Conflict Lecture 15-17

Ben Olken

14.770

Outline

- The puzzle: Why do wars happen?
- Theory:
  - Commitment problems + misaligned interests of leaders and citizens
- Empirics:
  - Democracy and conflict
  - Development/income and conflict
  - Natural resources and conflict
- Empirics on effects of conflict

The puzzle

Fearon (1995): "Rationalist Explanations for War"

- The key puzzle in conflict is why wars happen at all
  - They are extremely costly
  - Thus, you might expect the threat of war to affect bargaining power, but for wars not to happen in equilibrium
  - Yet they do happen
- One answer is that wars are mistakes
  - Grim trigger strategy with mutually assured destruction; with noise you can get wars

Fearon (1995): Reasons for wars

- Irrationalities
- Divergent interests between leaders and citizens
- "Rational reasons"
  - Private information, e.g., about other's willingness to go to war, or problems communicating that information (truthfully)
    - Example: N. Korea underestimated U.S. willingness to defend S. Korea
  - Commitment problems
    - Example: 1939 Winter War between Finland and Soviet Union over tiny islands; Finns worried Stalin would push for more if they conceded
  - Indivisibilities
    - Example: Only one prince can assume the throne $\rightarrow$ Franco-Prussian War
- There are models of these various explanations; we will focus on a model of commitment problems + misaligned incentives between leaders and citizens

Jackson and Morelli (2007): "Political Bias and War"

- Two countries: i and j. Let w_i denote wealth of country i
- Either country can choose to start a war
- If war happens, i wins with probability $p_i(w_i, w_j)$, with $\frac{\partial p_i}{\partial w_i} \geq 0$ and $\frac{\partial p_i}{\partial wj} \leq 0$
  - p_i is called the *Contest Success Function*
- Costs and benefits:
  - War costs fraction $C > 0$ of each country's wealth.
  - If a country wins, it gains fraction $G > 0$ of other country's wealth.
  - So if i wins, i ends up with

$$w_i(1 - C) + Gw_j$$

and if i loses i ends up with

$$w_i(1 - C - G)$$

Potential Coasian bargain

- Suppose everyone knows that the parameters are such that

$$Gw_j - Cw_i > 0$$

  and $p_i \approx 1$ so i will prefer to attack j.
- What will j do? j will prefer to just pay i to avoid the war
- Suppose j offers to pay i

$$Gw_j - Cw_i + \varepsilon$$

  in exchange for a peace treaty (we are assuming ability to commit).
- j prefers this because it is less than $Gw_j + Cw_j$
- i will accept this since this is greater (by ε) than gain from war
- In Jackson-Morelli, breakdown is because sometimes leaders' share of benefits of wars exceed their share of costs, or unenforceable peace treaties (commitment problem)

Leaders

- Leaders:
  - Leader i controls fraction a_i of country's wealth w_i
  - If there is a war and i wins, leader i obtains fraction a_i' of Gw_j
  - Denote $B_i = \frac{a_i'}{a_i}$ to be the "political bias" of country i
- So leader will choose war if

$$a_i' p_i G w_j > \left[C + (1 - p_i) G\right] a_i w_i$$

or equivalently

$$B_i p_i G w_j > \left[C + (1 - p_i) G\right] w_i$$

- So range of parameters where i prefers war:
  - Increasing in B and G, and decreasing in C
  - Depends only on the ratio of $\frac{C}{G}$ and not on levels
  - Depends only on B and not on values of a and a'

Analysis

- Result: If probability of winning is proportional to relative wealth ($p_j = \frac{w_j}{w_j + w_i}$), then with no bias ($B_j = 1$) there will be no war
  - To see this, recall that j prefers war if

$$B_j p_j G w_i > [C + (1 - p_j) G] w_j$$

Substituting yields:

$$B_j \frac{w_j}{w_j + w_i} G w_i > \left[C + \frac{w_i}{w_j + w_i} G \right] w_j$$

and rearranging yields

$$\frac{(B_j - 1) G w_i}{w_i + w_j} > C$$

  - As $w_i \uparrow$, gains from war $\uparrow$ but probability of winning $\downarrow$, and with proportional probability of winning these effects exactly cancel
- With other probability functions, one country (e.g., poorer one if, say, $p_i = p_j = \frac{1}{2}$) can prefer war even without bias if one country has a lot to gain in expectation

Analysis

Case 1: No transfers

- Recall country i wants war if

$$B_i p_i G w_j > \left[C + (1 - p_i)\, G\right] w_i$$

- Proposition 1:
  1. If $B_i = B_j = 1$, then at most one country wants to go to war
     - Intuition: Gains from war are zero-sum, and there are costs
  2. Fixing $\frac{C}{G}$, if B_i and B_j are both sufficiently large, then both countries want to go to war
  3. Fixing B_i and B_j, if $\frac{C}{G}$ is sufficiently large, then neither country wants to go to war
- NB: Transfers to avoid war are only relevant when exactly one country wants to go to war

Analysis

Case 2: Transfers with commitment

- Idea of commitment
  - In domestic context, commitment can be through changes in constitution, ownership of assets
  - In international context, commitment through int'l institutions
- Assumption: Bias for transfer is the same as the bias for war; leader of losing country pays a_i and leader of winning country gets a_i'
- Transfers will avoid a war if

$$p_j\left(1+B_j\frac{w_i}{w_j}\right)-1>\frac{C}{G}>\frac{(1-p_j)\,(B_iB_j-1)}{\left(1+B_j\frac{w_i}{w_j}\right)}$$

  - LHS states that country j wants to go to war with i in absence of transfer (same equation as before)
  - RHS states that country i willing to make a transfer high enough that would induce j to prefer peace

- Derivation of RHS:
  - j prefers peace if

$$(1 - C - G)\, a_j w_j + p_j G \left(a_j w_j + a'_j w_i\right) \leq a_j w_j + a'_j t$$

    which simplifies to

$$p_j G \left(w_j + B_j w_i\right) \leq \left(C + G\right) w_j + B_j t$$

  - Likewise i prefers peace if

$$(1 - p_j)\, G \left(w_i + B_i w_j\right) \leq \left(C + G\right) w_i - t$$

  - Combining these yields the RHS of the previous expression

- Recall transfers will avoid a war if

$$p_j\left(1+B_j\frac{w_i}{w_j}\right)-1>\frac{C}{G}>\frac{(1-p_j)\,(B_iB_j-1)}{\left(1+B_j\frac{w_i}{w_j}\right)}$$

- Propositions 2 and 3:
  - With no bias, there is no war. So, in this model, the ability to make transfers prevents war (as in Fearon)
  - More generally, the range of $\frac{C}{G}$ where transfers can avoid j wanting to launch an attack is increasing when
    1. B_i decreases, since i is less likely to want to go to war and gain less from more, and therefore willing to pay more to avoid it
    2. p_j increases, since it makes j more likely to want war and i more willing to pay to avoid it
    3. $\frac{w_i}{w_j}$ increases (holding p fixed), for same reasons as (2)

Analysis

Case 3: Transfers with no commitment

- Now, transfers need to be self-enforcing, i.e., after transfer takes place, aggressor needs to prefer no war to war
- Transfers have three effects on ex-post probability of war, which operate in different directions:
  - Make target poorer and less appealing (decrease war)
  - Make challenger richer, with more to lose (decrease war)
  - Increase the probability that challenger will win a subsequent war (increase war)
- Properties of this equilibrium:
  - Cases where transfers can avoid war with no commitment are a strict subset of cases where it avoids war with commitment
  - It is possible that small transfers avoid a war whereas large transfers do not (if transfer is too large, it affects the probability of victory too much and ex-post the aggressor will want to invade)

Analysis

- Special case of transfers without commitment (Proposition 4)
  - If probability of winning is proportional to relative wealth ($p = \frac{w_j}{w_j + w_i}$), then with no bias there will be no war, even without commitment
  - With other probability functions, if you lose either unbiasedness or commitment, you can get war
- Endogenous bias
  - With no transfers, everyone prefers unbiased leader, because the leader maximizes the same object as the population
  - With transfers, citizens might prefer a biased leader if it induces more transfers from the other side
  - Interesting hypothesis to investigate

Inefficiency, more generally...

Powell (2004): "The Inefficient Use of Power: Costly Conflict with Complete Information"

- Previous paper showed an example of how lack of commitment can lead to inefficiency
- Idea of the Powell paper is to formalize a general sufficiency condition for this type of inefficiency to emerge
- Intuition: inefficiency emerges if distribution of power changes sufficiently from period-to-period. If one party has more power now than it will have in the future, and cannot commit, it will take what it can while it has the power to do so.
- Details in recitation

Other theoretical frameworks

- There are many, many other approaches that focus on other aspects of conflict
- Some examples:
  - Ethnic conflict: Caselli and Coleman (2006) argue that ethnic conflict is more likely if ethnic groups are immutably different, so that ex-post you can tell the winners and losers apart
  - Strategic deterrence: Chassang and Padro-i-Miguel (2008): model situations with private information to examine the role of military strength as a deterrent
  - etc, etc.

Empirical work on causes of conflict

- We'll look at a few papers that investigate:
  - **Income /natural resources and conflict**
  - Leaders and conflict
  - Media and conflict
  - Counterinsurgency

Empirical work on conflict

- This is a field where the empirics have been lagging behind the theory, until recently
- Part of the problem is that conflict is usually a cross-country phenomenon, so we're in the world of cross-country regressions
  - Typical examples: Collier and Hoeffler (1998) and Fearon and Laitin (2003) have a series of papers running cross-sectional regressions on probability of civil war. Find:
    - Poor countries have more civil wars
    - More populous countries have more wars.
    - Ambiguous relationship with ethnic fragmentation
    - etc.
  - Better example: Miguel et al. (2004) regress conflict in Africa on economic growth, instrumented using rainfall
    - Why do we need an instrument? Is this instrument plausible?
    - Find negative relationship (growth retards war). But only in Sub-Saharan Africa.

Within-country evidence on causes of conflict

- Given the small number of countries, most (not all) empirical work instead looks *within* countries.
- As such this empirical work focuses on civil conflict
  - Between 1960 and 2010 more than half of the world's countries were affected by civil conflict, 20% of them for $\geq$ 10 years
- There are several recent well-identified papers on determinants of aspects of conflict, e.g., security situation, participation in militia
- Speaks to somewhat different issues than game-theoretic work on what triggers conflict and conflict between states, but is useful nonetheless
- How is within country conflict different?

Income and conflict

Dube and Vargas (2013): "Commodity Price Shocks and Civil Conflict: Evidence from Colombia"

- One theme of conflict theory: if you increase a country's wealth, you increase the probability a country will be attacked
- Dal Bó and Dal Bó (2005) consider the civil war context, and describe two countervailing forces:
  - Increasing income increases the return from winning a conflict ($\uparrow$ fighting)
  - But increasing income also raises the return to working instead of fighting to expropriate resources ($\downarrow$ fighting)
  - So net effect is ambiguous, and depends on the type of shock and the factor intensity of the shock
    - Increase return to capital-intensive sector might increase war if it increases returns to owning capital more than wages
    - Increase return to labor-intensive sector might decrease war if it increases return to labor more than to expropriating resources
- Dube and Vargas test these ideas using data from Colombia

Empirical idea

- Empirical Strategy:
  - Shocks to international oil price are shocks to expropriable sector
  - Shocks to international coffee price are shocks to labor-intensive sector
  - Different parts of the country specialize in oil vs. coffee, so these shocks affect each municipality differently
  - Plausible? Concerns?
  - To deal with endogenous coffee intensity, instrument with rainfall and temperature (grown in rainy, cool places)
  - To deal with potentially endogenous coffee price – instrument for coffee price with quantity of exports from other producing countries
- Data
  - Municipal level data on all conflict incidents from 1988-2005 – 21,000 incidents in total – in 966 municipalities
  - Classify municipality as coffee producing based on 1997 "National Coffee Survey"
  - Classify municipality as oil producing if contains oil reserves or pipelines

Specification

- Estimate

$$\begin{aligned} y_{it} &= \alpha_j + \beta_t + (CoffeeInt_j \times CoffeePrice_t)\,\delta \\ &\quad + (Oil_j \times Oilprice_t)\,\lambda + Pop_{jt}\phi + \varepsilon_{jt} \end{aligned}$$

  where they instrument for $(CoffeeInt_j \times CoffeePrice_t)$ using $Rainfall_{jr} \times Temp_{jr} \times$ quantity of foreign coffee exports in time t
- Also includes region-specific time trends
- Outcome variables:
  - Conflict
  - Wages
  - Municipal government revenue
  - Kidnappings

Results

Conflict

TABLE 2
The effect of the coffee and oil shocks on violence

Dependent variables	(1) Guerrilla attacks	(2) Paramilitary attacks	(3) Clashes	(4) Casualties
Coffee int. x log coffee price	−0.611**	−0.160***	−0.712***	−1.828*
	(0.249)	(0.061)	(0.246)	(0.987)
Oil production x log oil price	0.700	0.726***	0.304	1.526
	(1.356)	(0.156)	(0.663)	(2.127)
Observations	17,604	17,604	17,604	17,604

