Replication Study

POP77004 – Applied Statistical Analysis

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Foreign Policy Analysis

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Explaining Nonratification of the Genocide Convention: A Nested Analysis[1]

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What explains the large variation in the time taken by states to ratify the 1948 Genocide Convention? The costs of ratification would appear to be relatively low, yet many states have waited several decades before ratifying this symbolically important treaty. This study employs a "nested analysis" that combines a large-n event history analysis with a detailed study of an important outlying case in order to explain the main sources of this variation. Surprisingly, the results of our event history analysis suggest that states do not become more likely to ratify once the treaty has become widely adopted by others. We use the case of Japan to examine this relationship in more detail. We argue that once the norm embodied in a human rights treaty develops a "taken-for-granted" character, the rate of ratification can slow down because the marginal costs of additional ratifications begin to outweigh the expected benefits.

Title: Explaining Nonratification of the Genocide Convention: A Nested Analysis

Authors: Brian Greenhill and Michael Strausz

Research Question: Why do states sign the Genocide Convention when they do?

My Contribution: Test the models' robustness by trying other link functions and interactions

The Topic

- The Genocide Convention is Belorussian jurist, Rafał Lemkin's brainchild – he devised the concept of genocide in Chapter 8 of his 1948 book, Axis Rule in Europe

- It was opened for signature by the newly-formed United Nations on the 9th of December, 1948, and entered into force on the 12th of January 1951 (once it had the requisite number of signatories)

- 43 have never signed it

- The Dominican Republic is the only signatory not to have ratified the Convention

Article II

In the present Convention, genocide means any of the following acts committed with intent to destroy, in whole or in part, a national, ethnical, racial or religious group, as such:

(a) Killing members of the group;

(b) Causing serious bodily or mental harm to members of the group;

(c) Deliberately inflicting on the group conditions of life calculated to bring about its physical destruction in whole or in part;

(d) Imposing measures intended to prevent births within the group;

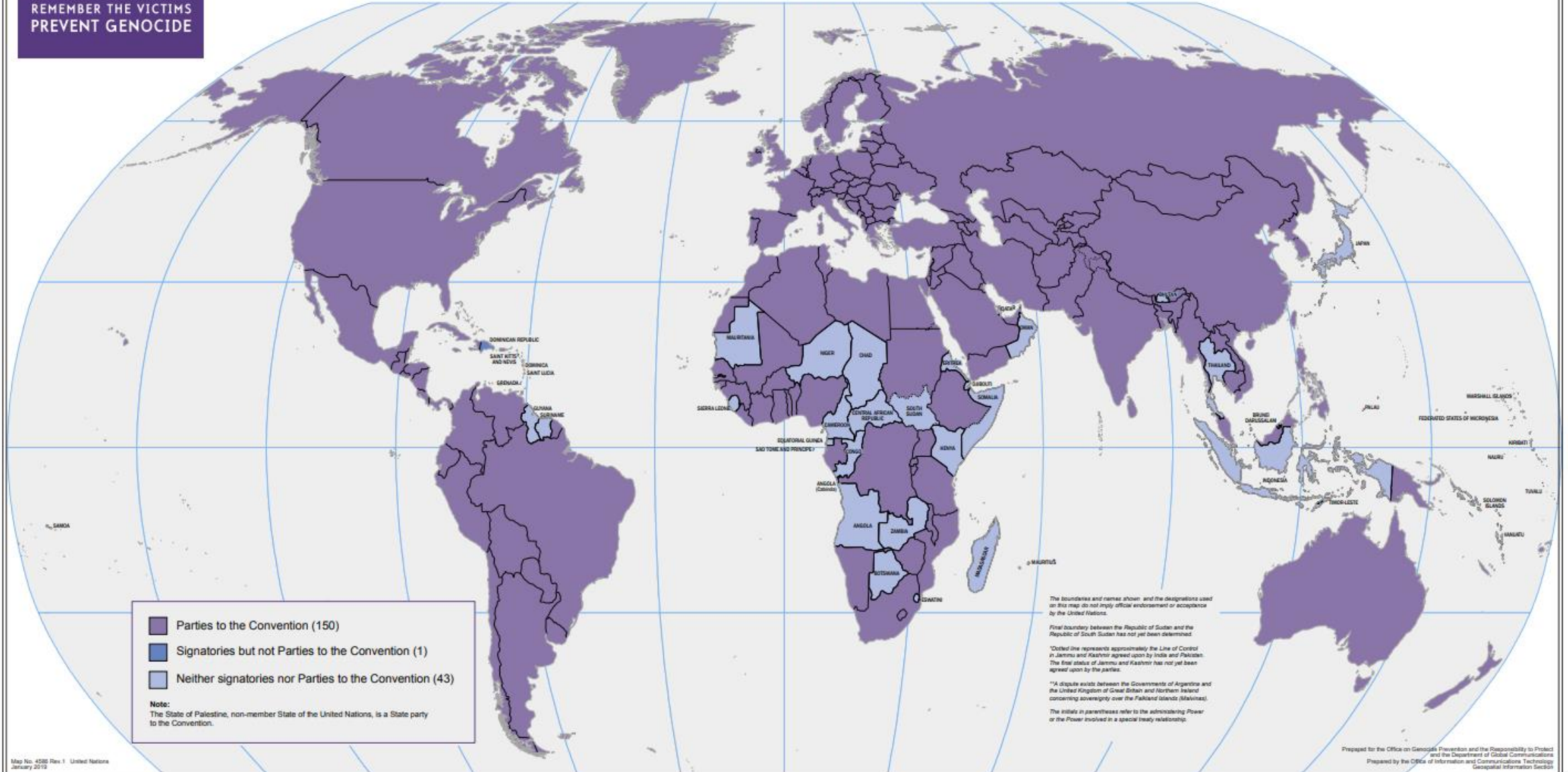(e) Forcibly transferring children of the group to another group.

