The Geography of Inter-State Resource Wars

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Figthing over Natural Resources

- Lots of anecdotal evidence
  - Iraq-Kuwait, N.Yemen-S.Yemen, Falklands, Iraq-Iran, Nigeria-Cameroon (Bakassi Peninsula), Ecuador-Peru (Cordillera del Condor), Bolivia-Chile-Peru (War of Pacific)...
- This paper:
  - Do natural resources make war more likely?
  - Does distance from the bilateral border matter?
- Application:
  - Theory: any resource
  - Empirics: oil

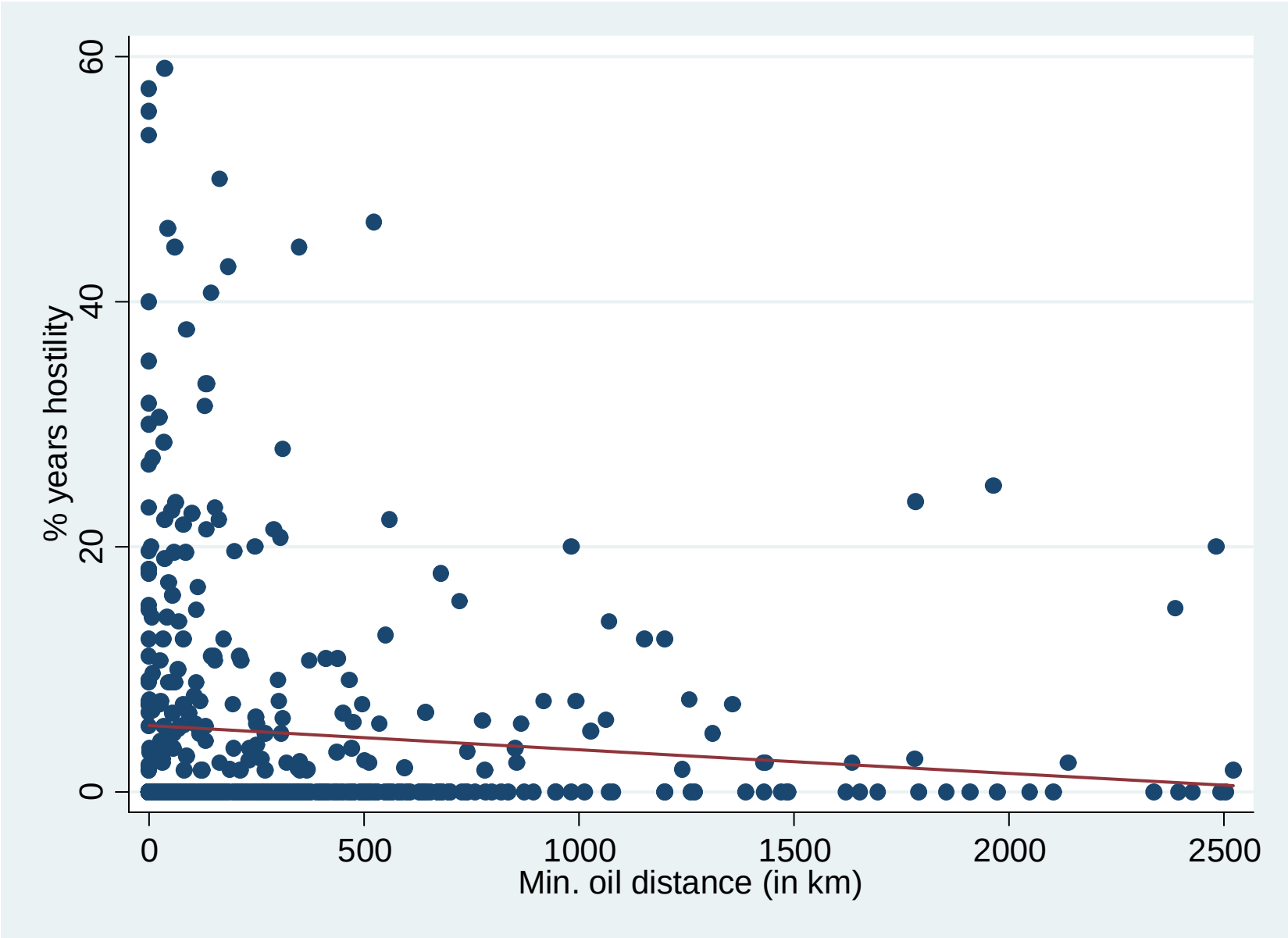


Figure: Unconditional correlation between minimum oil distance and hostility

Contributions

- Novel model of international war with geography
- Novel dataset: for each country pair (sharing a border), minimum distance from border of each countries' oil wells
- As predicted by model:
  - War more likely when oil is present
  - War is most likely when one country has oil close to the border, and the other country has no oil, or oil far from the border
  - Resource asymmetry drives conflict!

Existing Literature

- Fighting intensity (Hirshleifer, Skaperdas, ...)
- Bargaining breakdown (Fearon, Powell, ...)
- Motives for conflict (Martin et al., Rohner et al., Conconi et al., Chassang and Padró, ...)
- Conflict/extraction dynamic interaction (Acemoglu et al., 2011)

Summary of theoretical model

- Two countries with linear geography
- By triggering war, a country can stochastically change the border, and hope to grab the opponent's oil
- When at least one country wants war, it takes place
- When oil is unevenly spread (e.g. only one has oil, close to the border), the country without oil or with oil far from the border has powerful incentives to attack (has little to lose, a lot to gain) and conflict is frequent
- In the absence of oil, with oil far from the border, or with symmetric oil holdings both countries have relatively low incentives for attacks, and peace is frequent

Model

- Linear geography $(-\infty, \infty)$, two countries A, B
- Border initially normalized at origin
- Resource flows R_A, R_B; $R_i = \{0, 1\}$
- Resource location (if present) $G_A < 0$, $G_B > 0$
- One-period model

Outcomes

- Two outcomes: conflict and peace
- In case of peace, no border change
- In case of conflict, new border Z
- **Assumption 1:** Z is a random variable with domain $\mathbb{R}$, density f, cdf F, and mean $\bar{Z}$

Payoffs

- Under peace:

$$\begin{aligned} U_A^P &= R_A \\ U_B^P &= R_B \end{aligned}$$

- Under conflict:

$$U_A^C = R_A I(Z > G_A) + R_B I(Z > G_B) + b_A$$

$$U_B^C = R_A I(Z < G_A) + R_B I(Z < G_B) + b_B$$

- **Assumption 2:** (i) b_A and b_B are i.i.d. random variables with domain $\mathbb{R}$, density h, cdf H (ii) $h(b)/h(-b) < H(b)/H(-b)$ for $b > 0$ (examples: unimodal and symmetric with mean $\bar{b} < 0$, unimodal and log-concave with negative mode)

Time line

1. Independent realizations of b_A, b_B
2. Each country decides whether or not to begin a conflict
3. If at least one country begins a conflict, there is conflict
4. In case of conflict, Nature draws Z
5. Payoffs are distributed