Notes: Standard errors clustered at the department level are shown in parentheses. Variables not shown include municipality fixed effects, year fixed effects, log of population, and linear trends by region and municipalities cultivating coca in 1994. The interaction of the internal coffee price with coffee intensity is instrumented by the interaction of the coffee export volume of Brazil, Vietnam, and Indonesia with rainfall, temperature, and the product of rainfall and temperature.
*** is significant at the 1% level; ** is significant at the 5% level; * is significant at the 10% level

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Guerrillas: Left-wing (e.g., FARC)
Paramilitary: anti-insurgent self-defense and/or ideologically opposed to guerillas

Results

Wages, Municipal Revenue, and Kidnappings

TABLE 3
The opportunity cost and rapacity mechanisms

	(1)	(2)	(3)	(4)	(5)
	Opportunity cost mechanism		Rapacity mechanism		
Dependent variables	Log wage	Log hours	Log capital revenue	Paramilitary political kidnappings	Guerrilla political kidnappings
Coffee int. x log coffee price	0.371*	0.286**	−0.787	0.022	−0.060
	(0.217)	(0.125)	(0.698)	(0.014)	(0.060)
Oil production x log oil price	1.230	0.079	0.419**	0.168***	−0.066
	(0.894)	(0.314)	(0.203)	(0.009)	(0.206)
Observations	26,050	57,743	11,559	16,626	16,626
Sample period	1998–2005	1998–2005	1988–2005	1988–2004	1988–2004

Notes: Standard errors clustered at the department level are shown in parentheses. In column (1), the dependent variable is the log of hourly wage, defined as the the individuals' earnings in the past month divided by hours of employment in the past month. In column (2), log hours refers to hours of employment during the past month. Variables not shown in all specifications include municipality fixed effects, year fixed effects, and linear trends by region and municipalities cultivating coca in 1994. Columns (1) and (2) also control for education, age, age squared, and indicators of gender and marital status. Columns (3)–(5) additionally control for log population. The interaction of the internal coffee price with coffee intensity is instrumented by the interaction of the coffee export volume of Brazil, Vietnam, and Indonesia with rainfall, temperature, and the product of rainfall and temperature.
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Capital revenue = royalties to municipal govt, e.g., from oil companies

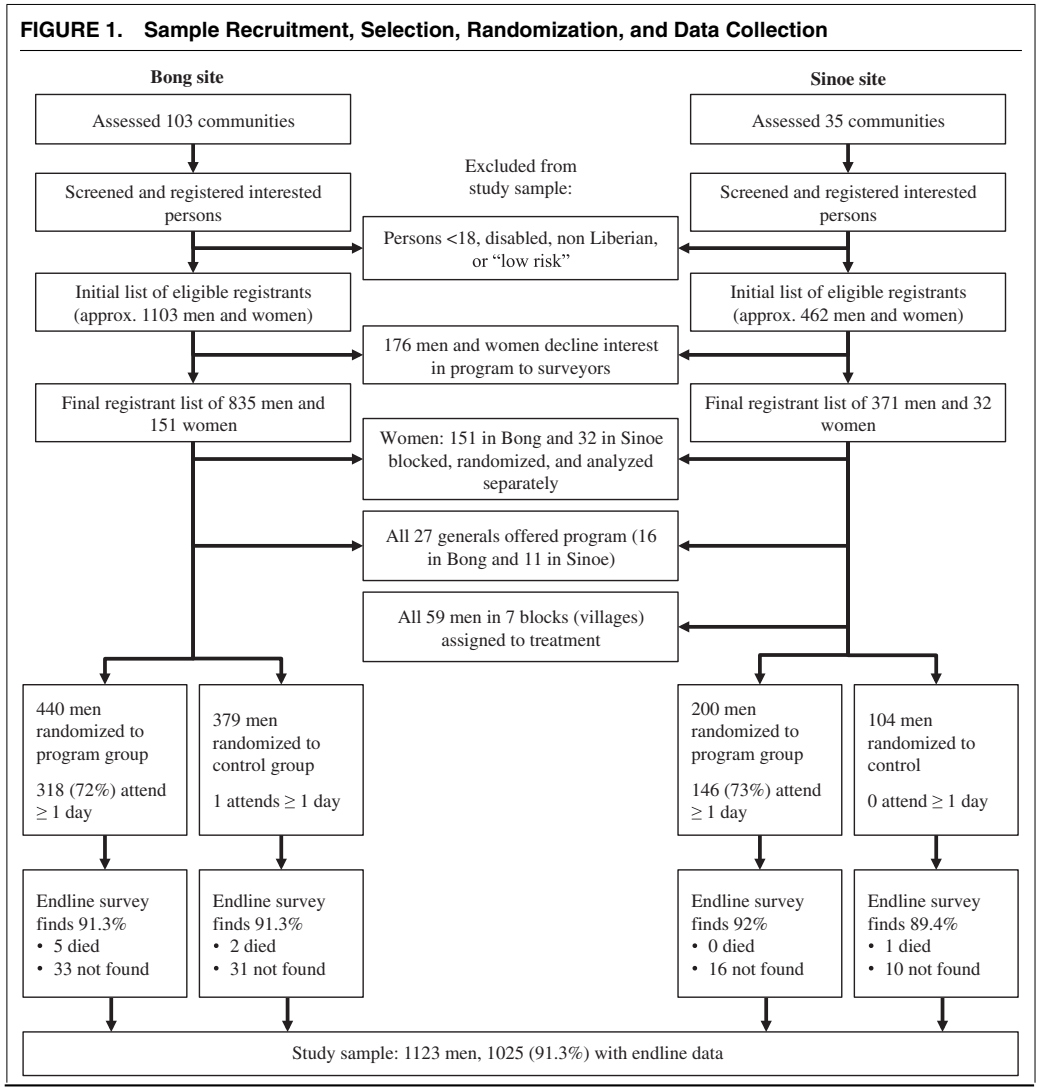
More evidence on these channels

Blattman and Annan (2016): Can Employment Reduce Lawlessness and Rebellion? A Field Experiment with High-Risk Men in a Fragile State

- Does economic opportunity reduce individual participation in conflict?
- Blattman and Annan (2016) study intervention aimed at ex-combatants from civil conflict in Liberia
- Engaged in illicit resource extraction and pool of potential mercenaries for conflict in neighboring countries
- Three-month residential training that cost roughly $1300 per participant
  - Provided (1) Training on agricultural, literacy, and other skills (2) Life skills group training and personal coaching (3) Room, board, medical care
  - Transported graduate to community of choice and arranged for farmland
  - Tools and supplies worth $125

Selection protocol

- Note selection procedure. Randomization $\neq$ no control over who gets program.



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Results

Treatment effects on employment

Table 3: Program impacts on occupational choice and income

		Treatment effect estimates (n=1025)			
	Control	ITT		TOT	
Outcome	Mean	Coeff.	Std. Err.	Coeff.	Std. Err.
	(1)	(2)	(3)	(4)	(5)
Agricultural engagement:					
Raising crops/animals†	0.61	0.118	[0.030]***	0.155	[0.036]***
Acres under cultivation	4.43	1.556	[2.146]	2.037	[2.573]
Thinks farming is a good living	0.95	0.008	[0.016]	0.010	[0.019]
Interested in farming	0.78	0.090	[0.029]***	0.118	[0.035]***
Interested in raising animals	0.90	0.049	[0.019]**	0.064	[0.023]***
Hours worked/week, past month	49.33	0.978	[2.357]	1.278	[2.824]
Illicit resource extraction	15.57	-2.829	[1.350]**	-3.697	[1.593]**
Logging	2.79	-0.926	[0.649]	-1.210	[0.773]
Mining	10.53	-1.356	[1.140]	-1.772	[1.362]
Rubber tapping	2.25	-0.547	[0.573]	-0.715	[0.682]
Farming and animal-raising	11.91	3.131	[1.180]***	4.090	[1.415]***
Farming	10.45	2.620	[1.037]**	3.423	[1.242]***
Animal-raising	1.46	0.511	[0.508]	0.667	[0.609]
Contract agricultural labor	1.82	-0.116	[0.320]	-0.152	[0.383]
Palm, coconut, sugar cutting	0.34	0.264	[0.343]	0.345	[0.413]
Hunting	1.18	0.215	[0.334]	0.281	[0.401]
Non-farm labor and business	18.16	-0.170	[2.055]	-0.222	[2.464]
Other activities	0.36	0.483	[0.571]	0.632	[0.682]
Other illicit activities:					
Any illicit resource extraction	0.40	-0.025	[0.032]	-0.032	[0.038]
Sells any soft or hard drugs	0.02	-0.008	[0.011]	-0.010	[0.013]
Stealing activities (z-score)†	-0.05	0.046	[0.064]	0.060	[0.077]
Income index (z-score)	-0.08	0.120	[0.059]**	0.157	[0.071]**
Cash earnings, past month (USD)	95.13	9.076	[9.555]	11.820	[11.398]
Durable assets (z-score)	-0.11	0.122	[0.059]**	0.160	[0.071]**

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Results

Treatment effects on mercenary activity

TABLE 4. Program Impacts on Mercenary Recruitment Proxies

Outcome	Control Mean (1)	TOT Estimate Coeff. (2)	TOT Estimate SE (3)
All Recruitment Interest/Actions (*z* score)	0.09	−0.204	[0.079]***
Direct Recruitment Proxies (0–12)	0.94	−0.239	[0.118]**
Talked to a Commander in Last 3 Months	0.45	−0.108	[0.044]**
Would Go if Called to Fight for Tribe	0.05	−0.015	[0.013]
Has Been Approached about Going to CI	0.07	0.001	[0.021]
Would Go to CI for $250	0.01	−0.006	[0.010]
Would Go to CI for $500	0.03	−0.009	[0.012]
Would Go to CI for $1000	0.08	−0.041	[0.019]**
Will Move Towards CI Border Area	0.10	−0.022	[0.024]
Invited to Secret Meeting on Going to CI	0.04	0.004	[0.016]
Attended Secret Meeting on Going to CI	0.03	−0.013	[0.011]
Was Promised Money to Go to CI	0.03	0.001	[0.014]
Willing to Fight if War Breaks Out in CI	0.04	−0.018	[0.015]
Has Plans to Go to CI in the Next Month	0.01	−0.012	[0.009]
Indirect Recruitment Proxies (0–4)	1.48	−0.158	[0.076]**
Talks about the CI Violence with Friends	0.68	−0.046	[0.041]
Has a Partisan Preference in CI	0.66	−0.117	[0.041]***
Knows People Who Went to CI to Fight	0.10	−0.021	[0.019]
Knows People Given Money to Go to CI	0.04	0.026	[0.016]

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Food aid and conflict

Nunn and Qian (2014): "US Food Aid and Civil Conflict"

- Empirical idea:
  - The US food aid system is part of a system to keep farm prices high in the US
  - So when there is a good wheat crop in the US, the government buys extra wheat and gives it out as aid
  - Tends to give it out to the same countries
- So...
  - They look at whether good US wheat harvests lead to more or less conflict in countries that tend to receive aid
  - Idea is that this is occurring through the aid channel
  - Thoughts on empirics?
  - How does this relate to Dube and Vargas?

Empirics

- Note: at heart this is a relatively common shift/share empirical design
  - Cross-sectional variation in average probability a country i receives aid, $\bar{D}_i$
  - Time-series variation in overall level of aid the US sends (in this case coming from lagged wheat production, P_{t-1}
  - Instrument is the product $P_{t-1} \times \bar{D}_i$, controlling for fixed effects in both i and t dimensions, so reduced form is

$$C_{it} = \alpha \left(P_{t-1} \times \bar{D}_i \right) + X_{it} + \gamma_{rt} + \gamma_i + \epsilon_{it}$$

  - This design is common. Thoughts?

