.65)**
	Constant	10.703 (4.25)**
N		616

* $p<0.05$; ** $p<0.01$

V. Conclusion

The findings from Findley and Young (2015) generally persisted, demonstrating their robustness. The lagged models produced more significant results compared to the non-lagged models, which is predictable considering that not all peace talks take place early in the month and that terrorist incidents take time to set in. I would have liked to use a weighted measure for previous and current time periods similar to the smoothed war-related terror measure, but Findley and Young did not describe exactly how the smoothing was done.

The number of deaths from all types of terrorism combined (both suicide and non-suicide) does not appear to have a significant effect on war duration, although there is a significant association with war recurrence (more deaths resulting in longer times to recurrence). Deaths from suicide terrorism, on the other hand, appear to significantly lengthen the duration of civil wars, and the effect is stronger for attacks on civilians. Suicide terrorism deaths also increase the time to recurrence regardless of target type.

Thus, my results appear to confirm one half of Findley and Young's argument: terrorism spoils peace processes in an ongoing civil war. On the other hand, it appears that once a war has ended, deadlier terrorist attacks are associated with a more durable peace. This possibly relates to the use of terrorism by "weak" elements as a demonstration of resolve. If higher death tolls are associated with more determined terrorists, then the actors in a civil war may be more likely to have a clear vision for peace (including plans to placate or exterminate violent elements), thus being less likely to engage in another civil war after one has ended.

In addition, suicide terrorist movements generally need community support to thrive (Pape 2005). If suicide attack death tolls are driven by highly determined nationalist movements seeking to unify their homeland against foreign elements and backed by non-trivial amounts of local and regional support, then the presence of suicide attacks may signal social cohesion rather than chaos. Thus, these regions may in fact be less prone to civil war (leading to longer recurrence times), but engage in particularly long and brutal ones where all sides have deeply entrenched interests.

Thus, these results may have more to do with regional circumstances than the independent effects of terrorism, and I cannot rule out endogeneity as a significant factor. A second caveat is that, unlike Findley and Young's geocoded approach in which they fitted terrorism data to war duration and recurrence data on the regional level, I coded terrorism deaths at the aggregate country level. Thus, my estimates are probably noisier than they would have been if I used a similar approach.

References

Chicago Project on Security and Terrorism (CPOST). 2016. Suicide Attack Database (October 12, 2016 Release). Retrieved from http://cpostdata.uchicago.edu/

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