Contiguity as a Correlate of Conflict

POSC 3610 – International Conflict

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CLEMSON
U N I V E R S I T Y

Goal for Today

Discuss contiguity as a 'correlate of war' (really: a correlate of confrontation onset).

MIC of the Day: The Boxer Rebellion (MIC#0031)

Table 1: The Approximate Distance (in Miles) Between China and its Boxer Rebellion Combatants in 1900

State	Minimum Distance	Capital Distance
United States	4,263	7,612
United Kingdom	3,263	5,064
France	3,259	5,111
Germany	2,537	4,577
Austria-Hungary	2,392	4,641
Italy	2,886	5,055
Russia	0	3,766
Japan	263	1,306

Note:

Data generated in {peacesciencer}, v. 0.9.9.

[1] Minimum distance: Schvitz et al. (2021). Capital distance: {peacesciencer}

Dangerous Dyads

Table 2: Bremer's (1992) "Dangerous Dyads"

Factor	Rank	Relationship
Contiguity	1	+
Major power in the dyad	2	+
Shared alliance	3	-
Joint Militarization	4	+
Joint democracy	5	-
Jointly advanced economies	6	-
Power preponderance	7	-

The "Correlates" of War

We'll talk about democratic peace soon but Bremer (1992) regards contiguity as the strongest correlate of war.

- We just weren't sure how "important" it was.

Contiguity

Land-contiguous states and those separated by less than 150 miles of water are disproportionately responsible for inter-state conflict.

- Wallensteen (1981): 93% of contiguous dyads have at least one MID in their history.
  - 64% have at least one war.
- Richardson (1960): Of 200 wars between 1480 and 1941, half were dyadic.
  - 75% were fought involving no more than three states.

Why Are Contiguous States Prone to Conflict?

Per Vasquez' (1995) review/critique:

1. Opportunity
2. Interactions/Willingness

A theme to recur: working backward.

- Often a hunch leads to an empirical discovery, for which theoretical arguments are tailored after the fact.

Opportunity

Conflict happens within a reach.

- Boulding (1962): loss of strength gradient.

In other words: neighbors fight because they can.

- Richardson (1960): total number of borders increases likelihood of new war participation.
- Gleditsch and Singer (1975): decreasing capital-to-capital distance increases likelihood of war onset.

Interactions/Willingness

An argument about the denominator, so to say (e.g. Starr and Most, 1976)

- The closer states are, they more they interact.
- The more they interact, the more likely they'll find something they are willing to militarize.

If the baseline rate of war is constant, increasing the proverbial denominator is going to increase the number of observational "successes" in a series of trials (i.e. war).

Measuring Contiguity

The Correlates of War maintains a "direct contiguity" data set.

1. direct land contiguity (e.g. USA-Canada)
2. separated by 12 miles or fewer of water (e.g. USA-Russia)
3. separated by 12-24 miles of water (e.g. UK-France)
4. separated by 24-150 miles of water (e.g. USA-Cuba)
5. separated by 150-400 miles of water (e.g. UK-Germany)
6. no contiguity relationship

A Comment on Contiguity in `{peacesciencer}`

Details

The contiguity codes in the dyad-year data range from 0 to 5. 1 = direct land contiguity. 2 = separated by 12 miles of water or fewer (a la Stannis Baratheon). 3 = separated by 24 miles of water or fewer (but more than 12 miles). 4 = separated by 150 miles of water or fewer (but more than 24 miles). 5 = separated by 400 miles of water or fewer (but more than 150 miles).

Importantly, 0 are the dyads that are not contiguous at all in the CoW contiguity data. This is a conscious decision on my part as I do not think of the CoW's contiguity data as exactly ordinal. Cross-reference CoW's contiguity data with the minimum distance data in this exact package to see how some dyads that CoW codes as not contiguous are in fact very close to each other, sometimes even land-contiguous. For example, Zimbabwe and Namibia are separated by only about a few hundred feet of water at that peculiar intersection of the Zambezi River where the borders of Zambia, Botswana, Namibia, and Zimbabwe meet. There is no contiguity record for this in the CoW data. There are other cases where contiguity records are situationally missing (e.g. India-Bangladesh, and Bangladesh-Myanmar in 1971) or other cases where states are much closer than CoW's contiguity data imply (e.g. Pakistan and the Soviet Union were separated by under 30 kilometers of Afghani territory). The researcher is free to recode these 0s to be, say, 6s, but this is why **peacesciencer** does not do this.

A Photo of the Zambezi River

Figure 1: Pictured: Namibia, Zambia, Zimbabwe, and Botswana

A Photo of the Zambezi River (Borders Annotated)

Foreground: America. Background: Russia

What Does This Look Like Dyadically?

Unit of analysis: non-directed dyad-year

- *dyad*: a pairing of any two states (e.g. USA-Canada, India-Pakistan)
- *year*: should be intuitive
- *non-directed*: USA-Canada and Canada-USA are observationally the same.
    - Useful for explaining simple onsets.
    - Operationally: keep the dyad where `ccode2` > `ccode1`.