The story in pictures

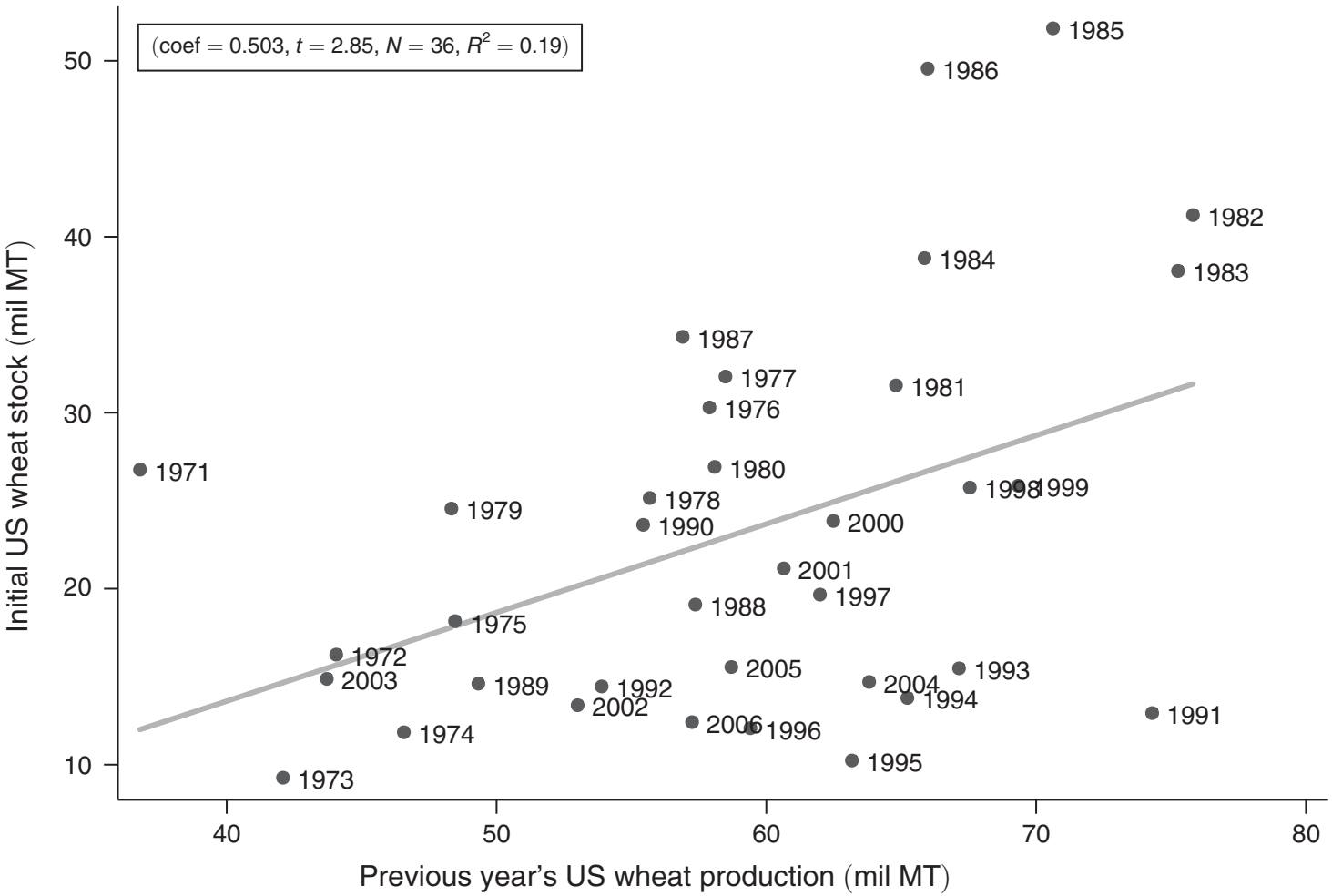

FIGURE 1. US WHEAT RESERVES AND LAGGED US WHEAT PRODUCTION

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The story in pictures

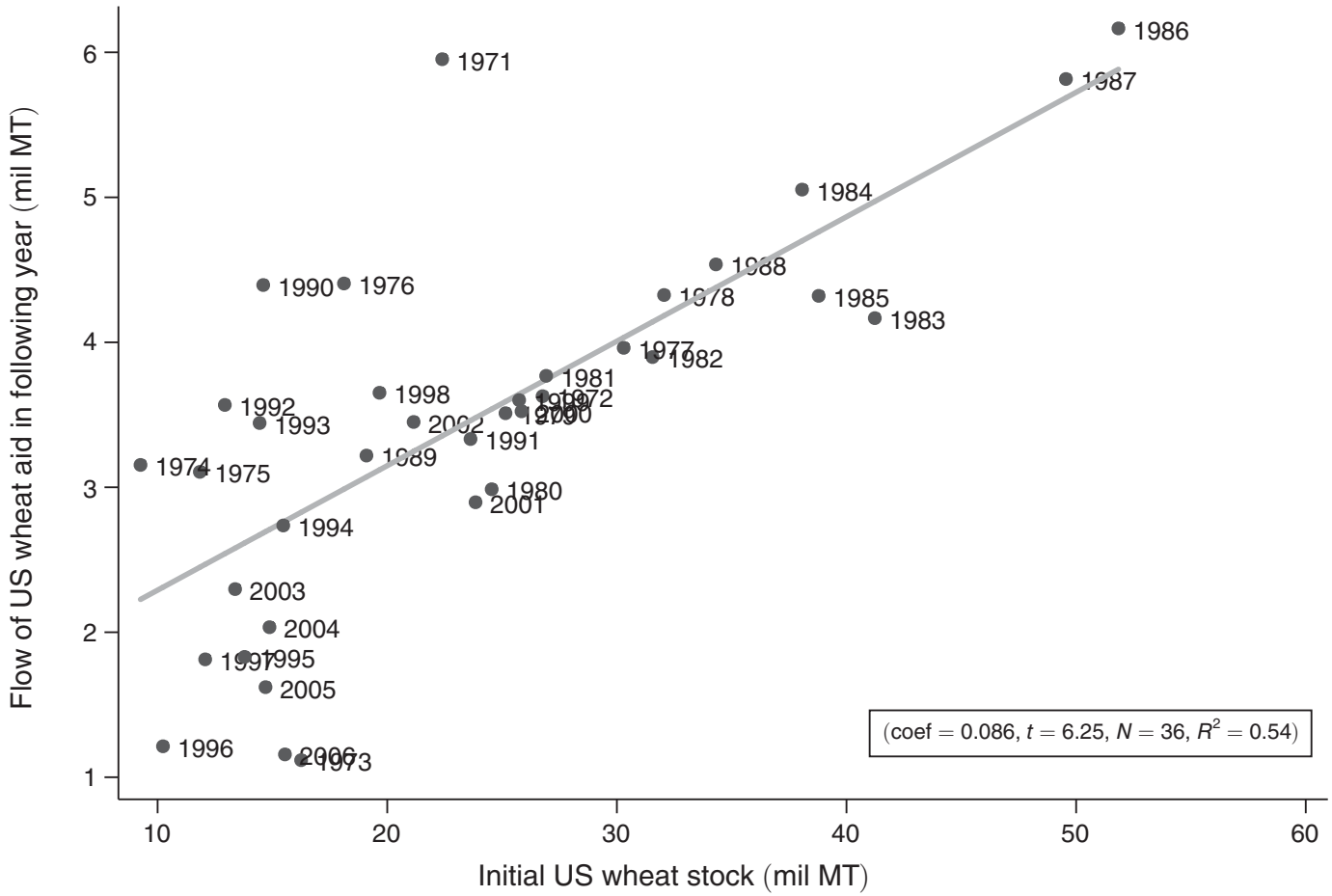

FIGURE 2. US WHEAT AID AND INITIAL US WHEAT RESERVES

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The story in pictures

Regular recipients of aid

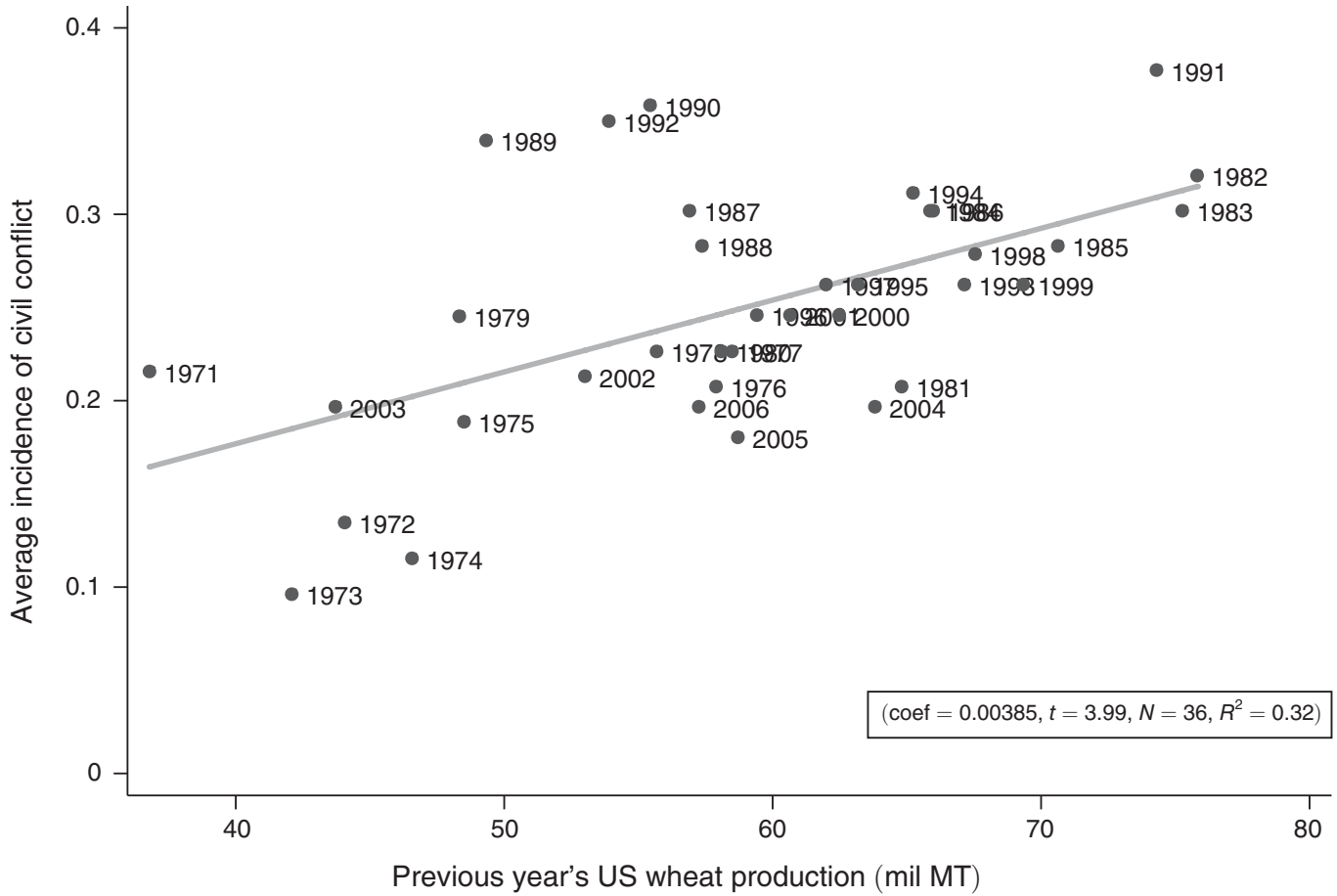

FIGURE 4. AVERAGE CIVIL CONFLICT INCIDENCE AND LAGGED US WHEAT PRODUCTION, REGULAR RECIPIENTS: $\overline{D}_{ir} \geq 0.30$