Conditions for Peace

- Both must hold

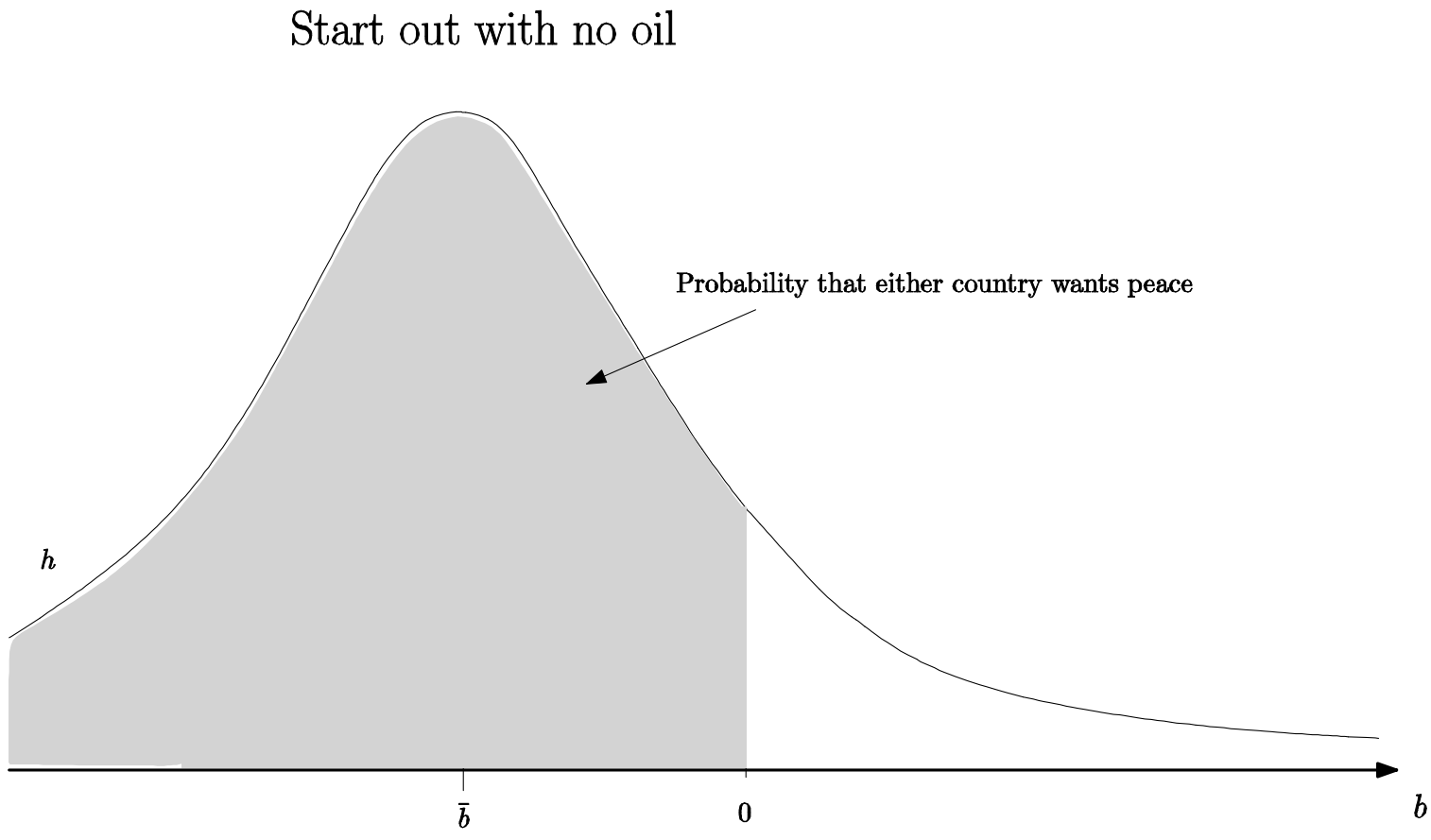
$$\begin{aligned} b_A + R_B[1 - F(G_B)] &\leq R_A F(G_A) \\ b_B + R_A F(G_A) &\leq R_B\,[1 - F(G_B)] \end{aligned}$$

- Remark:
  - $R_A = 0$ isomorphic to $G_A \to -\infty$
  - $R_B = 0$ isomorphic to $G_B \to \infty$
- Solve for $P(G_A, G_B)$

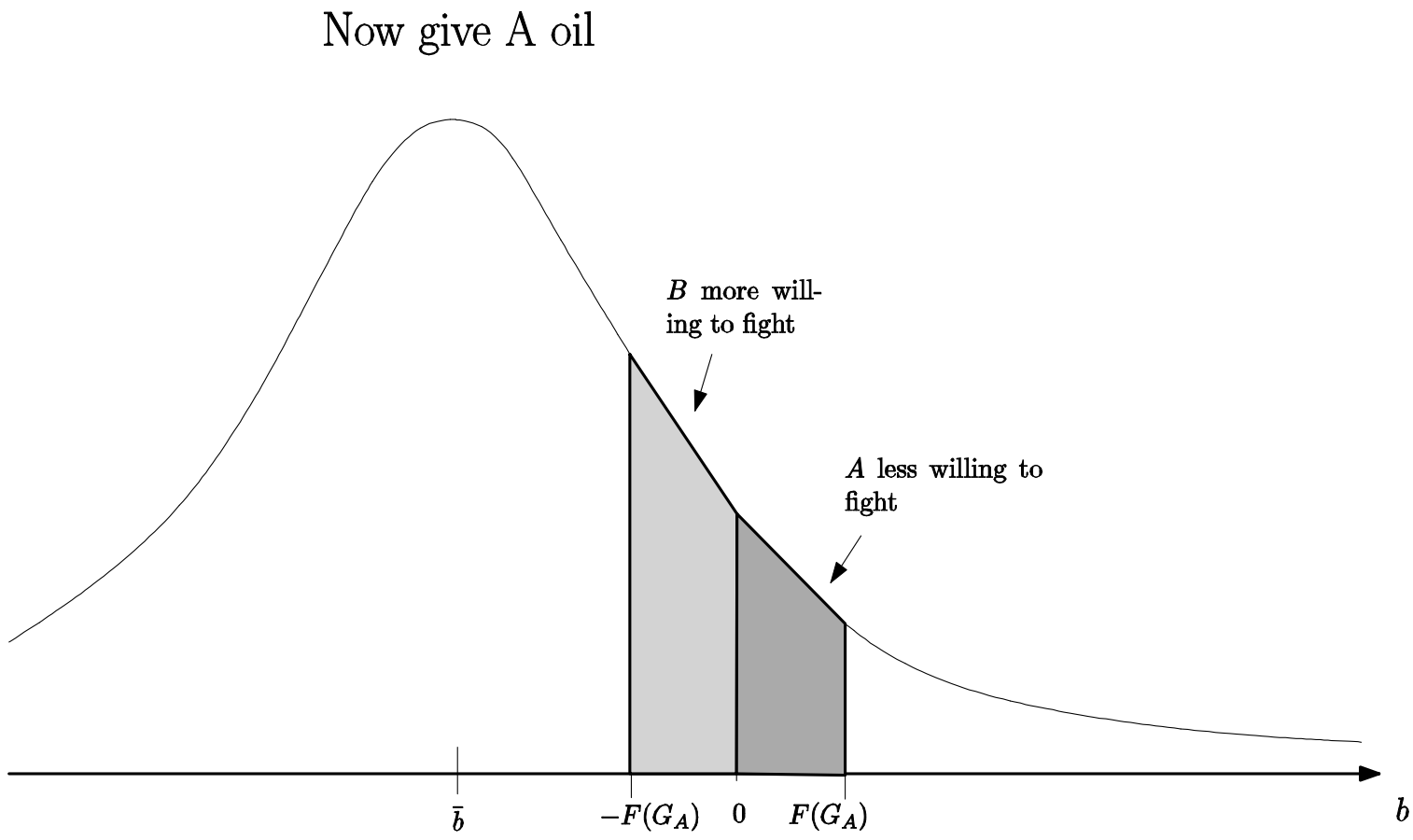
Prediction (i)