Dependent Variables

Dependent Variables: (i.e. the thing(s) we want to explain)

- *confrontation onset*: binary, indicates a unique confrontation onset in dyad-year
- *sum of minimum fatalities*: total (minimum) estimated fatalities in dyad-year
- *sum of maximum fatalities*: total (maximum) estimated fatalities in dyad-year
- *dyadic war*: whether a confrontation escalated to over 1,000 dyadic (minimum) fatalities

Main Independent Variable(s)

Main Independent Variable(s): contiguity category

- *Land contiguity*: direct land border (contiguity type == 1)
- *Other contiguity*: water border of 400 miles or fewer

In your travels, you'll see this sometimes called a "fixed effect".

- The coefficient of land contiguity is compared to "no contiguity"
- The coefficient of other contiguity is compared to "no contiguity"

Table 3: A Summary of Direct Contiguity Relationships, 1816-2016

Contiguity Type	Number of Entries	Percentage
Land Contiguity	948	55.96%
12 Miles of Water or Fewer	50	2.95%
12-24 Miles of Water	50	2.95%
24-150 Miles of Water	256	15.11%
150-400 Miles of Water	390	23.02%

Note:

Data generated in {peacesciencer}, v. 0.9.9.

[1] Correlates of War Direct Contiguity Data (v. 3.2)

Table 4: A Summary of Direct Contiguity Relationships Among Non-Directed PRDs, 1816-2014

Contiguity Type	Number of Entries	Percentage
Land Contiguity	23,840	19.94%
Other Contiguity	9,620	8.05%
No Contiguity	86,069	72.01%

Note:

Data generated in {peacesciencer}, v. 0.9.9.

[1] Correlates of War Direct Contiguity Data (v. 3.2)

Control Variables

Control Variables:

- CINC proportion (W/S), major powers in the dyad, defense pact, joint democracy, advanced economies
- Again: a "Dangerous Dyads" type of analysis (Bremer, 1992).

Other notes: (i.e. things that academics care a lot about)

- Confrontation data: Gibler and Miller (Forthcoming)
- Sample: politically relevant dyads (i.e. neighbors and/or dyads with a major power)
- Onset estimated using logistic regression.
- Fatalities estimated with Heckman sample correction, selecting on ongoing confrontations.
    - Otherwise: basic OLS ("linear regression").
- War model is probit with Heckman sample correction.

	Conf. Onset	Min. Fatalities	Max. Fatalities	Dyadic War
Land Contiguity	1.280***	0.035	0.003	-0.055
	(0.065)	(0.180)	(0.197)	(0.128)
Other Contiguity	0.540***	-0.307	-0.326	-0.324*
	(0.093)	(0.211)	(0.232)	(0.165)
CINC Proportion	0.780***	0.056	-0.086	-0.146
	(0.089)	(0.218)	(0.239)	(0.173)
Both Major Powers	1.018***	0.967***	0.875***	0.872***
	(0.085)	(0.217)	(0.239)	(0.148)
Major-Minor	0.169*	0.467**	0.458**	0.472***
	(0.066)	(0.148)	(0.163)	(0.112)
Defense Pact	-0.078	-0.338*	-0.410**	-0.428**
	(0.059)	(0.138)	(0.151)	(0.133)
Joint Democracy	-0.868***	-0.311	-0.369	-4.220
	(0.087)	(0.211)	(0.231)	(71.200)
Min. GDP per Capita in Dyad	0.109***	-0.228***	-0.281***	-0.079**
	(0.016)	(0.038)	(0.041)	(0.025)
Num.Obs.	107798	2348	2348	2348

Table 5: A Dangerous Dyad-ish Analysis of Inter-state Conflict

Note:

I'm aware that there's a separation problem in Model 5 for joint democracy. Stay out of my mentions.

+ $p < 0.1$, * $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

How to Interpret a Regression Table Like This

1. Find the variable(s) of interest.
2. Look for direction (positive/negative)
3. Look for "stars" (to determine statistical significance)

Table 6: The Important Results of Our Analysis (Omitting the Control Variables)

	Conf. Onset	Min. Fatalities	Max. Fatalities	Dyadic War
Land Contiguity	1.280***	0.035	0.003	-0.055
	(0.065)	(0.180)	(0.197)	(0.128)
Other Contiguity	0.540***	-0.307	-0.326	-0.324*
	(0.093)	(0.211)	(0.232)	(0.165)
Num.Obs.	107798	2348	2348	2348

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Table 7: The Important Results of Our Analysis (Omitting the Control Variables and Color Coded)

	Conf. Onset	Min. Fatalities	Max. Fatalities	Dyadic War
Land Contiguity	1.280***	0.035	0.003	-0.055
	(0.065)	(0.180)	(0.197)	(0.128)
Other Contiguity	0.540***	-0.307	-0.326	-0.324*
	(0.093)	(0.211)	(0.232)	(0.165)
Num.Obs.	107798	2348	2348	2348

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Table 8: The Important Results of Our Analysis (Omitting the Control Variables, Color Coded, Identifying Significance)

	Conf. Onset	Min. Fatalities	Max. Fatalities	Dyadic War
Land Contiguity	1.280***	0.035	0.003	-0.055
	(0.065)	(0.180)	(0.197)	(0.128)
Other Contiguity	0.540***	-0.307	-0.326	-0.324*
	(0.093)	(0.211)	(0.232)	(0.165)
Num.Obs.	107798	2348	2348	2348

+ p < 0.1, * p < 0.05, ** p < 0.01, *** p < 0.001

Takeaways

Contiguity is a correlate of confrontation onset, not confrontation escalation (to war).