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The story in pictures

Non-regular recipients of aid

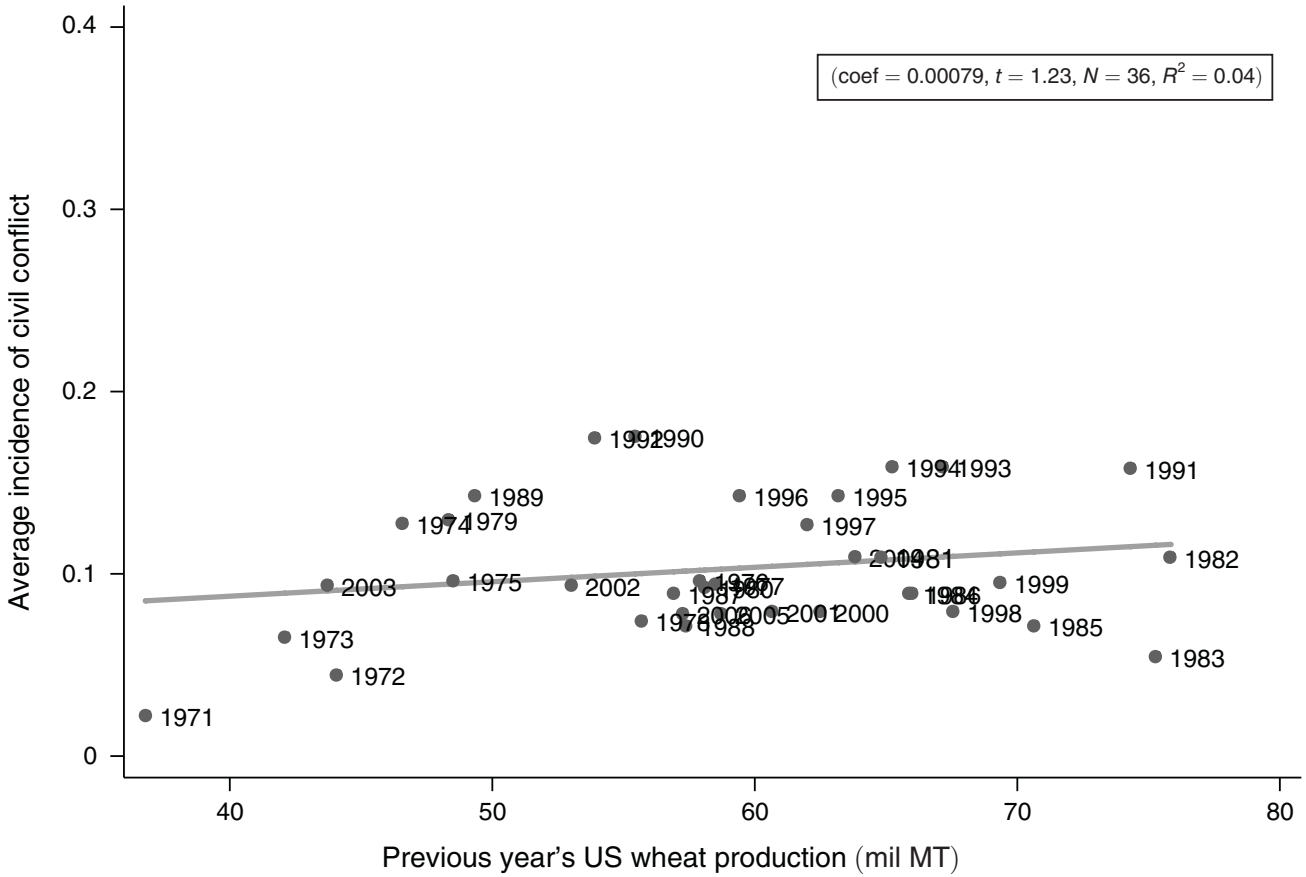

FIGURE 3. AVERAGE CIVIL CONFLICT INCIDENCE AND LAGGED US WHEAT PRODUCTION, IRREGULAR RECIPIENTS: $\overline{D}_{ir} < 0.30$

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Results

TABLE 2—THE EFFECT OF FOOD AID ON CONFLICT: BASELINE SPECIFICATION WITH $P_{t-1} \times D_{ir}$ AS THE INSTRUMENT

	Parsimonious specifications				Baseline specification		
Dependent variable (panels A, B, and C):	Any conflict (1)	Any conflict (2)	Any conflict (3)	Any conflict (4)	Any conflict (5)	Intrastate (6)	Interstate (7)
Panel A. OLS estimates							
US wheat aid (1,000 MT)	−0.00006	−0.00007	−0.00005	−0.00007	−0.00011	−0.00005	−0.00011
	(0.00018)	(0.00018)	(0.00017)	(0.00017)	(0.00017)	(0.00017)	(0.00004)
R^2	0.508	0.508	0.518	0.534	0.549	0.523	0.385
Panel B. Reduced form estimates (× 1,000)**							
Lag US wheat production (1,000 MT)	0.00829	0.01039	0.01070	0.01133	0.01071	0.00909	−0.00158
× avg. prob. of any US food aid	(0.00257)	(0.00263)	(0.00262)	(0.00318)	(0.00320)	(0.00322)	(0.00121)
R^2	0.511	0.512	0.521	0.536	0.551	0.525	0.382
Panel C. 2SLS estimates							
US wheat aid (1,000 MT)	0.00364	0.00303	0.00312	0.00343	0.00299	0.00254	−0.00044
	(0.00174)	(0.00125)	(0.00117)	(0.00106)	(0.00096)	(0.00088)	(0.00033)
Dependent variable (panel D):	US wheat aid (1,000 MT)						
Panel D. First-stage estimates							
Lag US wheat production (1,000 MT)	0.00227	0.00343	0.00343	0.00330	0.00358	0.00358	0.00358
× avg. prob. of any US food aid	(0.00094)	(0.00126)	(0.00120)	(0.00092)	(0.00103)	(0.00103)	(0.00103)
Kleibergen-Paap *F*-statistic	5.84	7.37	8.24	12.76	12.10	12.10	12.10
Controls (for all panels):							
Country FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Region-year FE	Yes	Yes	Yes	Yes	Yes	Yes	Yes
US real per capita GDP × avg. prob. of any US food aid	No	Yes	Yes	Yes	Yes	Yes	Yes
US democratic president × avg. prob. of any US food aid	No	Yes	Yes	Yes	Yes	Yes	Yes
Oil price × avg. prob. of any US food aid	No	Yes	Yes	Yes	Yes	Yes	Yes
Monthly recipient temperature and precipitation	No	No	Yes	Yes	Yes	Yes	Yes
Monthly weather × avg. prob. of any US food aid	No	No	Yes	Yes	Yes	Yes	Yes
Avg. US military aid × year FE	No	No	No	Yes	Yes	Yes	Yes
Avg. US economic aid (net of food aid) × year FE	No	No	No	Yes	Yes	Yes	Yes
Avg. recipient cereal imports × year FE	No	No	No	No	Yes	Yes	Yes
Avg. recipient cereal production × year FE	No	No	No	No	Yes	Yes	Yes
Observations (for all panels)	4,089	4,089	4,089	4,089	4,089	4,089	4,089

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Results

TABLE 8—THE EFFECT OF FOOD AID ON SMALL- AND LARGE-SCALE CONFLICTS

	Small wars only: 25–999 battle deaths			Large wars only: 1000+ battle deaths		
Dependent variable: Incidence of conflict	Any (1)	Intrastate (2)	Interstate (3)	Any (4)	Intrastate (5)	Interstate (6)
Mean of dep. variable	0.141	0.120	0.012	0.076	0.056	0.014
US wheat aid (1,000 MT)	0.00170	0.00164	−0.00006	0.00129	0.00090	−0.00038
	(0.00090)	(0.00087)	(0.00015)	(0.00091)	(0.00085)	(0.00032)
Kleibergen-Paap *F*-statistic	12.10	12.10	12.10	12.10	12.10	12.10
Observations	4,089	4,089	4,089	4,089	4,089	4,089

Notes: 2SLS estimates are reported. The sample includes 125 non-OECD countries for the years 1971–2006. US wheat aid in year t is instrumented by US wheat production in year $t-1$ × the average probability of receiving any US food aid during 1971–2006. All regressions include the full set of baseline controls (see Table 2 columns 5–7 for a complete list). Coefficients are reported with standard errors clustered at the country level in parentheses.

TABLE 9—THE EFFECT OF FOOD AID ON OTHER AID

Dependent variable:	World wheat aid (1,000 MT) (1)	World cereal aid (1,000 MT) (2)	Non-US wheat aid (1,000 MT) (3)	Non-US cereal aid (1,000 MT) (4)	US military aid (1,000 real USD) (5)	US economic aid excl. food aid (1,000 real USD) (6)	Non-US net ODA (1,000 real USD) (7)	Non-US net ODA 2 (1000 real USD) (8)
Mean of dep. variable	42.06	63.21	13.56	18.82	34,060	60,283	430,128	407,748
US wheat aid (1,000 MT) (mean = 27.61)	1.226	1.211	0.233	0.133	1,073	776	1,923	1,443
	(0.122)	(0.281)	(0.120)	(0.172)	(448)	(591)	(1,210)	(863)
Kleibergen-Paap *F*-statistic	12.10	12.10	12.10	12.10	12.10	12.10	12.10	12.10
Observations	4,089	4,089	4,089	4,089	4,089	4,089	4,089	4,089

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Placebo

TABLE 5—REDUCED-FORM ESTIMATES OF THE EFFECT OF PLACEBO INSTRUMENTS ON CIVIL CONFLICT

	Reduced-form estimates (× 1,000)**. Dependent variable: Incidence of civil conflict					
	Baseline	*Panel A. Placebo crops I*				
	(1)	(2)	(3)	(4)	(5)	(6)
Crop used for instrument: Mean production, 1971–2006	Wheat [59,316]	Oranges [9,070]	Grapes [5,145]	Lettuce [3,432]	Cotton lint [3,350]	Onions [2,394]
Lag US production (1,000 MT) × avg. prob. of any US food aid	0.00909 (0.00322)	−0.01977 (0.01960)	0.04829 (0.03094)	−0.07371 (0.10535)	−0.03456 (0.04588)	−0.09759 (0.15061)
Standardized beta coefficient R^2	0.452 0.525	−0.154 0.526	0.212 0.526	−0.218 0.526	−0.101 0.526	−0.210 0.526
Observations	4,089	4,089	4,089	4,089	4,089	4,089
		Panel B. Placebo crops II				
		(7)	(8)	(9)	(10)	(11)
Crop used for instrument: Mean production, 1971–2006		Grapefruit [2,268]	Cabbages [1,596]	Watermelons [1,428]	Carrots and turnips [1,395]	Peaches and nectarines [1,331]
Lag US production (1,000 MT) × avg. prob. of any US food aid		−0.00588 (0.08511)	−0.08000 (0.07137)	−0.34902 (0.20577)	−0.22736 (0.13532)	0.17813 (0.17234)
Standardized beta coefficient R^2		−0.011 0.525	−0.114 0.526	−0.430 0.526	−0.288 0.526	0.198 0.526
Observations		4,089	4,089	4,089	4,089	4,089

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Income channel vs. wealth channel?

TABLE 10—THE EFFECT OF FOOD AID ON RECIPIENT COUNTRY CEREAL PRODUCTION

Dependent variable:	Recipient wheat production (1,000 MT) (1)	Recipient cereals production (1,000 MT) (2)	Recipient wheat price (Windsorized) (3)	Recipient wheat price (natural log) (4)
Mean of dep. variable	4,178.6	10,162.5	527.3	7.77
US wheat aid (1,000 MT) (mean = 27.61)	−7.206 (5.735)	−7.177 (9.721)	−0.329 (0.446)	−0.00094 (0.00386)
Kleibergen-Paap F-statistic	8.99	13.23	7.14	7.14
Observations	2,368	3,736	1,737	1,737

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Empirical work on causes of conflict

- We'll look at a few papers that investigate:
  - Income /natural resources and conflict
  - **Leaders and conflict**
  - Media and conflict
  - Counterinsurgency

Political regimes and peace

- Idea that democracies don't fight each other is an "empirical regularity" of conflict literature
- Jackson-Morelli probably predicts less war among democracies. Why?
- Baliga, Lucca, and Sjostrom examine the relationship by matching dyadic conflict data with Polity data on regime type
- They posit non-monotonic relationship: Full democracies punish leaders for attacking non-aggressor countries; in full and limited democracies, leaders punished for not defending the country
- They test if:
  - "Limited democracy" dyads are most war-like
  - "Full democracy" dyads are most peaceful
- Test this using panel approach, with dyad fixed effects, and so identified off changes in regime types.
- Lag regime type variables by one period. Empirical issues?

Results

TABLE 3
Regression models—baseline

	Dependent variable: onset of a MID							
Model	(1) Baseline		(2)		(3)		(4)	
Panel a								
D_{DiDi}	−0.58		−0.0027		−0.90		−0.35	
	[0.21]***	(<0.01)***	[0.0013]**	(<0.01)***	[0.18]***	(0.03)**	[0.16]**	(<0.01)***
D_{LiDi}	−0.54		−0.0030		−0.47		−0.26	
	[0.20]***	(<0.01)***	[0.0013]**	(<0.01)***	[0.19]**	(<0.01)***	[0.13]**	(<0.01)***
D_{DeDi}	−0.57		−0.0033		−0.34		−0.40	
	[0.20]***	(<0.01)***	[0.0013]**	(<0.01)***	[0.19]*	(<0.01)***	[0.17]**	(<0.01)***
D_{DeLi}	−0.70		−0.0044		−0.44		−0.26	
	[0.21]***	(<0.01)***	[0.0014]***	(<0.01)***	[0.20]**	(<0.01)***	[0.15]*	(<0.01)***
D_{DeDe}	−1.38		−0.0071		−1.33		−1.34	
	[0.22]***		[0.0014]***		[0.23]***		[0.26]***	
Panel b								
Alliance	−0.38		−0.0054		−0.06		−0.41	
	[0.12]***		[0.0016]***		[0.12]		[0.12]***	
MajPower	0.36		0.0030		1.84		0.42	
	[0.28]		[0.0025]		[0.15]***		[0.28]	
LogCapRatio	−0.01		0.0001		−0.13		−0.01	
	[0.07]		[0.0004]		[0.036]***		[0.07]	
Contiguous	—		—		2.27		—	
					[0.15]***			
LogDist	—		—		−0.36		—	
					[0.06]***			
Model	CLOGIT		FE-LPM		LOGIT		CLOGIT-Ds	
Years	1816–2000		1816–2000		1816–2000		1816–2000	
Observations	40 786		495 062		492 420		40 786	
(pseudo) R2	0.09		0.01		0.32		0.09	

MID = military dispute, Di = Dictator, Li = Limited democracy, De = Full democracy

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Interpretation

TABLE 4
Partial effects for the pooled logit Model 3 in Table 3

Variable	Partial effect	% Change
D_{DiDi}	-0.0010^{***}	-59
D_{LiDi}	-0.0006^{**}	-38
D_{DeDi}	$-0.0005\hat{}$	-29
D_{DeLi}	-0.0006^{**}	-36
D_{DeDe}	-0.0012^{***}	-74
Pr(MID|{Li,Li}) = 0.0017		

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Testing leaders directly

Jones and Olken 2009: Hit or Miss? The Effect of Assassinations on Institutions and War

- Simple idea: compare successful vs. failed assassination attempts
- Estimate

$$\Delta y_i = \alpha + \beta SUCCESS_i + \epsilon_i$$

  where i is an attempt and $SUCCESS$ is a dummy for killing the leader
- Why do we need the failures? What does this estimate? Empirical concerns?