$$P(G_A, \infty) \leq P(-\infty, \infty)$$

Intuition


Start out with no oil
Probability that either country wants peace
h
$\bar{b}$
0
b

Intuition (cont.)

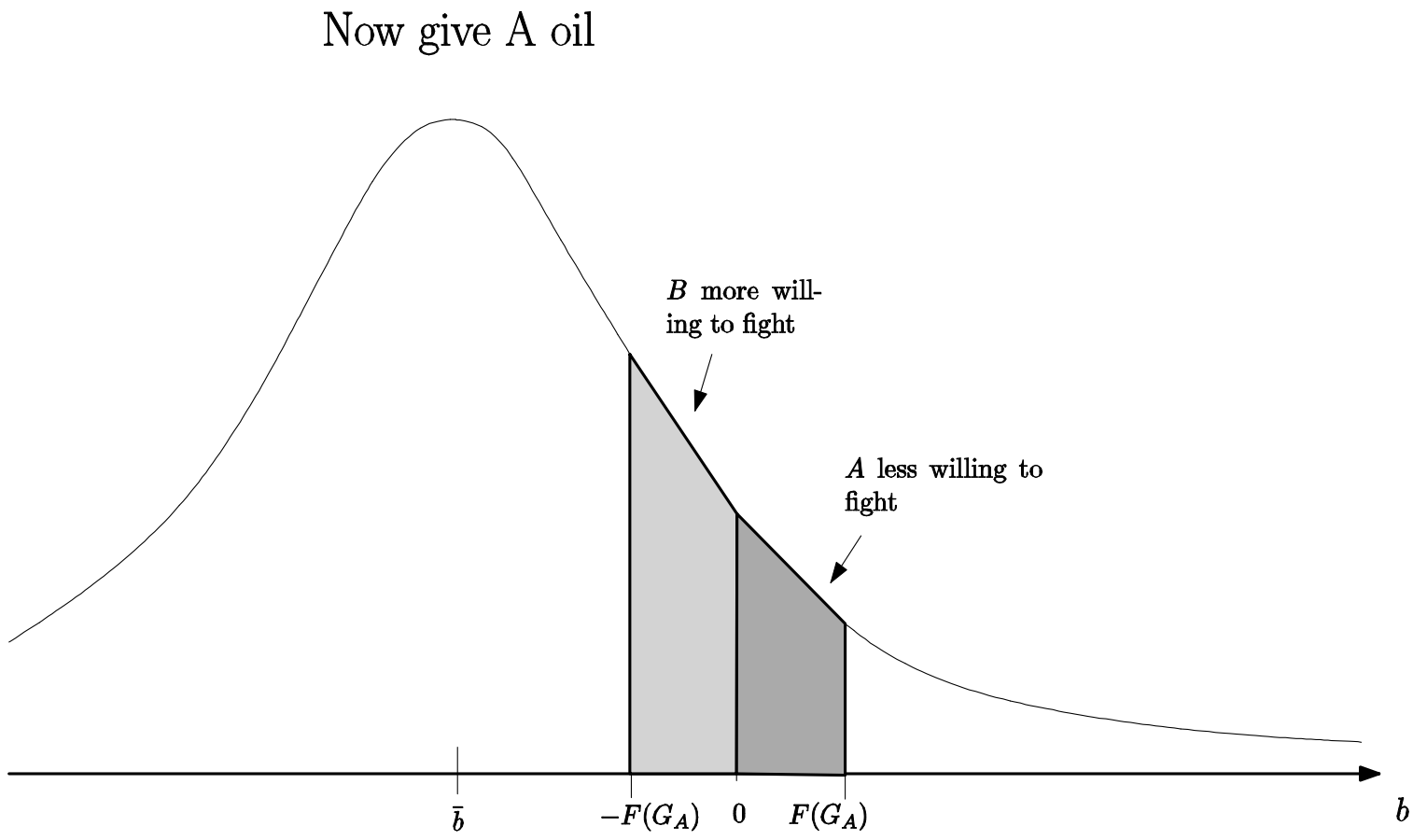


- $P_1 < P_0$
- $P_1'(G_A) < 0$

Prediction (ii)

$$\partial P(G_A, \infty)/\partial G_A \leq 0$$

Intuition (cont.)



- $P_1 < P_0$
- $P_1'(G_A) < 0$

Prediction (iii)

$$P(G_A, G_B) \leq P(-\infty, \infty)$$

Prediction (iv)

$$P(G_A, \infty) \leq P(G_A, G_B) \text{ if and only if } 1 - F(G_B) \leq 2F(G_A)$$

Prediction (v)