- Closer states are more likely to have confrontations.
- No real effect of contiguity on confrontation escalation/severity.

If anything, states further from each other are more likely to escalate their confrontations to war.

How Does This Make Sense?

War is a kind of selection effect.

- More powerful states (e.g. hegemons) select into more remote fights.
- There are *a lot* of peculiar wars in terms of distance.
  - e.g. WW1 (e.g. USA-GER), WW2 (e.g. BRA-GER), Chincha Islands War (SPN-CHL), Boxer Rebellion (ITA-CHN), Korean War (SAF-PRK), Vietnam War (AUS-DRV), Gulf War (CAN-IRQ), Iraq War (POL-IRQ), Invasion of Afghanistan (GRC-AFG).

Basically: if you're going to select into a war, distance won't be much of an issue.

The Simulated Probability of Confrontation Onset, by Contiguity Relationship

The percentage change in probability of confrontation onset from no contiguity to water contiguity is 72%. From water to land: 105%
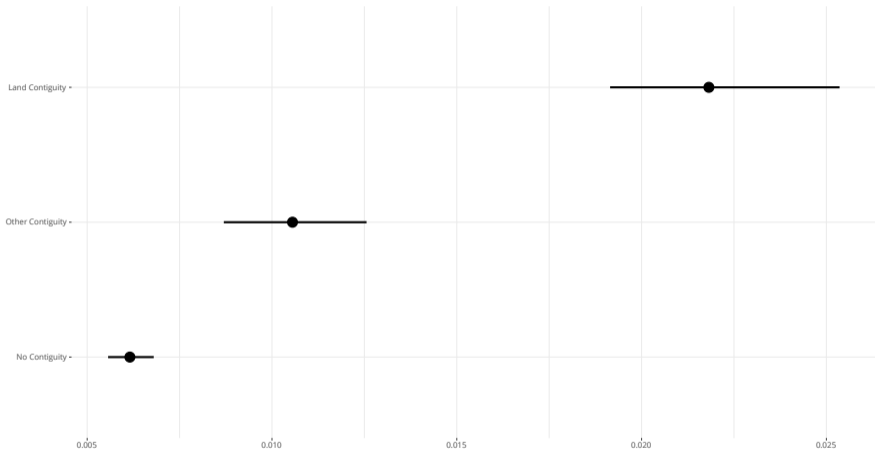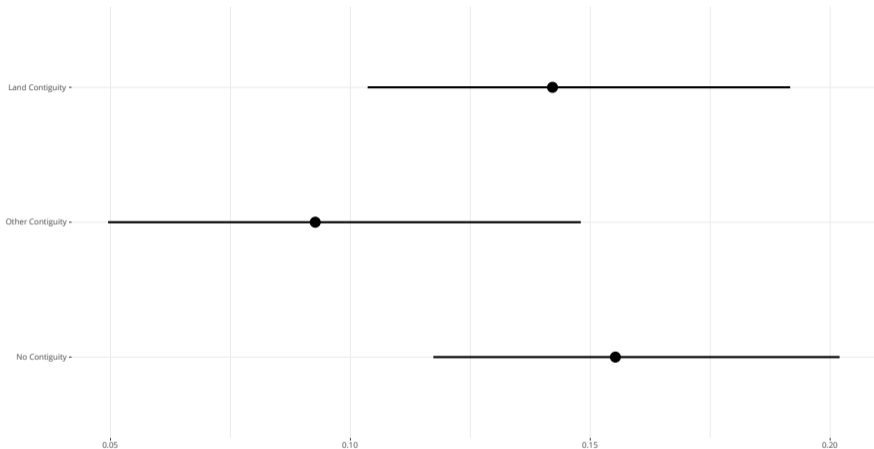
Mean Probability of Confrontation Onset (with 95% Intervals)

Simulation by way of multivariate normal distribution, given Model 1 in this presentation.

The Simulated Probability of Confrontation Escalation to Dyadic War, by Contiguity Relationship

Contiguity is a correlate of confrontations, not necessarily a 'correlate of war'.

Mean Probability of Confrontation Escalation to Dyadic War (with 95% Intervals)

Simulation by way of multivariate normal distribution, given Model 5 in this presentation.

Conclusion

We'll riff on what's wrong with the contiguity argument next session, but:

- Contiguity is often a starting point for orienting our study of inter-state conflicts.
- Traditionally: the "strongest correlate of war."

However, this isn't quite right.

- Contiguity arguments are short on the important questions of "how?" and "why?"
- Empirically: contiguity is a correlate of confrontation onset, not escalation/severity.

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