Identification

TABLE 2—ASSASSINATION ATTEMPTS: SUMMARY STATISTICS

	Observations	Percentage	Probability leader killed		Bystander casualties	
			All attempts	Serious attempts	Mean killed	Mean wounded
Type of weapon						
Gun	161	55%	28%	31%	1.0	2.2
Explosive device	91	31%	5%	7%	5.8	18.2
Knife	23	8%	13%	21%	0.3	0.4
Other	19	6%	16%	18%	1.1	0.3
Unknown	10	3%	40%	44%	2.0	1.3
Location						
Abroad	12	4%	25%	30%	3.6	6.5
At home	286	96%	20%	23%	2.4	6.7
Number of attackers						
Solo	132	59%	24%	29%	0.4	2.5
Group	92	41%	22%	26%	5.6	11.0
Total attempts	298	n/a	20%	24%	2.4	6.7

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Identification

TABLE 4—ARE SUCCESSFUL AND FAILED ATTEMPTS SIMILAR?

Variable	Success	Failure	Difference	*p*-val on difference
Panel A: Pairwise t-tests of sample balance				
Democracy dummy	0.362	0.344	0.018	0.80
	(0.064)	(0.035)	(0.072)	
Change in democracy dummy	−0.036	−0.022	−0.013	0.67
	(0.025)	(0.019)	(0.032)	
War dummy	0.263	0.318	−0.055	0.42
	(0.059)	(0.034)	(0.068)	
Change in war	0.036	0.011	0.025	0.71
	(0.058)	(0.034)	(0.067)	
Log energy use per capita	−1.589	−1.740	0.152	0.69
	(0.338)	(0.180)	(0.383)	
Log population	9.034	9.526	−0.492	0.05*
	(0.219)	(0.117)	(0.248)	
Age of leader	55.172	52.777	2.395	0.14
	(1.351)	(0.866)	(1.604)	
Tenure of leader	9.328	7.619	1.709	0.27
	(1.440)	(0.544)	(1.539)	
Observations	59	194		

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Results

TABLE 7—ASSASSINATIONS AND CONFLICT: CHANGE ONE YEAR AFTER ATTEMPT

	Gleditsch-COW dataset 1875–2002 (1)	Gleditsch-COW dataset 1946–2002 (2)	PRIO/Uppsala dataset 1946–2002 (3)
Panel A: Average effects			
Success	−0.072	0.041	0.162
	(0.068)	(0.093)	(0.071)
Parm. *p*-value	0.29	0.66	0.02**
Nonparm. *p*-value	0.57	0.83	0.03**
Observations	223	116	116
Data source	Gleditsch	Gleditsch	PRIO
Panel B: Split by war status in year before attempt			
Success × intense war	−0.255	−0.103	−0.110
	(0.144)	(0.257)	(0.294)
Success × moderate war			0.334
			(0.163)
Success × not at war	−0.024	0.020	0.070
	(0.068)	(0.086)	(0.057)
Intense war—parm. *p*-value	0.08*	0.69	0.71
Intense war—nonparm. *p*-value	0.13	1.00	0.69
Moderate war—parm. *p*-value	N/A	N/A	0.05**
Moderate war—nonparm. *p*-value	N/A	N/A	0.13
Not at war—parm. *p*-value	0.73	0.82	0.22
Not at war—nonparm. *p*-value	0.62	0.71	0.21
Observations	222	116	116
Data source	Gleditsch	Gleditsch	PRIO

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Empirical work on causes of conflict

- We'll look at a few papers that investigate:
  - Income /natural resources and conflict
  - Leaders and conflict
  - **Media and conflict**
  - Counterinsurgency

Does propaganda foment genocide?

Yangizawa-Drott (2014): Propaganda and Conflict: Evidence from the Rwandan Genocide

- What is the role of propaganda in fueling genocide?
- Examines quantitatively whether "hate radio" – Radio Télévision Libre des Mille Collines (RTLM) – led to more violence
- Identification strategy: Placement of radio towers + physical terrain

Identification

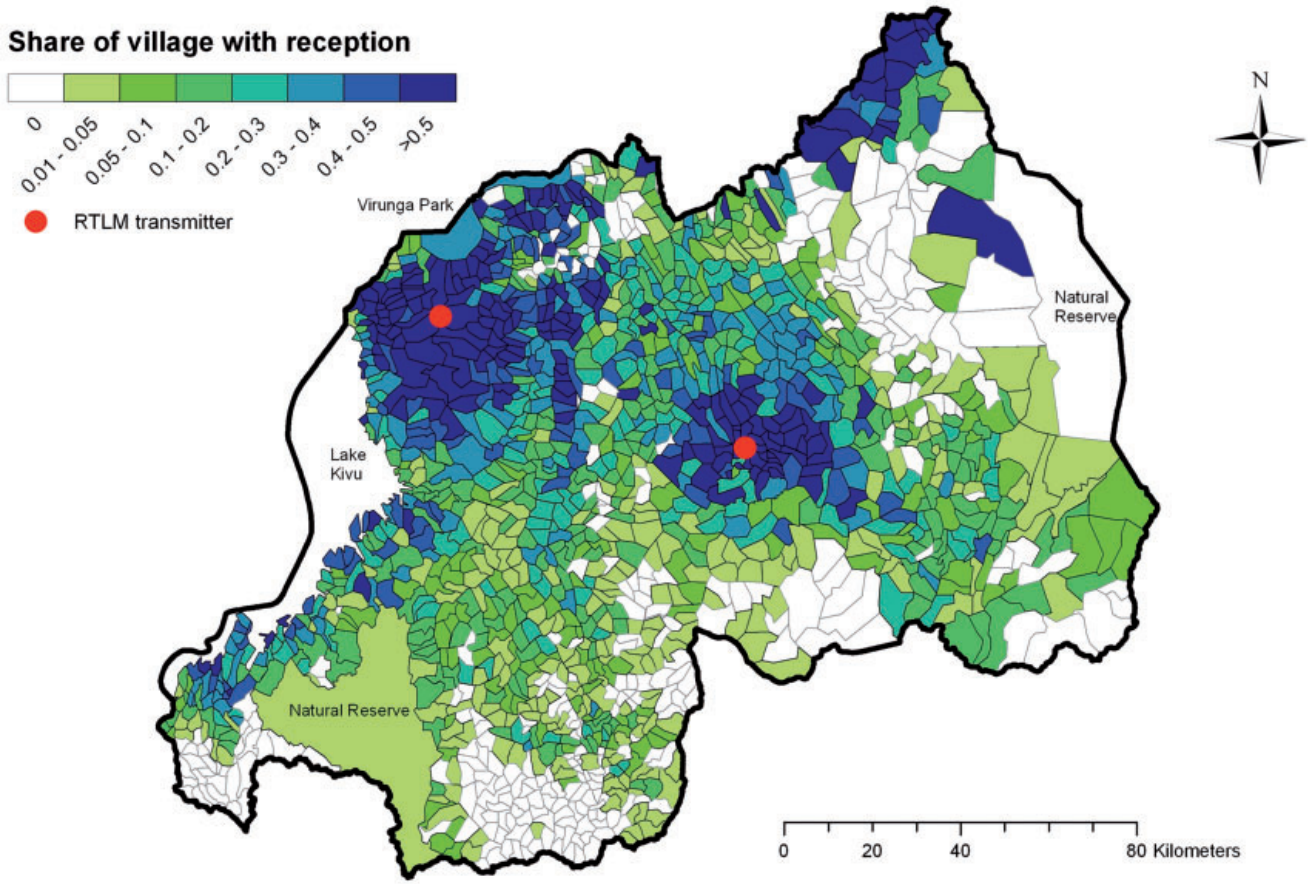

FIGURE II

- More on this identification strategy later....

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Does propaganda foment genocide?

Yangizawa-Drott (2014): Propaganda and Conflict: Evidence from the Rwandan Genocide

- What is the role of propaganda in fueling genocide?
- Examines quantitatively whether "hate radio" – Radio Télévision Libre des Mille Collines (RTLM) – led to more violence
- Identification strategy: Placement of radio towers + physical terrain
- Outcome: Prosecutions in the post-genocide tribunals
- Finding: 1 std. dev. increase in radio coverage is associated with a 12% increase in participation in total violence
- Also finds spillover effects – violence begets violence
- In total, estimates that 10% of the violence was due to RTLM
- Why? Slant? Coordination and multiple equilibria?
- Related work examines the imapct of radio on anti-semitic violence in the Nazi regime

Empirical work on causes of conflict

- We'll look at a few papers that investigate:
  - Income /natural resources and conflict
  - Leaders and conflict
  - Media and conflict
  - **Counterinsurgency**

Counterinsurgency

- For obvious reasons (see., e.g. Afghanistan, Iraq) there has been a lot of interest recently in counter-insurgency
- Counter-insurgency is tricky because rebels blend in with regular population, whom they need to rely on for support
- You therefore need to trade off direct effects of combat with spillover effects of combat on regular population and their desire to support the population
- Thus it's not clear which approach works best:
  - With development assistance (but, what does theory say?)
  - With violence (increasing costs of conflict)

The Vietnam War

Dell and Querubin 2017: Nation Building Through Foreign Intervention: Evidence from Discontinuities in Military Strategies

"Never before did the people of Vietnam, from top to bottom, unite as they did during the years that the U.S. was bombing us. Never before had Chairman Ho Chi Minh's appeal - that there is nothing more precious than freedom and independence - gone straight to the hearts and minds of the Vietnamese people." - Tran Quang Co

"The solution in Vietnam is more bombs, more shells, more napalm." - General William DePuy.

"Get the people by the balls and their hearts and minds will follow." (popular Marine saying, quoted in the Pentagon Papers)

Empirical approach

- This paper has two components
  - RD using prioritization rule to identify impact of bombing
  - Spatial RD on Army (bomb) vs. Marine (hearts and minds) control of an area
- The prioritization rule RD is an example where you need to be creative to create the RD
  - Army started with 169-variables on each hamlet
  - Aggregated these into 19 major indices first, then aggregated these into a letter grade A - E
  - 1967 IBM computer couldn't store more than 1 digit. So rounded at each step.
  - Using the discrete cutoffs from rounding to identify.