THE CONVENTION ON THE PREVENTION AND PUNISHMENT OF THE CRIME OF GENOCIDE (1948)

Status of Ratification

As of January 2019

REMEMBER THE VICTIMS
PREVENT GENOCIDE

Legend:

- Parties to the Convention (150)
- Signatories but not Parties to the Convention (1)
- Neither signatories nor Parties to the Convention (43)

Note:
The State of Palestine, non-member State of the United Nations, is a State party to the Convention.

The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Final boundary between the Republic of Sudan and the Republic of South Sudan has not yet been determined.

*Dotted line represents approximately the Line of Control in Jammu and Kashmir agreed upon by India and Pakistan. The final status of Jammu and Kashmir has not yet been agreed upon by the parties.

**A dispute exists between the Governments of Argentina and the United Kingdom of Great Britain and Northern Ireland concerning sovereignty over the Falkland Islands (Malvinas).

The initials in parentheses refer to the administering Power or the Power involved in a special treaty relationship.

Map No. 4586 Rev.1 United Nations
January 2019

Prepared for the Office on Genocide Prevention and the Responsibility to Protect and the Department of Global Communications
Prepared by the Office of Information and Communications Technology
Geospatial Information Section

Methods

Binomial logit – using quadratic and polynomial terms for the discrete variable total to factor in the possibility the number of countries that ratified the convention has a nonlinear influence on the response variable (ratified)

Response variable: ratified

Explanatory variables: newdemoc, neighbors, polity, total, loggdppc, nminorities, domestic.hurdles, british.legal

- Data: 4,133 observations
  - Country years start at independence or when the Genocide Convention was opened for signing (1948.12.09) up to 2009.01.01