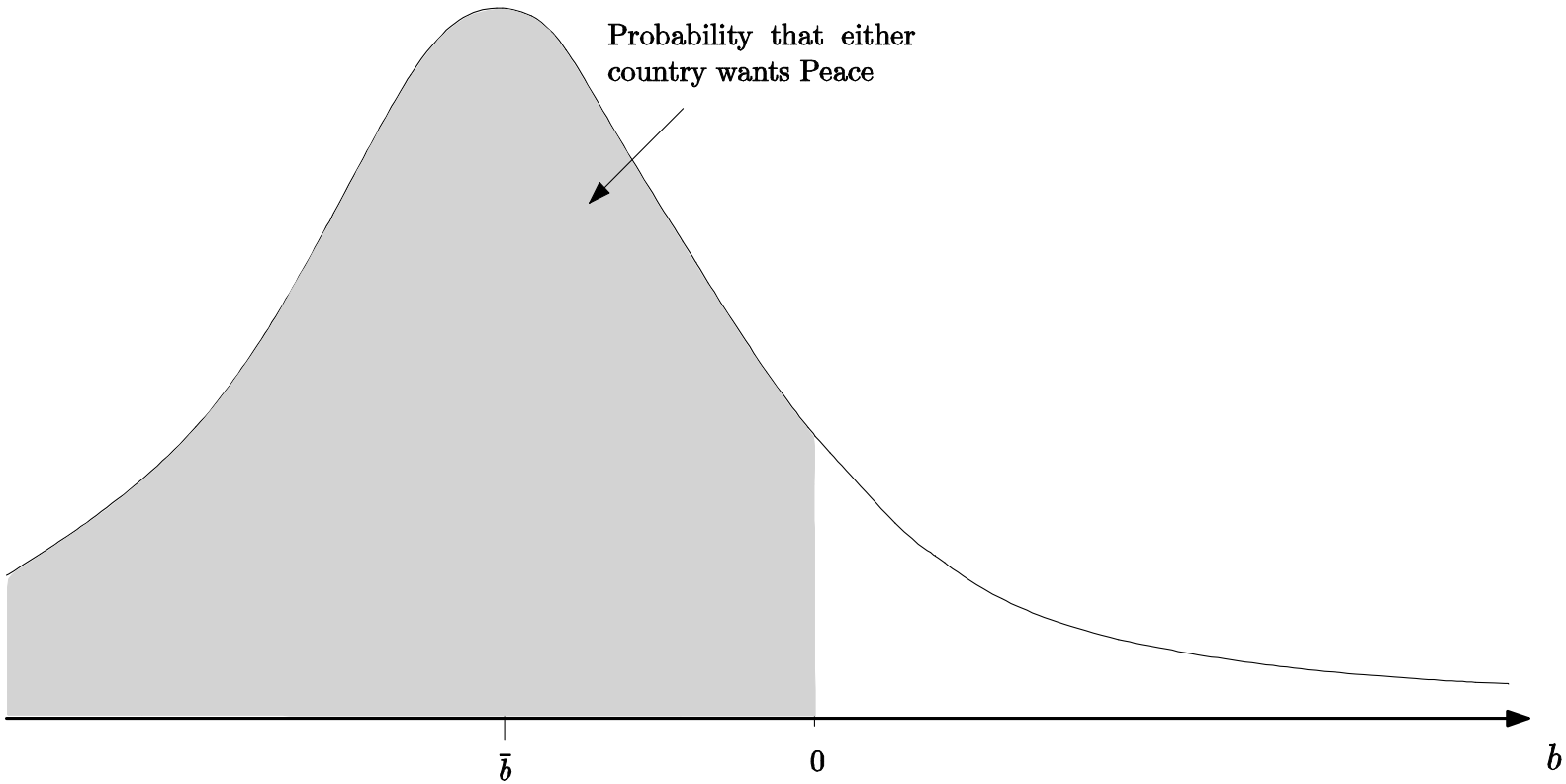
- $\partial P(G_A, G_B)/\partial G_A \leq 0$ if and only if $1 - F(G_A) - F(G_B) \leq 0$
- Corollary: if $\bar{Z} = 0$ and f symmetric, then

$$\frac{\partial P(G_A, G_B)}{\partial G_A} \leq 0 \text{ iff } |G_A| \leq G_B$$

Intuition

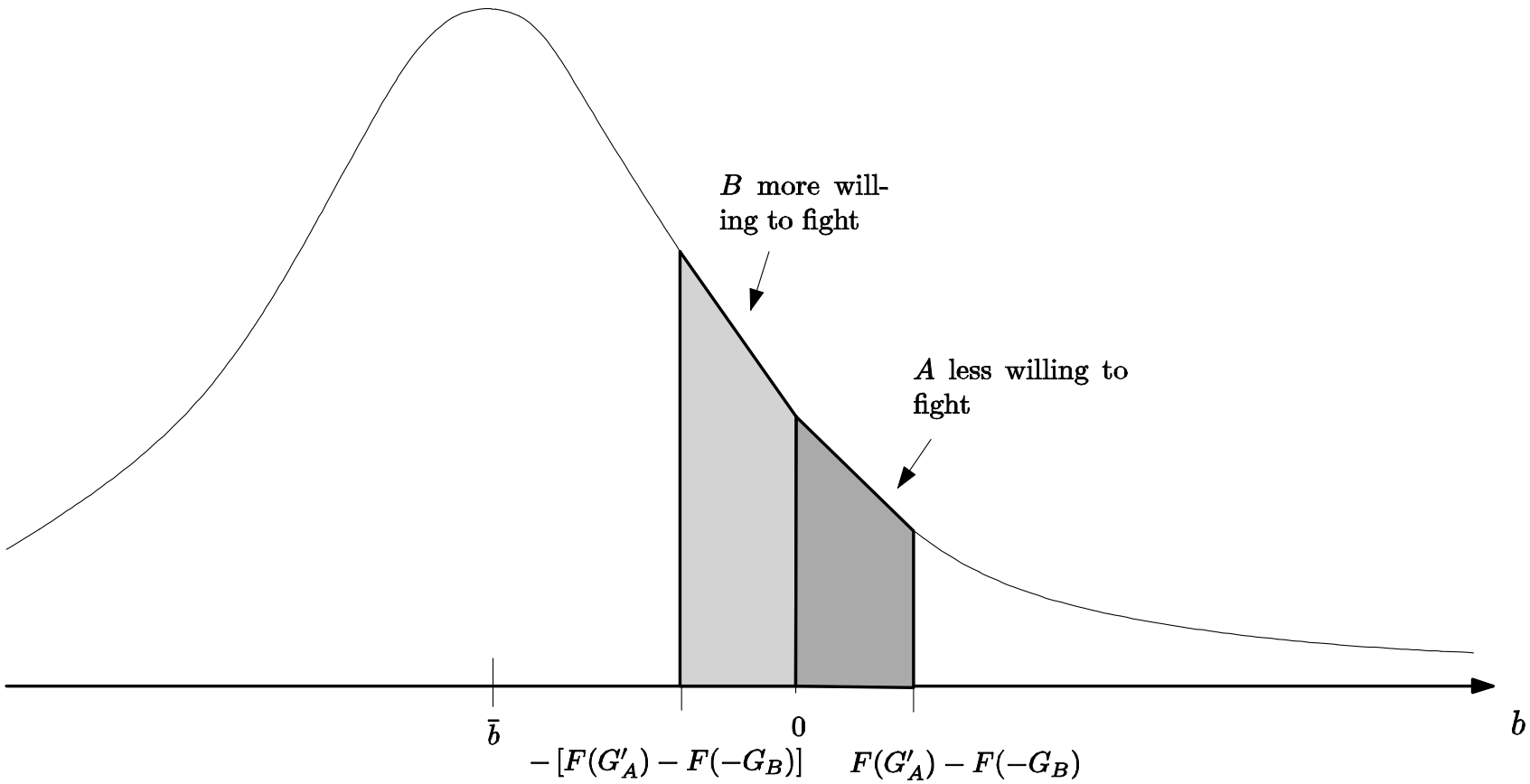
Start out with symmetry

$$F(G_A) = F(-G_B)$$



Intuition (cont.)