Implementation

- Imagine that discrete outcome $A, ..., E = g(x_1, ...x_{169}) = g(X)$
- Define

$$dist = \sum_i x_i - \tilde{x}_i$$

where

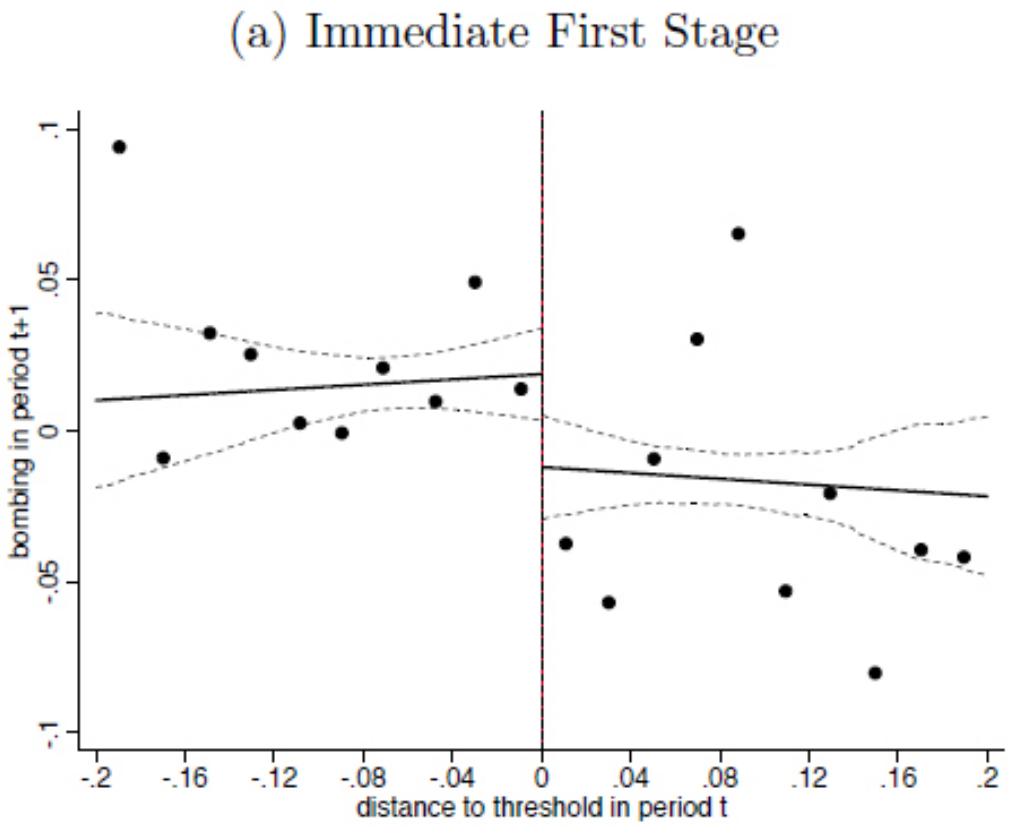
$$\tilde{X} = argmin_{\tilde{X}} |\sum_i x_i - \tilde{x}_i|$$

such that $g(X) \neq g(\tilde{X})$

- This takes a multi-dimensional vector $x_1, ...x_{169}$ and creates a single-dimensional variable *dist* which captures distance to the threshold
- They then run a standard RD using *dist*, i.e.

$$y = \beta_1 1_{g(X)=A} + \beta_2 1_{g(X)=B} + ... + f(dist) + f(dist) \times 1_{f(dist)<0} + \epsilon$$

First stage



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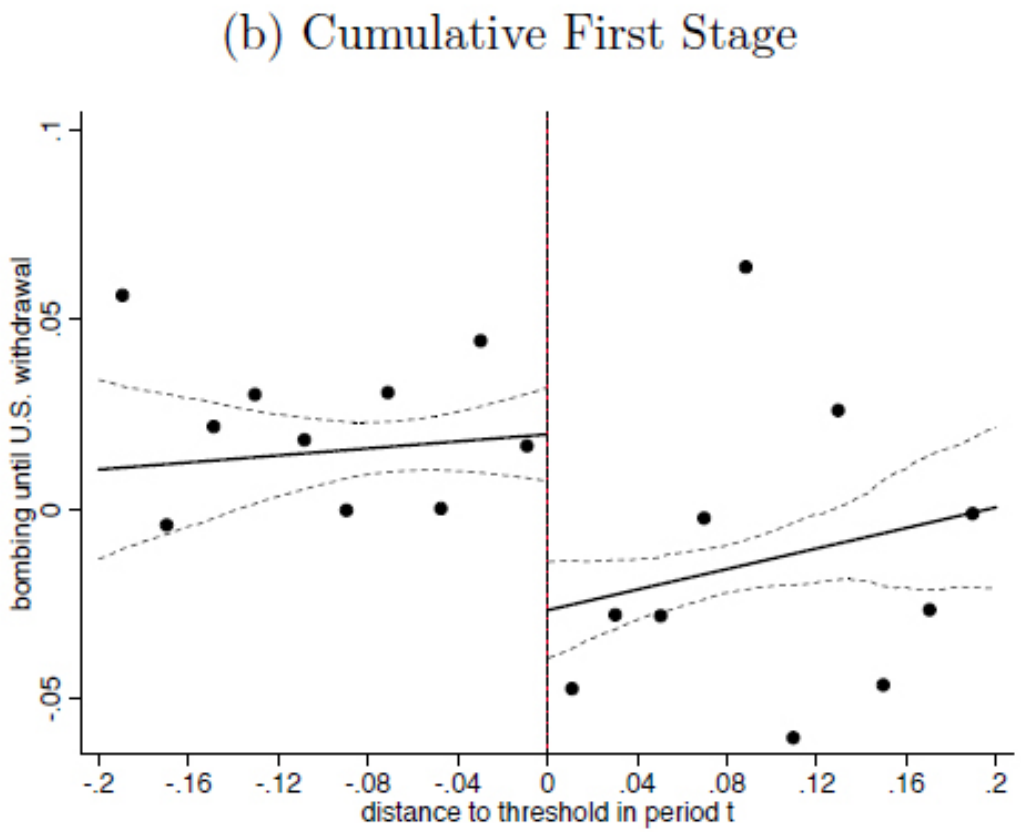
First stage



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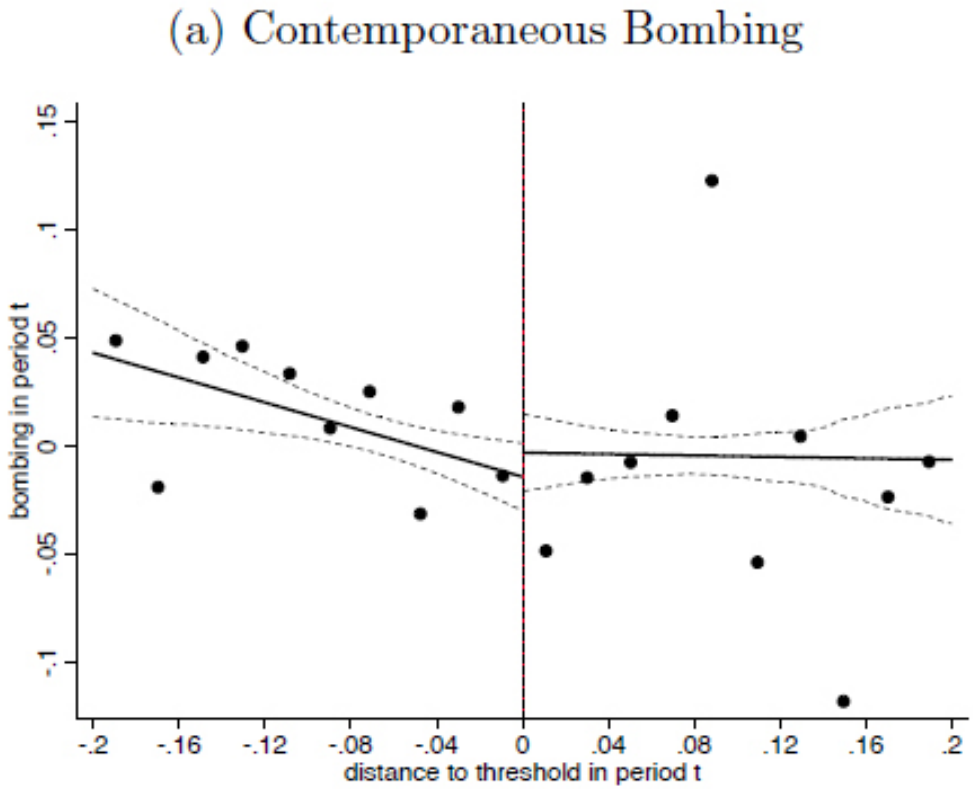
Placebo tests



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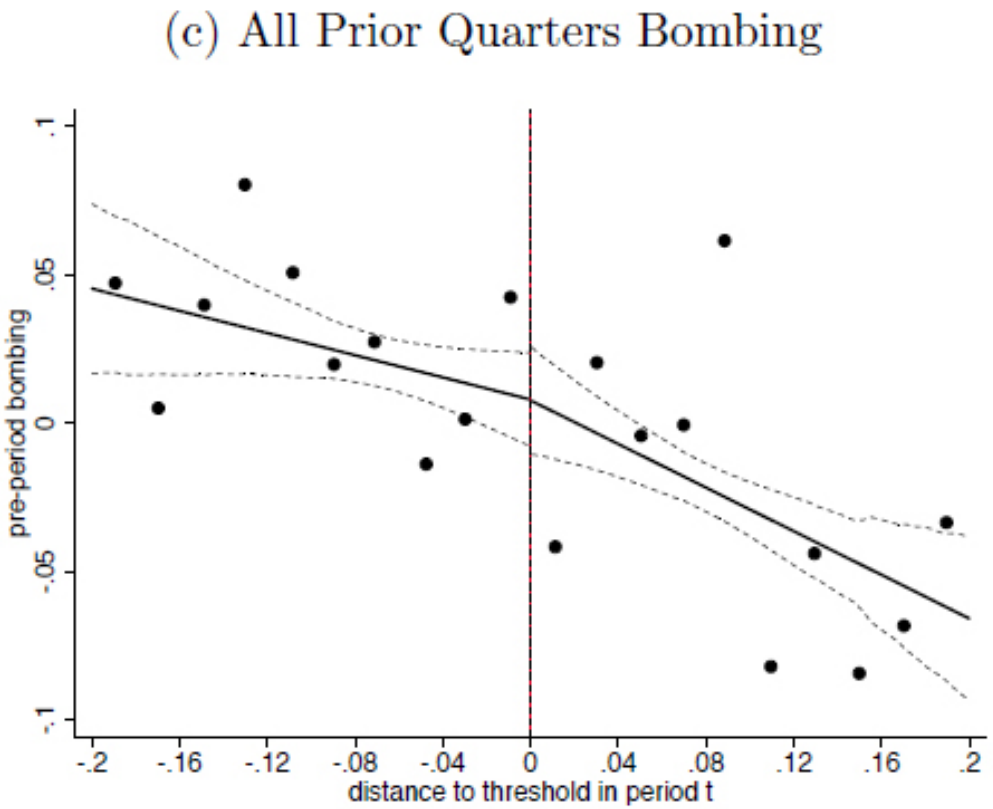
Placebo test



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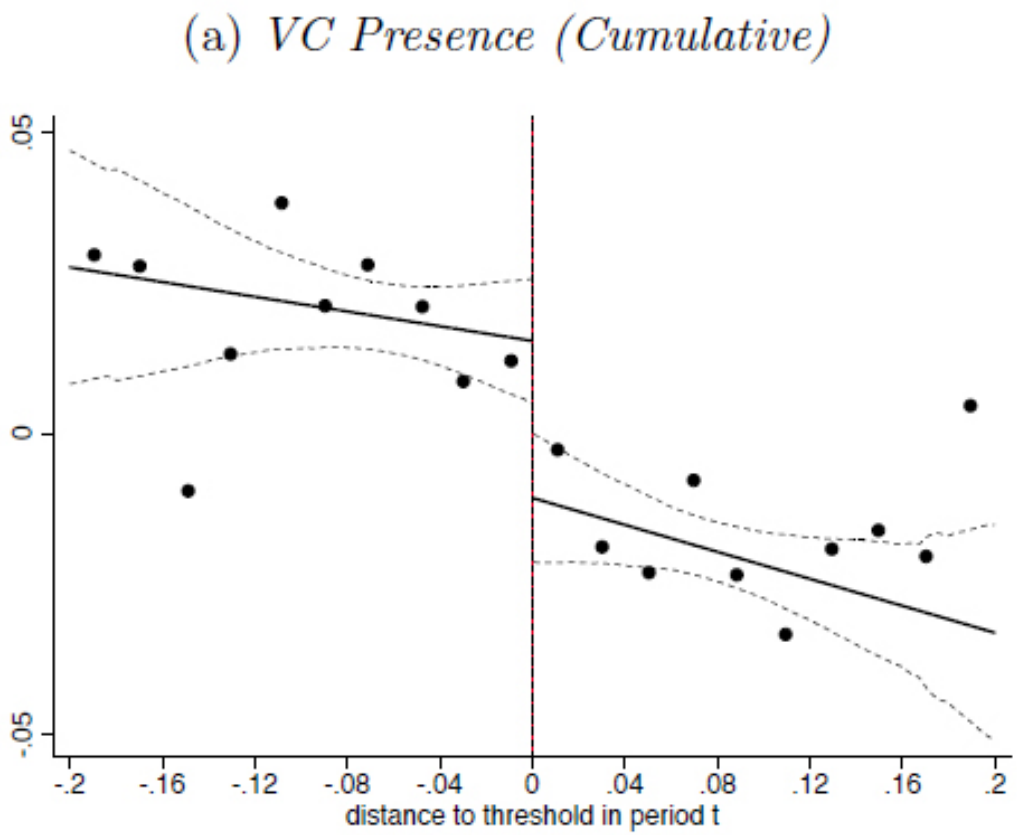
Results