Greenhill and Strausz's data in R


```
gendata              4133 obs. of 37 variables
   $ country     : Factor w/ 192 levels "Afghanistan",..: 1 1
   $ cow         : Factor w/ 192 levels "AFG","ALB","ALG",..:
   $ year        : num  1948 1949 1950 1951 1952 ...
   $ startdate   : Date, format: "1948-12-09" "1949-01-01" "19
   $ stopdate    : Date, format: "1948-12-31" "1949-12-31" "19
   $ ratified    : num  0 0 0 0 0 0 0 0 1 0 ...
   $ response    : 'Surv' num [1:4133, 1:3] (    0,    22+] (
   ..- attr(*, "dimnames")=List of 2
```

	country	cow	year	startdate	stopdate	ratified	cols	polity	neighbors	gdppc	loggdppc	nminorities	IGOc	otherrat	logigo
1	Afghanistan	AFG	1948	1948-12-09	1948-12-31	0	(0, 22+]	NA	NA	NA	NA	NA	NA	NA	N
2	Afghanistan	AFG	1949	1949-01-01	1949-12-31	0	(23, 387+]	-10	0.0000000	677.00	6.517671	4	0.00000000	0	N
3	Afghanistan	AFG	1950	1950-01-01	1950-12-31	0	(388, 752+]	-10	0.0000000	677.00	6.517671	4	0.07603935	0	N
4	Afghanistan	AFG	1951	1951-01-01	1951-12-31	0	(753, 1117+]	-10	0.0000000	677.00	6.517671	4	0.31447606	0	N
5	Afghanistan	AFG	1952	1952-01-01	1952-12-31	0	(1118, 1483+]	-10	0.0000000	743.00	6.610696	4	0.34754826	0	N
6	Afghanistan	AFG	1953	1953-01-01	1953-12-31	0	(1484, 1848+]	-10	0.0000000	743.00	6.610696	4	0.48511349	0	N
7	Afghanistan	AFG	1954	1954-01-01	1954-12-31	0	(1849, 2213+]	-10	0.0000000	763.00	6.637258	4	0.51727270	0	N
8	Afghanistan	AFG	1955	1955-01-01	1955-12-31	0	(2214, 2578+]	-10	0.0000000	735.00	6.599870	4	0.55273691	0	N
9	Afghanistan	AFG	1956	1956-01-01	1956-03-22	1	(2579, 2660]	-10	0.0000000	747.00	6.616065	4	0.57588131	0	N
10	Albania	ALB	1948	1948-12-09	1948-12-31	0	(0, 22+]	NA	NA	NA	NA	NA	NA	NA	N
11	Albania	ALB	1949	1949-01-01	1949-12-31	0	(23, 387+]	-9	0.0000000	2212.10	7.701698	1	0.00000000	0	N
12	Albania	ALB	1950	1950-01-01	1950-12-31	0	(388, 752+]	-9	0.0000000	2212.10	7.701698	1	0.06846695	0	N
13	Albania	ALB	1951	1951-01-01	1951-12-31	0	(753, 1117+]	-9	0.4000000	2212.10	7.701698	1	0.32912905	0	N
14	Albania	ALB	1952	1952-01-01	1952-12-31	0	(1118, 1483+]	-9	0.4000000	2212.10	7.701698	1	0.37111114	0	N
15	Albania	ALB	1953	1953-01-01	1953-12-31	0	(1484, 1848+]	-9	0.6000000	2212.10	7.701698	1	0.51357416	0	N
16	Albania	ALB	1954	1954-01-01	1954-12-31	0	(1849, 2213+]	-9	0.6000000	2212.10	7.701698	1	0.52350356	0	N
17	Albania	ALB	1955	1955-01-01	1955-05-12	1	(2214, 2345]	-9	0.8000000	2212.10	7.701698	1	0.58966291	0	N
18	Algeria	ALG	1962	1962-07-05	1962-12-31	0	(4956, 5135+]	NA	0.4444444	NA	NA	1	NaN	0	N
19	Algeria	ALG	1963	1963-01-01	1963-10-31	1	(5136, 5439]	-8	0.4444444	2044.00	7.622664	1	NaN	0	N
20	Andorra	AND	1948	1948-12-09	1948-12-31	0	(0, 22+]	NA	NA	NA	NA	NA	NA	NA	N
21	Andorra	AND	1949	1949-01-01	1949-12-31	0	(23, 387+]	0	0.0000000	NA	NA	NA	NaN	0	N
22	Andorra	AND	1950	1950-01-01	1950-12-31	0	(388, 752+]	0	0.0000000	NA	NA	NA	NaN	0	N