Break symmetry: increase G_A



Empirical Implementation

- New country-pair panel dataset
  - For each pair, for each country, and for each year, measure distance of closest oil to the border
- Predictive regressions
  - Effect of presence and distance of oil on conflict

Data

- Cross-section of around 600 "border-sharing" country pairs (according to CoW)
  - Share a terrestrial border
  - And/or their coastlines are "near" each other (max 400 miles)
- Annual data, 1946-2008

Dependent Variables

- War
  - sustained combat, involving organized armed forces, resulting in a minimum of 1,000 battle-related combatant fatalities within a twelve month period
  - 0.4% of observations
- Hostility = War + Use of Force
  - Where Use of Force = Blockade, Occupation of territory, Seizure, Attack, Clash, Declaration of war, or Use of CBR weapons
  - 5.7% of observations
- Hostility345 = Hostility + "Show of force, Alert, Nuclear alert, Mobilization, Fortify border, Border violation." (7.2%)
- Directed dyad outcomes (Revisionist, Attacker, Initiator)
- Border Change

Main explanatory variables

- Constructed by us from geo-referenced petroleum (PETRODATA) and border [Weidman et al. (2010)] dataset
- Endowments
  - One: 1 if one and only one country in dyad has oil
  - Both: 1 if both have oil
- Distances
  - One x Dist: distance when only one has oil
  - Both x MinDist: min distance when both have oil
  - Both x MaxDist: max distance when both have oil

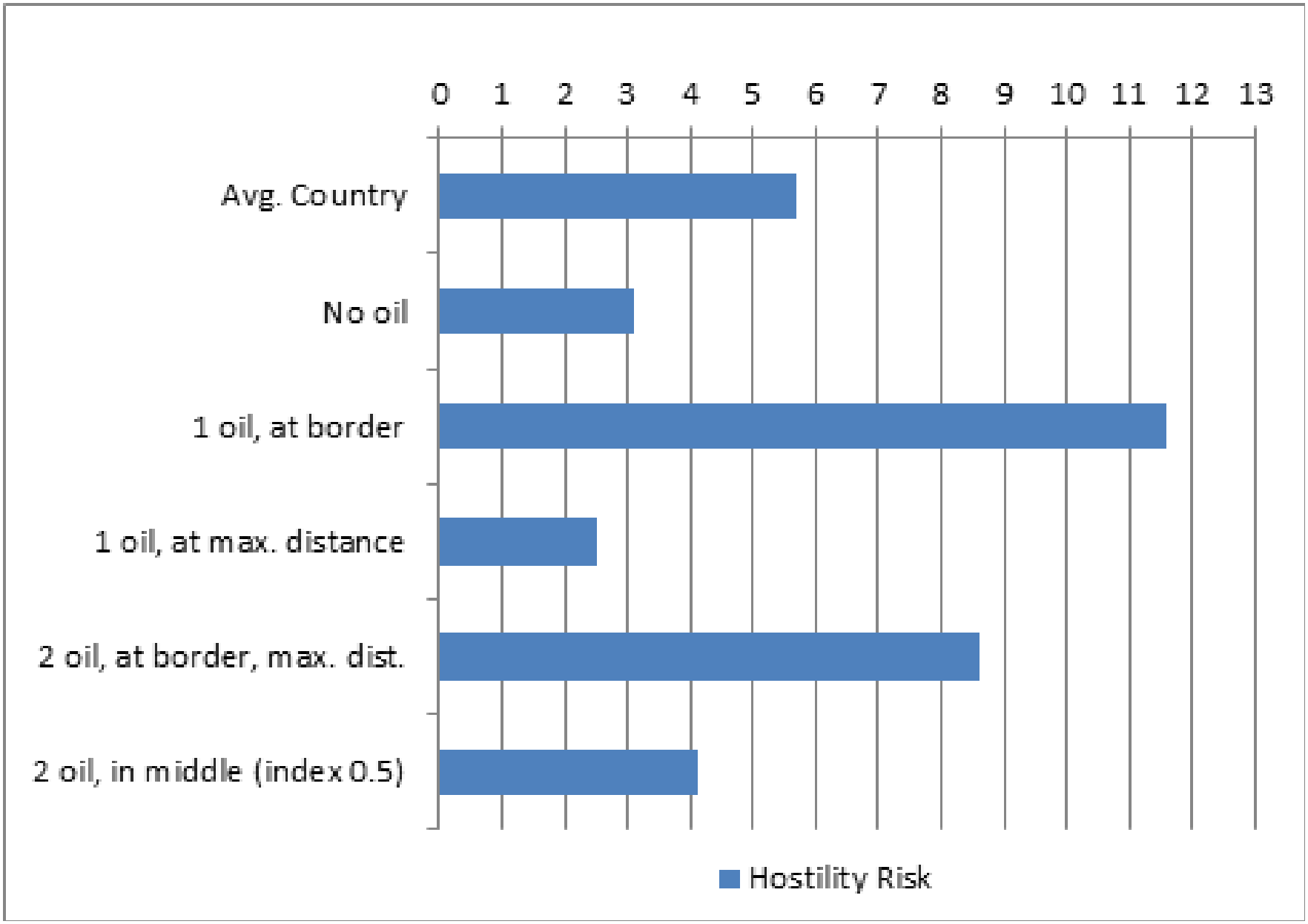
Regression specification

$$\begin{aligned}\text{Hostility}_{d,t+1} &= \alpha + \beta \text{One}_{dt} + \delta \text{Both}_{dt} + \gamma \left(\text{One} \times \text{Dist}\right)_{dt} \\ &\quad + \eta \left(\text{Both} \times \text{MinDist}\right)_{dt} + \omega \left(\text{Both} \times \text{MaxDist}\right)_{dt} \\ &\quad + \mathbf{X}'_{dt}\boldsymbol{\xi} + u_{d,t}\end{aligned}$$

- Country fixed effects, year effects, and robust standard errors (clustered at dyad level)
- Controls: (minimum and maximum of) land area, population, GDP per capita, democracy score, and capabilities; civil war in one country, civil war in both countries, bilateral trade / GDP, defensive pact, one country OPEC member, both countries OPEC members, years since last hostility in dyad