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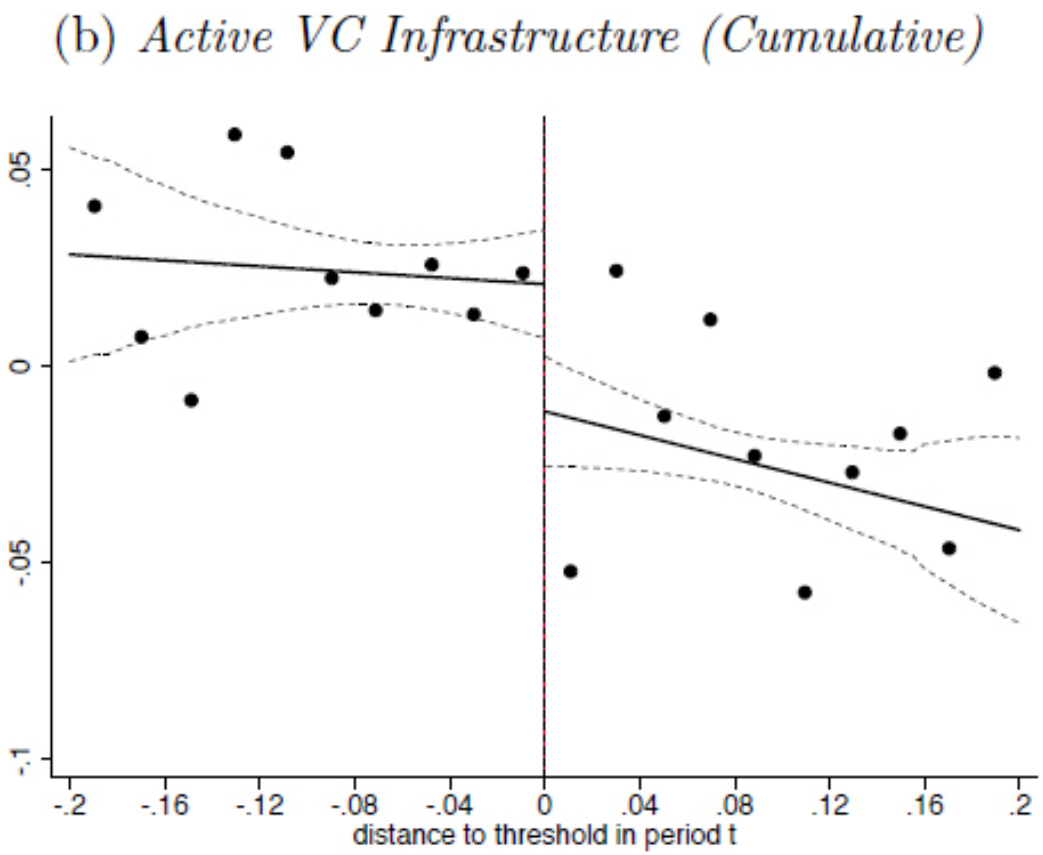
Results



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Results

Table 4: Security

	Dependent variable is:										
	Security Posterior $t+1$ (1)	Prob Cum (2)	Armed VC Present (3)	Vilg Guer Squad (4)	VC Main Squad (5)	VC Base Nearby (6)	VC Attack Hamlet (7)	Reg VC Infra Activity (8)	% HH Part VC Infr (9)	VC Prop Drive (10)	VC Extorts Pop (11)
Bombing $(t+1)$	-0.673										
	(0.246)										
Bombing (Cum)		-0.642	0.571	1.030	0.640	1.139	0.328	0.978	0.159	0.278	0.893
		(0.246)	(0.222)	(0.435)	(0.387)	(0.429)	(0.183)	(0.384)	(0.095)	(0.179)	(0.417)
Obs	12,188	12,206	12,189	11,923	11,924	11,925	12,149	11,921	11,914	12,139	11,904
Clusters	2261	2265	2263	2204	2204	2205	2262	2198	2200	2260	2195
F stat	14.43	12.12	11.89	10.03	10.18	10.04	11.45	10.41	11.76	11.44	10.43
Mean	0.65	0.68	0.19	0.38	0.39	0.22	0.16	0.25	0.03	0.09	0.27

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Results

Table 6: Economic Outcomes

	Dependent variable is:								
	Economic Posterior Prob $t+1$ (1)	Cum (2)	Non-Rice Food Avail (3)	Manuf. Goods Avail (4)	Surplus Goods Prod (5)	No Farm Security Bad (6)	% HH Own Vehic (7)	% HH Require Assist (8)	Ham Pop Growth (9)
Bombing $(t+1)$	0.029								
	(0.148)								
Bombing (Cum)		-0.452	-0.336	-0.839	-0.775	0.636	-0.302	0.074	-0.063
		(0.287)	(0.379)	(0.460)	(0.487)	(0.418)	(0.154)	(0.158)	(0.212)
Obs	12,188	12,206	11,882	11,882	11,894	10,976	11,935	11,848	11,966
Clusters	2261	2265	2187	2187	2190	2072	2204	2197	2209
F stat	14.43	12.12	9.66	9.66	9.90	10.18	11.84	11.74	10.38
Mean	0.67	0.68	0.71	0.61	0.43	0.28	0.26	0.07	-0.02

Courtesy of Melissa Dell and Pablo Querubin. Used with permission.

Results

Table 7: Governance

	Dependent variable is:											
	Administration		Vilg	Vilg	Chief	Education		Primary	Sec	Health		Pub
	Posterior Prob		Comm	Gov	Visits	Posterior Prob		School	School	Posterior Prob		Works
	$t+1$	Cum	Filled	Taxes	Hamlet	$t+1$	Cum	Access	Access	$t+1$	Cum	Cons.
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
Bombing $(t+1)$	-0.091					-0.090				0.277		
	(0.110)					(0.183)				(0.175)		
Bombing (Cum)		-0.305	-0.798	-0.944	-0.560		-0.447	-0.623	-0.752		0.417	-0.523
		(0.144)	(0.380)	(0.443)	(0.241)		(0.283)	(0.307)	(0.455)		(0.286)	(0.492)
Obs	12,188	12,206	11,815	11,878	11,928	12,188	12,206	11,928	11,906	12,188	12,206	11,904
Clusters	2261	2265	2188	2189	2202	2261	2265	2204	2192	2261	2265	2191
F stat	14.43	12.12	10.33	10.62	11.44	14.43	12.12	11.61	9.76	14.43	12.12	10.34
Mean	0.97	0.96	0.84	0.70	0.93	0.59	0.66	0.88	0.37	0.72	0.76	0.51

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Results

Table 8: Non-Insurgent Civic Society

	Dependent variable is:								
	Civic Society		% HH with a Member Active in				Self Dev	Youth	Council
	Posterior Prob.		Civic	PSDF	Econ	Dev	Proj	Org	Meets
	$t+1$	Cum	Org	Units	Train	Proj	Underway	Exists	Regularly
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
Bombing $(t+1)$	-0.331								
	(0.186)								
Bombing (Cum)		-0.523	-0.504	-0.260	-0.225	-0.563	-0.471	0.166	-0.128
		(0.248)	(0.266)	(0.238)	(0.230)	(0.357)	(0.245)	(0.359)	(0.421)
Obs	12,188	12,206	11,927	11,914	11,967	11,298	11,863	11,855	11,761
Clusters	2261	2265	2202	2201	2209	2168	2186	2189	2143
F stat	14.43	12.12	11.28	11.61	10.35	8.53	11.03	11.25	11.16
Mean	0.61	0.69	0.29	0.52	0.20	0.37	0.89	0.76	0.58

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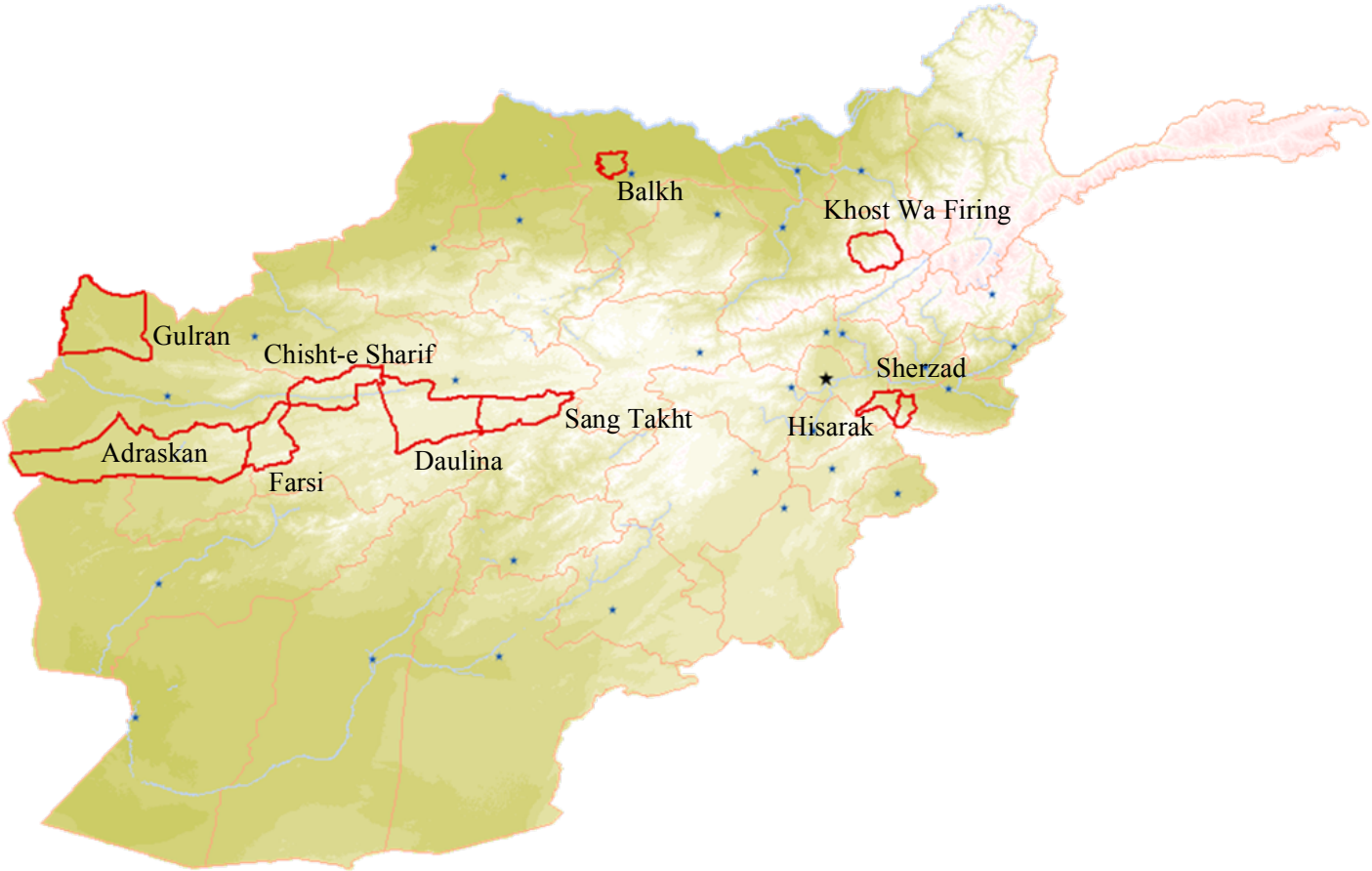
How about development assistance?

Beath, Christia, and Enikolopov 2016: "Winning Hearts and Minds through Development: Evidence from a Field Experiment in Afghanistan"

- Beath et al (2012) examine effects of development aid in Afghanistan
- Does develop aid "win hearts and minds," thereby strengthening security situation?
- Hypothesis: Aid projects raise support for government and reduce support for insurgents
- Evaluate National Solidarity Programme which created Community Development Council and disbursed block grants (magnitude: $200 per household in village) to support project implementation
  - Projects could include repairing roads, building irrigation canals, etc
  - Goals: To deliver services and infrastructure to rural population and to build representative institutions for village governance
  - Managed by Government of Afghanistan, funded by international donors, implemented by NGOs
  - Program now active in 29,000 villages
- RCT in 500 villages across 10 districts

Higher violence in Eastern districts

Figure 1. Ten Sample Districts



Beath, Andrew; Christia, Fotini; Enikolopov, Ruben. 2013. Do Elected Councils Improve Governance? Experimental Evidence on Local Institutions in Afghanistan. Policy Research Working Paper;No. 6510. World Bank, Washington, DC. © World Bank. https://openknowledge.worldbank.org/handle/10986/15869. License: CC BY 3.0 IGO."