Greenhill and Strausz's original regressions

```
12  gendata$totalsq<-gendata$total^2
13  gendata$totalcu<-gendata$total^3
14
15  fulldata$totalsq<-fulldata$total^2
16  fulldata$totalcu<-fulldata$total^3
17
18  ### Table 1 (regression models 1-3):
19
20  # Basic model with total:
21  model1<-glm(ratified ~ total + neighbors + polity + newdemoc
22              + domestic.hurdles + british.legal +  + loggdppc
23              + nminorities, data=gendata, binomial(link = "logit")) #
24
25  # Add a squared term for total:
26  model2<-glm(ratified ~ total + totalsq + neighbors + polity
27              + newdemoc + domestic.hurdles + british.legal +  + loggdppc
28              + nminorities, data=gendata, binomial(link = "logit")) #
29
30  # Add a cubed term for total:
31  model3<-glm(ratified ~ total + totalsq + totalcu + neighbors + polity
32              + newdemoc + domestic.hurdles + british.legal +  + loggdppc
33              + nminorities, data=gendata, binomial(link = "logit")) #
```

TABLE 1. Logit models of ratification of the Genocide Convention. All Covariates have been Lagged by 1 Year

	Model 1	Model 2	Model 3
Constant	−1.89 (0.10)	−0.98 (0.40)	−1.83 (0.13)
Global Ratifications	−0.02 (0.00)	−0.06 (0.00)	−0.01 (0.81)
Global Ratifications (Squared)		0.00 (0.00)	−0.00 (0.11)
Global Ratifications (Cubed)			0.00 (0.02)
Neighborhood Effect	0.86 (0.05)	1.40 (0.00)	1.05 (0.03)
Democracy	0.05 (0.01)	0.04 (0.03)	0.03 (0.07)
New Democracy	0.44 (0.19)	0.36 (0.28)	0.49 (0.15)
Institutional Hurdles	−0.12 (0.54)	−0.15 (0.43)	−0.13 (0.50)
Common Law	−0.79 (0.00)	−0.62 (0.02)	−0.57 (0.03)
GDP per capita (logged)	−0.01 (0.93)	−0.04 (0.78)	0.03 (0.83)
Minorities at Risk	0.04 (0.35)	0.03 (0.46)	0.03 (0.55)
N	2496	2496	2496
AIC	787.71	771.82	768.57

(*Note.* P-values (for a two-tailed test) are shown in parentheses below each coefficient estimate.)

Greenhill and Strausz's Findings

Global norms (in this instance, how many have signed the convention) are have a negative effect (-1.75%), and statistically significant at the 99.99% level in determining whether a country signed the Convention

Being a democracy is statistically significant in all three models, but less so with each additive term

Being a country with common (i.e., a British legal system) is statistically significant across all three models

Why I'm replicating

Possible external validity for other conventions and statutes (e.g., the Chemical Weapons Convention, the Rome Statute for the International Criminal Court, or even the Covenant of the League of Nations)

The R code and comments made sense

I want to test which link function performs best

Preventing grievous and massive crimes is the issue of the century

What I did

I modelled three different link functions (probit, cauchit, and gompit), and reran the logit link function to (dis)confirm Greenhill and Strausz's results, and determine their robustness

I ran additive and interactive models with these link functions

I tested different distributions by using four link functions

I ran logit models with the four binary legal system variables (common, civil, mixed, and sharia)

I considered multinomial models – only one country would be in the third category (Dominican Republic)

A primer on link functions

Link functions: Connect the response variable to the linear model to predict values between - ∞ and + ∞

- **Logit:** Errors have a standard logistic distribution (symmetrical) = $\ln(\mu_i/(1-\mu_i))$
- **Probit:** Errors are normally distributed (symmetrical) = $\Phi^{-1}(\mu_i)$
- **Cauchit:** Errors follow a Cauchy distribution (i.e., a more leptokurtic Gaussian distribution with longer tails) = $g(\mu) = 2\tan^{-1}(\sqrt{\mu}/(1-\mu))$
- **Gompit:** Errors have a standard extreme value-distribution (asymmetrical) = $\ln(-\ln(1-\mu_i))$