	Dependent variable: Hostility								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
One	0.034	0.049*	0.085***	0.087	0.143***	0.136***	0.048	0.058*	0.141***
	(0.032)	(0.027)	(0.030)	(0.054)	(0.048)	(0.037)	(0.042)	(0.033)	(0.044)
One x Dist	-0.050	-0.073***	-0.091***	-0.107*	-0.138***	-0.128***	-0.079*	-0.103***	-0.144***
	(0.035)	(0.026)	(0.027)	(0.056)	(0.048)	(0.036)	(0.044)	(0.033)	(0.041)
Both	0.022	0.034	0.055*	0.023	0.110***	0.079**	0.009	0.020	0.058*
	(0.021)	(0.029)	(0.028)	(0.030)	(0.035)	(0.031)	(0.024)	(0.032)	(0.033)
Both x MinDist	-0.077**	-0.105***	-0.092***	-0.088*	-0.107**	-0.064*	-0.102***	-0.122***	-0.128***
	(0.035)	(0.030)	(0.029)	(0.047)	(0.051)	(0.033)	(0.038)	(0.032)	(0.036)
Both x MaxDist	0.026	0.016	0.002	0.048	0.012	-0.012	0.059	0.047	0.041
	(0.040)	(0.030)	(0.029)	(0.065)	(0.065)	(0.044)	(0.043)	(0.034)	(0.038)
Type Oil	All	All	All	Offshore	Offshore	Offshore	Onshore	Onshore	Onshore
Country FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Add. Controls	No	No	Yes	No	No	Yes	No	No	Yes
Observations	19962	19962	11401	19962	19962	11401	19962	19962	11401
R-squared	0.019	0.145	0.158	0.020	0.145	0.155	0.021	0.146	0.160

Note: The unit of observation is a country pair in a given year. The sample covers all direct contiguous country pairs of the Correlates of War list and the years 1946-2001. OLS regressions with intercept in all columns. Significance levels *** p<0.01, ** p<0.05, * p<0.1. In all columns robust standard errors clustered at the country pair level in parenthesis. All independent variables are taken as first lag. All specifications control for minimum and maximum land areas and annual time dummies (not displayed). In addition, columns 2, 3, 5, 6, 8, and 9 include country fixed effects for each country of the dyad. In addition, columns 3, 6, and 9 include the following set of unreported control variables: Minimum population, maximum population, minimum GDP per capita, maximum GDP per capita, minimum democracy score, maximum democracy score, minimum capabilities, maximum capabilities, dummy for one country having civil war, dummy for both countries having civil war, bilateral trade / GDP, defensive pact, dummy for one country being OPEC member, dummy for both countries being OPEC member, and years since the last hostility in the country pair.


0
1
2
3
4
5
6
7
8
9
10
11
12
13
Avg. Country
No oil
1 oil, at border
1 oil, at max. distance
2 oil, at border, max. dist.
2 oil, in middle (index 0.5)
Hostility Risk

	Dependent variable: War								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
One	0.005	0.008	0.018***	0.026*	0.029*	0.041***	0.007	0.013	0.021**
	(0.008)	(0.010)	(0.007)	(0.016)	(0.016)	(0.015)	(0.010)	(0.011)	(0.008)
One x Dist	-0.007	-0.010	-0.012**	-0.030*	-0.032**	-0.040***	-0.011	-0.016	-0.018**
	(0.008)	(0.008)	(0.005)	(0.017)	(0.016)	(0.015)	(0.010)	(0.010)	(0.007)
Both	0.004	0.009	0.021**	-0.005**	0.003	0.009	0.005	0.012	0.018**
	(0.006)	(0.009)	(0.009)	(0.002)	(0.007)	(0.007)	(0.006)	(0.009)	(0.009)
Both x MinDist	-0.003	-0.008*	-0.008	0.001	0.006	0.001	-0.004	-0.008**	-0.009
	(0.005)	(0.005)	(0.006)	(0.003)	(0.006)	(0.005)	(0.005)	(0.004)	(0.006)
Both x MaxDist	-0.004	-0.005	-0.007	0.001	-0.015**	-0.008	-0.005	-0.005	-0.007
	(0.007)	(0.006)	(0.008)	(0.002)	(0.008)	(0.007)	(0.007)	(0.006)	(0.009)
Type Oil	All	All	All	Offshore	Offshore	Offshore	Onshore	Onshore	Onshore
Country FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Add. Controls	No	No	Yes	No	No	Yes	No	No	Yes
Observations	23768	23768	11401	23768	23768	11401	23768	23768	11401
R-squared	0.005	0.073	0.101	0.009	0.075	0.107	0.006	0.073	0.102

Note: The unit of observation is a country pair in a given year. The sample covers all direct contiguous country pairs of the Correlates of War list and the years 1946-2008. OLS regressions with intercept in all columns. Significance levels *** p<0.01, ** p<0.05, * p<0.1. In all columns robust standard errors clustered at the country pair level in parenthesis. All independent variables are taken as first lag. All specifications control for minimum and maximum land areas and annual time dummies (not displayed). In addition, columns 2, 3, 5, 6, 8, and 9 include country fixed effects for each country of the dyad. In addition, columns 3, 6, and 9 include the following set of unreported control variables: Minimum population, maximum population, minimum GDP per capita, maximum GDP per capita, minimum democracy score, maximum democracy score, minimum capabilities, maximum capabilities, dummy for one country having civil war, dummy for both countries having civil war, bilateral trade / GDP, defensive pact, dummy for one country being OPEC member, dummy for both countries being OPEC member, and years since the last war in the country pair.

	Dependent variable: Hostility (coded as 1 for conflict intensity levels 3,4 and 5)								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
One	0.036	0.051*	0.089***	0.101*	0.167***	0.180***	0.049	0.054	0.145***
	(0.033)	(0.030)	(0.032)	(0.060)	(0.051)	(0.042)	(0.044)	(0.037)	(0.043)
One x Dist	-0.059*	-0.083***	-0.099***	-0.131**	-0.173***	-0.169***	-0.086*	-0.111***	-0.151***
	(0.035)	(0.027)	(0.028)	(0.063)	(0.051)	(0.040)	(0.045)	(0.035)	(0.041)
Both	0.033	0.037	0.064*	0.020	0.106***	0.097***	0.020	0.019	0.062
	(0.024)	(0.033)	(0.033)	(0.035)	(0.040)	(0.034)	(0.027)	(0.036)	(0.038)
Both x MinDist	-0.092**	-0.131***	-0.113***	-0.112*	-0.139**	-0.087**	-0.127***	-0.152***	-0.161***
	(0.041)	(0.035)	(0.033)	(0.058)	(0.060)	(0.035)	(0.048)	(0.042)	(0.049)
Both x MaxDist	0.025	0.021	0.002	0.071	0.034	0.004	0.069	0.059	0.057
	(0.047)	(0.035)	(0.031)	(0.076)	(0.073)	(0.043)	(0.054)	(0.042)	(0.050)
Type Oil	All	All	All	Offshore	Offshore	Offshore	Onshore	Onshore	Onshore
Country FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Add. Controls	No	No	Yes	No	No	Yes	No	No	Yes
Observations	19962	19962	11401	19962	19962	11401	19962	19962	11401
R-squared	0.024	0.155	0.177	0.025	0.155	0.175	0.027	0.156	0.179

Note: The unit of observation is a country pair in a given year. The sample covers all direct contiguous country pairs of the Correlates of War list and the years 1946-2001. OLS regressions with intercept in all columns. Significance levels *** p<0.01, ** p<0.05, * p<0.1. In all columns robust standard errors clustered at the country year level in parenthesis. All independent variables are taken as first lag. All specifications control for minimum and maximum land areas and annual time dummies (not displayed). In addition, columns 2, 3, 5, 6, 8, and 9 include country fixed effects for each country of the dyad. In addition, columns 3, 6, and 9 include the following set of unreported control variables: Minimum population, maximum population, minimum GDP per capita, maximum GDP per capita, minimum democracy score, maximum democracy score, minimum capabilities, maximum capabilities, dummy for one country having civil war, dummy for both countries having civil war, bilateral trade / GDP, defensive pact, dummy for one country being OPEC member, dummy for both countries being OPEC member, and years since the last hostility in the country year.

	Dependent variable: Hostility							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
One	0.060*	0.052***	2.800***	1.162**	0.783*		0.074**	0.085***
	(0.034)	(0.018)	(1.006)	(0.452)	(0.451)		(0.029)	(0.030)
One x Dist	-0.005**	-0.009***	-3.297***	-1.458***	-0.955**	-0.093***	-0.082***	-0.092***
	(0.002)	(0.002)	(0.851)	(0.389)	(0.473)	(0.028)	(0.026)	(0.027)
Both	0.061*	0.056**	1.018	0.377	0.370	-0.029	0.052*	0.056**
	(0.032)	(0.025)	(0.631)	(0.297)	(0.306)	(0.029)	(0.027)	(0.028)
Both x MinDist	-0.006***	-0.012**	-2.185***	-1.169***	-1.264***	-0.096***	-0.055**	-0.091***
	(0.002)	(0.005)	(0.503)	(0.250)	(0.482)	(0.030)	(0.024)	(0.029)
Both x MaxDist	-0.001	-0.006**	0.206	0.167	0.168	0.003	-0.027	-0.000
	(0.002)	(0.003)	(0.500)	(0.257)	(0.448)	(0.029)	(0.026)	(0.029)
Sample	All	All	All	All	All	Only I1, I2	w/o Israel	w/o Dist. 0
Estimator	OLS	OLS	Logit	Probit	ReLogit	OLS	OLS	OLS
Country FE and TE	Yes	Yes	Yes	Yes	NO	Yes	Yes	Yes
Scale distances	Nat.log.	in 100 km	Standard	Standard	Standard	Standard	Standard	Standard
Observations	11401	11401	8939	8939	11401	9937	11256	11392
R-squared	0.154	0.161	0.318	0.308	0.228	0.170	0.155	0.158

Note: The unit of observation is a country pair in a given year. The sample covers all direct contiguous country pairs of the Correlates of War list and the years 1946-2001. Significance levels *** p<0.01, ** p<0.05, * p<0.1. In all columns robust standard errors clustered at the country pair level in parenthesis. The oil variables are constructed using all oil fields (onshore and offshore). All independent variables are taken as first lag. All specifications control for intercept, minimum and maximum land area, minimum population, maximum population, minimum GDP per capita, maximum GDP per capita, minimum democracy score, maximum democracy score, minimum capabilities, maximum capabilities, dummy for one country having civil war, dummy for both countries having civil war, bilateral trade / GDP, defensive pact, dummy for one country being OPEC member, dummy for both countries being OPEC member, and years since the last hostility in the dyad. All columns, with the exception of the ReLogit regression in column 5, also include country fixed effects and annual time dummies.

	Dependent variable: Hostility			
	(1)	(2)	(3)	(4)
One	0.103***	0.027	0.098***	0.090**
	(0.038)	(0.080)	(0.038)	(0.036)
One x Dist	-0.122***	-0.107***	-0.117***	-0.102***
	(0.033)	(0.033)	(0.033)	(0.034)
Both	0.048	-0.107	0.043	0.053
	(0.038)	(0.140)	(0.038)	(0.033)
Both x MinDist	-0.077***	-0.088***	-0.079***	-0.072***
	(0.025)	(0.026)	(0.025)	(0.025)
Both x MaxDist	-0.011	0.000	-0.006	-0.014
	(0.028)	(0.028)	(0.027)	(0.028)
Oil Prod.(max)	-0.002			
	(0.001)			
Oil Prod.(min)	-0.006*			
	(0.003)			
Oil Res.(max)		-0.011		
		(0.062)		
Oil Res.(min)		0.066		
		(0.077)		
Oil/GDP(max)			-0.042	
			(0.038)	
Oil/GDP(min)			-0.133**	
			(0.067)	
Oil Prod. (further)				0.001
				(0.001)
Oil Prod. (closer)				-0.001
				(0.001)
Country FE, TE, all controls	Yes	Yes	Yes	Yes
Observations	9331	6206	8991	9814
R-squared	0.167	0.197	0.161	0.161

Note: The unit of observation is a country pair in a given year. The sample covers all direct contiguous country pairs of the Correlates of War list and the years 1946-2001. Significance levels *** p<0.01, ** p<0.05, * p<0.1. In all columns robust standard errors clustered at the country pair level in parenthesis. The oil variables are constructed using all oil fields (onshore and offshore). All independent variables are taken as first lag. OLS with intercept in all columns. All specifications control for minimum land area, maximum land area, minimum population, maximum population, minimum GDP per capita, maximum GDP per capita, minimum democracy score, maximum democracy score, minimum capabilities, maximum capabilities, dummy for one country having civil war, dummy for both countries having civil war, bilateral trade / GDP, defensive pact, dummy for one country being OPEC member, dummy for both countries being OPEC member, and years since the last hostility in the country pair, country fixed effects and annual time dummies.

	Dependent variable: Hostility							
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
One	0.052*	0.097***	0.019	0.055**	0.130***	0.113***	0.072**	0.219*
	(0.029)	(0.035)	(0.027)	(0.025)	(0.037)	(0.036)	(0.031)	(0.122)
One x Dist	-0.079***	-0.112***	-0.042*	-0.073***	-0.127***	-0.101***	-0.061**	-0.210*
	(0.027)	(0.033)	(0.024)	(0.023)	(0.035)	(0.028)	(0.025)	(0.123)
Both	0.045*	0.050*	0.007	0.017	0.164***	0.124**	0.154***	0.108**
	(0.026)	(0.028)	(0.023)	(0.027)	(0.052)	(0.051)	(0.056)	(0.047)
Both x MinDist	-0.100***	-0.050*	-0.083***	-0.069***	-0.135**	-0.071	-0.157**	-0.038
	(0.030)	(0.025)	(0.028)	(0.025)	(0.062)	(0.043)	(0.073)	(0.041)
Both x MaxDist	-0.011	-0.037	0.026	0.007	-0.018	-0.057	0.016	-0.056
	(0.038)	(0.030)	(0.030)	(0.027)	(0.071)	(0.057)	(0.081)	(0.045)
Sample	No border changes (bc) after oil discovery		No bc after oil disc., historical borders older than oil disc. or 1816		Removed 50% with least "snaky" border		Only country pairs without land border	
Additional controls	No	Yes	No	Yes	No	Yes	No	Yes
Observations	16504	9572	11771	7290	9907	5481	8168	4423
R-squared	0.151	0.151	0.231	0.147	0.187	0.200	0.172	0.166

Note: The unit of observation is a country pair in a given year. The sample covers all direct contiguous country pairs of the Correlates of War list (unless noted otherwise) and the years 1946-2001. OLS regressions with intercept in all columns. Significance levels *** p<0.01, ** p<0.05, * p<0.1. In all columns robust standard errors clustered at the country pair level in parenthesis. All independent variables are taken as first lag. All specifications use the same unreported controls as the benchmark specification of column (2) of Table 1: Country fixed effects for each country of the country pair, annual time dummies, and minimum and maximum land areas. In addition, the specifications (2), (4), (6) and (8) also include all unreported controls from column (3) of Table 1: Minimum and maximum population, minimum and maximum GDP per capita, minimum and maximum democracy scores, minimum and maximum capabilities, dummy for one country having civil war, dummy for both countries having civil war, bilateral trade / GDP, defensive pact, dummy for one country being OPEC member, dummy for both countries being OPEC member, and years since the last hostility in the country pair.