The Beauty of R's Link Function

```
# Additive Probit
model.probit1<-glm(ratified ~ total + neighbors + polity + newdemoc
        + domestic.hurdles + british.legal +  + loggdppc
        + nminorities, data=gendata, binomial(link = "probit"))
```

```
# Additive Gompit
model.gompit1<-glm(ratified ~ total + neighbors + polity + newdemoc
                + domestic.hurdles + british.legal +  + loggdppc
                + nminorities, data=gendata, binomial(link = "cloglog"))
```

```
# Additive Cauchit
model.cauchit1<-glm(ratified ~ total + neighbors + polity + newdemoc
                + domestic.hurdles + british.legal +  + loggdppc
                + nminorities, data=gendata, binomial(link = "cauchit"))
```

```
# Basic model with total:
model.logit1<-glm(ratified ~ total + neighbors + polity + newdemoc
                + domestic.hurdles + british.legal +  + loggdppc
                + nminorities, data=gendata, binomial(link = "logit"))
```

Additive Results

	Logit Model 1	Logit Model 2	Logit Model 3
Constant	- 1.89 (0.099) +	- 0.98 (0.395)	- 1.83 (0.13)
Global Ratification	- 0.02 (0.000) ***	- 0.06 (0.000) ***	- 0.01 (0.81)
Global Ratification (^2)		0.00 (0.000) ***	- 0.00 (0.11)
Global Ratification (^3)			0.00 (0.02) *
Neighbourhood Effect	0.86 (0.045) *	1.40 (0.003) **	1.05 (0.03) *
Democracy	0.05 (0.007) **	0.04 (0.025) *	0.03 (0.07) +
New Democracy	0.44 (0.185)	0.36 (0.282)	0.49 (0.15)
Institutional Hurdles	- 0.12 (0.539)	- 0.15 (0.429)	- 0.12 (0.50)
Common Law	- 0.79 (0.003) **	- 0.62 (0.018) *	- 0.57 (0.03) *
GDP per capita (logged)	- 0.01 (0.927)	- 0.04 (0.781)	0.03 (0.83)
Minorities at Risk	0.04 (0.351)	0.03 (0.455)	0.03 (0.55)

	Logit Model 1	Logit Model 2	Logit Model 3
N	2,496	2,496	2,496
AIC	787.71	771.82	768.57

	Probit Model 1	Probit Model 2	Probit Model 3
Constant	- 1.23 (0.015) *	- 0.65 (0.212)	- 0.97 (0.078) +
Global Ratification	- 0.01 (0.000) ***	- 0.03 (0.000) ***	- 0.01 (0.528)
Global Ratification (^2)		0.00 (0.000) ***	- 0.00 (0.257)
Global Ratification (^3)			0.00 (0.069) +
Neighbourhood Effect	0.36 (0.066) +	0.59 (0.006) **	0.47 (0.036) *
Democracy	0.02 (0.007) **	0.02 (0.024) *	0.02 (0.061) +
New Democracy	0.18 (0.266)	0.14 (0.393)	0.18 (0.261)
Institutional Hurdles	- 0.05 (0.585)	- 0.07 (0.393)	- 0.07 (0.428)
Common Law	- 0.33 (0.004) **	- 0.26 (0.023) *	- 0.23 (0.052) +
GDP per capita (logged)	0.00 (0.992)	- 0.02 (0.790)	0.01 (0.920)
Minorities at Risk	0.02 (0.382)	0.01 (0.501)	0.01 (0.589)

	Probit Model 1	Probit Model 2	Probit Model 3
N	2,496	2,496	2,496
AIC	790.05	771.43	770.05