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
	State A revisionist			State A attacker			State A initiator		
Oil A	-0.022	-0.044**	-0.029*	-0.006	-0.022	-0.041***	-0.006	-0.024	-0.041***
	(0.014)	(0.019)	(0.017)	(0.015)	(0.017)	(0.015)	(0.015)	(0.016)	(0.015)
Oil A x MinDist A	0.033**	0.032**	0.039**	0.027*	0.033*	0.038***	0.029*	0.037**	0.039***
	(0.016)	(0.016)	(0.015)	(0.015)	(0.017)	(0.013)	(0.016)	(0.016)	(0.014)
Oil B	0.031*	-0.004	0.003	0.008	-0.007	-0.008	0.004	-0.014	-0.016
	(0.017)	(0.014)	(0.017)	(0.018)	(0.020)	(0.018)	(0.018)	(0.019)	(0.019)
Oil B x MinDist B	-0.035**	-0.025*	-0.019	-0.014	-0.021	-0.022	-0.011	-0.017	-0.014
	(0.017)	(0.014)	(0.014)	(0.017)	(0.017)	(0.017)	(0.018)	(0.017)	(0.017)
Country FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Add. Controls	No	No	Yes	No	No	Yes	No	No	Yes
Observations	19962	19962	11401	19962	19962	11401	19962	19962	11401
R-squared	0.006	0.058	0.095	0.005	0.046	0.054	0.006	0.048	0.059

Note: The unit of observation is a country pair in a given year. The sample covers all direct contiguous country pairs of the Correlates of War list and the years 1946-2001. Significance levels *** p<0.01, ** p<0.05, * p<0.1. In all columns OLS regressions are run, with robust standard errors clustered at the country pair level in parenthesis. All independent variables are taken as first lag. The dependent variable in the columns 1-3 is the dummy of country A being revisionist minus the dummy of country B being revisionist (hence the dependent variable takes values of -1, 0, and 1). The construction of the dependent variable is analogous for columns 4-6 and 7-9 with being attacker, resp. initiator instead of revisionist as underlying variable. All specifications control for land areas of both countries and annual time dummies (not displayed). In addition, columns 2, 3, 5, 6, 8 and 9 include country fixed effects for each country of the country pair. In addition, columns 3, 6, and 9 include the following set of unreported control variables for both countries in the pair: Population, GDP per capita, democracy score, capabilities, dummy for having a civil war, bilateral trade / GDP, defensive pact, dummy for being OPEC member, and years since the last hostility in the country pair.

	(1)	(2)	(3)	(4)
	Dependent variable: Border Change			
Hostility	0.018***		0.015***	
	(0.006)		(0.004)	
War		0.070***		0.064***
		(0.022)		(0.020)
Country FE	No	No	Yes	Yes
Observations	20564	24387	20564	24387
R-squared	0.013	0.014	0.033	0.031

Note: The unit of observation is a country pair in a given year. The sample covers all direct contiguous country pairs of the Correlates of War list and the years 1946-2008. OLS regressions with intercept in all columns. Significance levels *** p<0.01, ** p<0.05, * p<0.1. In all columns robust standard errors clustered at the dyad level in parenthesis. All specifications control for annual time dummies (not displayed).

	Dependent variable: Border change								
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
One	0.002	0.004	0.005*	0.014*	0.017**	0.020*	0.002	0.004	0.005
	(0.002)	(0.003)	(0.003)	(0.007)	(0.007)	(0.010)	(0.002)	(0.003)	(0.004)
One x Dist	-0.002	-0.003	-0.004	-0.016**	-0.019**	-0.021**	-0.003	-0.003	-0.004
	(0.002)	(0.002)	(0.003)	(0.008)	(0.007)	(0.009)	(0.002)	(0.003)	(0.004)
Both	0.006***	0.013***	0.008*	0.006	0.011**	0.003	0.005**	0.011**	0.009
	(0.002)	(0.004)	(0.004)	(0.004)	(0.005)	(0.005)	(0.002)	(0.005)	(0.006)
Both x MinDist	0.000	-0.001	-0.002	0.002	0.000	-0.003	-0.003	-0.004	-0.002
	(0.003)	(0.002)	(0.003)	(0.002)	(0.003)	(0.002)	(0.004)	(0.003)	(0.004)
Both x MaxDist	-0.006*	-0.009***	-0.006	-0.008	-0.010*	0.001	-0.002	-0.006*	-0.007
	(0.003)	(0.003)	(0.004)	(0.006)	(0.006)	(0.003)	(0.004)	(0.003)	(0.005)
Type Oil	All	All	All	Offshore	Offshore	Offshore	Onshore	Onshore	Onshore
Country FE	No	Yes	Yes	No	Yes	Yes	No	Yes	Yes
Add. Controls	No	No	Yes	No	No	Yes	No	No	Yes
Observations	23768	23768	11401	23768	23768	11401	23768	23768	11401
R-squared	0.011	0.027	0.035	0.012	0.027	0.037	0.011	0.026	0.035

Note: The unit of observation is a country pair in a given year. The sample covers all direct contiguous country pairs of the Correlates of War list and the years 1946-2008. OLS regressions with intercept in all columns. Significance levels *** p<0.01, ** p<0.05, * p<0.1. In all columns robust standard errors clustered at the country pair level in parenthesis. All independent variables are taken as first lag. All specifications control for minimum and maximum land areas and annual time dummies (not displayed). In addition, columns 2, 3, 5, 6, 8, and 9 include country fixed effects for each country of the dyad. In addition, columns 3, 6, and 9 include the following set of unreported control variables: Minimum population, maximum population, minimum GDP per capita, maximum GDP per capita, minimum democracy score, maximum democracy score, minimum capabilities, maximum capabilities, dummy for one country having civil war, dummy for both countries having civil war, bilateral trade / GDP, defensive pact, dummy for one country being OPEC member, dummy for both countries being OPEC member, and years since the last border change in the country pair.

Conclusions

- Risk of inter-state disputes to be largest in the presence of natural resource *asymmetry*.
- Future work: Dynamic model, oil field sizes and reserves, other resources.
- Related to our other research on oil unevenness and civil wars, and on strategic mass killings.