	Cauchit Model 1	Cauchit Model 2	Cauchit Model 3
Constant	0.97 (0.868)	- 0.51 (0.929)	- 5.22 (0.319)
Global Ratification	- 0.08 (0.000) ***	- 0.18 (0.000) ***	0.14 (0.137)
Global Ratification (^2)		0.00 (0.005) **	- 0.01 (0.001) **
Global Ratification (^3)			0.00 (0.001) ***
Neighbourhood Effect	5.83 (0.000) ***	8.04 (0.000) ***	4.66 (0.013) *
Democracy	0.27 (0.009) **	0.22 (0.032) *	0.12 (0.143)
New Democracy	1.57 (0.119)	1.85 (0.072) +	2.23 (0.032) *
Institutional Hurdles	- 0.75 (0.399)	- 0.47 (0.569)	- 0.02 (0.974)
Common Law	- 5.38 (0.003) **	- 5.91 (0.000) ***	- 4.02 (0.020) *
GDP per capita (logged)	- 0.53 (0.476)	- 0.35 (0.624)	0.15 (0.814)
Minorities at Risk	0.32 (0.017) *	0.27 (0.091) +	0.06 (0.695)

	Cauchit Model 1	Cauchit Model 2	Cauchit Model 3
N	2,496	2,496	2,496
AIC	784.14	781.2	768.19

	Gompit Model 1	Gompit Model 2	Gompit Model 3
Constant	- 1.92 (0.084) +	- 1.11 (0.312)	- 1.97 (0.089) +
Global Ratification	- 0.02 (0.00) ***	- 0.06 (0.000) ***	- 0.00 (0.905)
Global Ratification (^2)		0.00 (0.000) ***	- 0.00 (0.084) +
Global Ratification (^3)			0.00 (0.015) *
Neighbourhood Effect	0.85 (0.039) *	1.37 (0.002) **	1.02 (0.030) *
Democracy	0.05 (0.007) **	0.04 (0.026) *	0.03 (0.076) +
New Democracy	0.44 (0.164)	0.36 (0.257)	0.50 (0.120)
Institutional Hurdles	- 0.12 (0.527)	- 0.14 (0.443)	- 0.11 (0.521)
Common Law	- 0.77 (0.002) **	- 0.61 (0.016) *	- 0.56 (0.030) *
GDP per capita (logged)	- 0.01 (0.913)	- 0.04 (0.769)	0.03 (0.814)
Minorities at Risk	0.04 (0.341)	0.03 (0.444)	0.03 (0.542)

	Gompit Model 1	Gompit Model 2	Gompit Model 3
N	2,496	2,496	2,496
AIC	787.28	772.19	768.29

My Results

- Confirms the logits mostly

- Global ratification and having British common law both have statistically significant and negative effects on ratification

- The neighbourhood effect and being a democracy being a democracy have statistically significant and negative effects on ratification

- Being a new democracy and having significant minority populations have statistically significant and positive effects on ratification only in the second and third Cauchit models

- GDP isn't statistically significant in any of the 12 models

- After interacting the neighbours, democracy, and new democracy variables, I only found significant interaction (and absurd) effects using the cauchit four link function
  - E.g., in Interactive Cauchit Model 1, neighbors:newdemoc:democracy resulted in a 33.5 trillion % increase in how likely a state would sign the Convention

My Results

- Civil Law (civil.law), unlike Mixed Law (mixed law) or Common Law (british.legal) has a statistically significant positive effect on countries ratifying the convention
  - Model 1: 121% more likely to ratify (99% significance)
  - Model 2: 88% more likely to ratify (95% significance)
  - Model 3: 82% more likely to ratify (95% significance)

- Both Mixed Law and Common Law have statistically significant negative effect on countries ratifying the Convention
  - Model 1: 56% less likely to ratify if Mixed Law, 54% less likely to ratify if Common Law
  - Model 2: 55% less likely to ratify if Mixed Law, 46% less likely to ratify if Common Law
  - Model 3: 53% less likely to ratify if Mixed Law, 43% less likely to ratify if Common Law

- Sharia has no significant effect, except in Model 3 to have a statistically significant effect that new democracies are 77% more likely to ratify the Convention

- Genocide/Politicide (genocide) in the past ten years isn't statistically significant

Conclusion

- A really useful exercise, even though I found nothing contradictory

- Stimulating and consequential idea to study what influences states to sign pacts, conventions, statutes, and treaties (e.g., using multinomial, Poisson, and negative binomial methods

- Massive implications for international law