Overview of results

- Program improved perceptions of economic well-being
- Also improved attitudes towards central and sub-national government, NGOs and foreign military forces
- Improved perceptions of the local security situation
- Reduction in number of security incidents recorded by the International Security Assistance Force (ISAF), but no effects on the number of incidents reported by villagers in household surveys
- Heterogeneous impacts in more insecure Eastern region:
  - Objective but not perceived economic well-being increases
  - No impact on perceived or real security risk
  - Negative impacts on attitudes toward government

Effects on economic well-being

Table 2: Economic Outcomes

Variable	Mean in Control	Treatment Effect	Standard error	Eastern District* Treatment Effect	Standard error	N	R-squared
A. Income, Consumption, and Employment							
Ln(Annual Household Income)	7.077	0.027	[0.020]	0.061**	[0.029]	4,578	0.15
Ln(Annual Household Consumption)	7.509	0.004	[0.019]	0.030	[0.034]	4,315	0.22
Respondent is Unemployed	0.065	0.005	[0.007]	-0.024**	[0.011]	4,621	0.08
Respondent is Employed in Subsistence Agriculture and Husbandry	0.554	-0.032**	[0.014]	0.025	[0.038]	4,621	0.16
Summary Index	-0.002	0.026**	[0.013]	0.011	[0.025]	4,665	0.18
B. Perceptions of Economic Situation by Male Respondents							
Respondent Perceives Household's Situation Has Improved in the Past Year	0.406	0.044***	[0.014]	0.016	[0.032]	4,662	0.21
Respondent Expects Economic Welfare of Villagers to Improve Next Year	0.302	0.053***	[0.013]	-0.006	[0.029]	4,633	0.11
C. Perceptions of Economic Situation by Female Respondents							
Respondent Perceives Household's Situation Has Improved in the Past Year	0.287	0.044***	[0.016]	0.079***	[0.027]	4,227	0.23
Respondent Expects Economic Welfare of Villagers to Improve Next Year	0.377	0.042***	[0.016]	0.024	[0.036]	4,213	0.18
D. Migration according to village leaders							
Net Number of Families Migrating to the Village	4.805	1.055	[1.528]	19.355*	[10.915]	460	0.68

Treatment effect is estimated in the regression, which includes a constant, a dummy variable for villages that have been assigned to the treatment group and fixed effects for the matched pairs. Measures of income, consumption and migration are winsorized at 1 percent and 99 percent level. Robust standard errors adjusted for clustering at the village-cluster level in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

Courtesy of Beath, Andrew; Fotini Christia; and Ruben Enikolopov. (IGO).

Effects on perceptions of government, security forces, and NGOs

Table 3: Perceptions of Government, Civil Society, and ISAF Soldiers

Variable	Mean in Control	Treatment Effect	Standard error	Eastern District* Treatment Effect	Standard error	N	R-squared
District Governor Acts For the Benefit of All Villagers	0.654	0.061***	[0.014]	-0.018	[0.046]	4,414	0.28
Provincial Governor Acts For the Benefit of All Villagers	0.707	0.077***	[0.014]	-0.115***	[0.038]	4,148	0.26
Central Government Officials Act For the Benefit of All Villagers	0.688	0.061***	[0.015]	-0.080**	[0.036]	4,256	0.22
President of Afghanistan Act For the Benefit of All Villagers	0.801	0.057***	[0.012]	-0.097***	[0.023]	4,490	0.22
Members of Parliament Act For the Benefit of All Villagers	0.557	0.079***	[0.014]	-0.099***	[0.036]	4,409	0.24
Government Judges Act For the Benefit of All Villagers	0.512	0.063***	[0.017]	-0.067*	[0.040]	4,491	0.20
National Police Act For the Benefit of All Villagers	0.725	0.038***	[0.014]	-0.129***	[0.035]	4,556	0.22
NGO Employees Act For the Benefit of All Villagers	0.684	0.063***	[0.014]	-0.096***	[0.037]	4,472	0.17
ISAF Soldiers Act For the Benefit of All Villagers	0.289	0.042**	[0.016]	-0.030	[0.023]	4,062	0.18
Summary Measure	-0.004	0.128***	[0.022]	-0.177***	[0.049]	4,660	0.28

Treatment effect is estimated in the regression, which includes a constant, a dummy variable for villages that have been assigned to the treatment group and fixed effects for the matched pairs. All the measures are based on the responses of male villagers. Robust standard errors adjusted for clustering at the village-cluster level in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

Courtesy of Beath, Andrew; Fotini Christia; and Ruben Enikolopov. (IGO).

Effects on perceived level of security

Table 4: Perceptions of Security

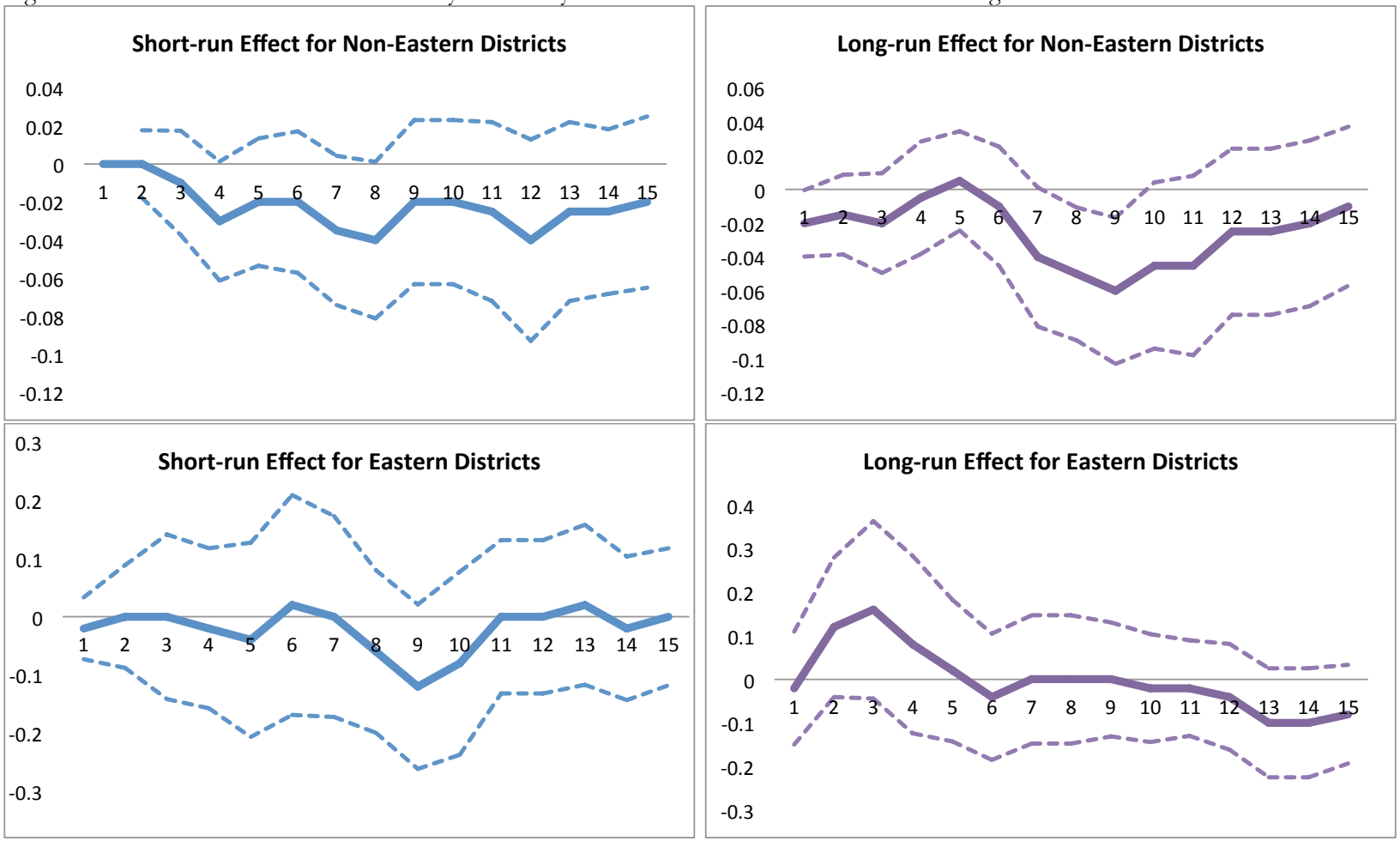
Variable	Mean in Control	Treatment Effect	Standard error	Eastern District* Treatment Effect	Standard error	N	R-squared
A. Security Perception by Male Respondents							
Respondent Believes Security In and Around Village Has Improved in Past Two Years	0.655	0.058***	[0.015]	-0.042	[0.032]	4,661	0.28
Respondent Believes Security In and Around Village Has Deteriorated in Past Two Years	0.121	-0.026**	[0.010]	0.041*	[0.021]	4,661	0.22
Summary Measure	-0.028	0.099***	[0.027]	-0.106**	[0.051]	4,661	0.29
B. Security Perception by Female Respondents							
Respondent Believes that compared to two years ago women feel more safe in working for NGOs or the government or attending training courses	0.292	0.049***	[0.018]	-0.054	[0.038]	4,063	0.29
Respondent Believes that compared to two years ago women feel less safe in working for NGOs or the government or attending training courses	0.171	-0.039**	[0.016]	0.013	[0.032]	4,063	0.32
Respondent Believes that compared to two years ago teenage girls feel more safe when traveling to and from school or when socializing with other girls	0.294	0.044**	[0.018]	-0.069	[0.043]	4,020	0.27
Respondent Believes that compared to two years ago teenage girls feel less safe when traveling to and from school or when socializing with other girls	0.213	-0.037**	[0.017]	0.009	[0.055]	4,020	0.31
Summary Measure	0.003	0.098***	[0.034]	-0.084	[0.059]	4,102	0.29

Treatment effect is estimated in the regression, which includes a constant, a dummy variable for villages that have been assigned to the treatment group and fixed effects for the matched pairs. Robust standard errors adjusted for clustering at the village-cluster level in brackets. * significant at 10%; ** significant at 5%; *** significant at 1%.

Courtesy of Beath, Andrew; Fotini Christia; and Ruben Enikolopov. (IGO).

Effects on objective measure of security

Figure 3. Treatment Effect for the Probability of Security Incidents for Different Radii around Villages



Notes: The figures plot estimated treatment effects (along with 5% confidence interval) for the probability of having a security incident within a certain radius of a village, where the radius changes from 1km to 15km.

Courtesy of Beath, Andrew; Fotini Christia; and Ruben Enikolopov. (IGO).

Other work on aid and conflict

- Berman, Shapiro, and Felter (2011) find that US military development aid in Iraq reduced violence (but only after the Surge)

Consequences of conflict

- On combatants
- Short-term economic growth
- Long-term economic growth

Causal effects of being a child soldier

- There is very little evidence
- Lack of data
  - Dangerous to collect
  - Migration and mortality make tracking people hard
- Need valid counterfactual — people who are identical but for not having been child soldiers

Why northern Uganda?

- Unpopular rebel movement (Lord's Resistance Army)
- Children mostly abducted, so not self-selection
- Rebel leaders say they abducted adolescent boys indiscriminately
- Can check in data if this looks to be true

Hypothesized effects

- Disrupted education, work experience
- Psychological trauma – aggression, distress
- Injuries, worse physical health
- Social ties broken

Baseline characteristics

TABLE 2.—COMPARISON OF MEANS

	(1)	(2)	(3)	(4)
	Abducted versus Nonabducted		Militia versus Nonmilitia Members	
	Difference in Means[b]		Difference in Means[b]	
Pretreatment Covariate	Unconditional	Conditional	Unconditional	Conditional
Year of birth[a]	1.02 [0.44]**	1.27 [0.51]**	2.76 [0.82]***	2.31 [0.65]***
Indicator for father a farmer[a]	0.01 [0.02]	−0.01 [0.02]	0.06 [0.04]	0.05 [0.04]
Household size in 1996[a]	−0.33 [0.41]	−1.51 [0.32]***	0.34 [1.01]	1.32 [0.54]**
Landholdings in 1996[a]	0.57 [2.09]	−1.46 [2.72]	−6.69 [4.13]	−7.12 [4.28]
Indicator for top 10% of landholdings[a]	0.00 [0.03]	−0.02 [0.03]	−0.10 [0.04]**	−0.12 [0.05]**
Cattle in 1996[a]	5.12 [4.14]	6.21 [4.98]	−10.07 [6.18]	−4.51 [3.51]
Other livestock in 1996[a]	0.96 [2.72]	2.07 [1.66]	−6.25 [2.60]**	−1.94 [2.38]
Indicator for plow ownership in 1996[a]	0.03 [0.07]	−0.01 [0.04]	−0.18 [0.08]**	−0.06 [0.04]
Indicator for uneducated father	0.01 [0.02]	0.02 [0.02]	−0.05 [0.03]	−0.12 [0.04]***
Father's years of schooling	−0.05 [0.28]	−0.06 [0.30]	−0.04 [0.44]	0.41 [0.43]
Indicator for uneducated mother	−0.01 [0.03]	−0.01 [0.04]	0.09 [0.08]	0.05 [0.10]
Mother's years of schooling	−0.10 [0.26]	−0.12 [0.34]	−0.44 [0.41]	−0.14 [0.65]
Indicator for paternal death before 1996	0.02 [0.04]	0.03 [0.05]	0.04 [0.13]	0.05 [0.11]
Indicator for maternal death before 1996	0.01 [0.02]	0.02 [0.02]	−0.07 [0.04]*	−0.03 [0.03]
Indicator for orphaning before 1996	0.00 [0.02]	−0.02 [0.02]	−0.05 [0.02]**	−0.01 [0.02]

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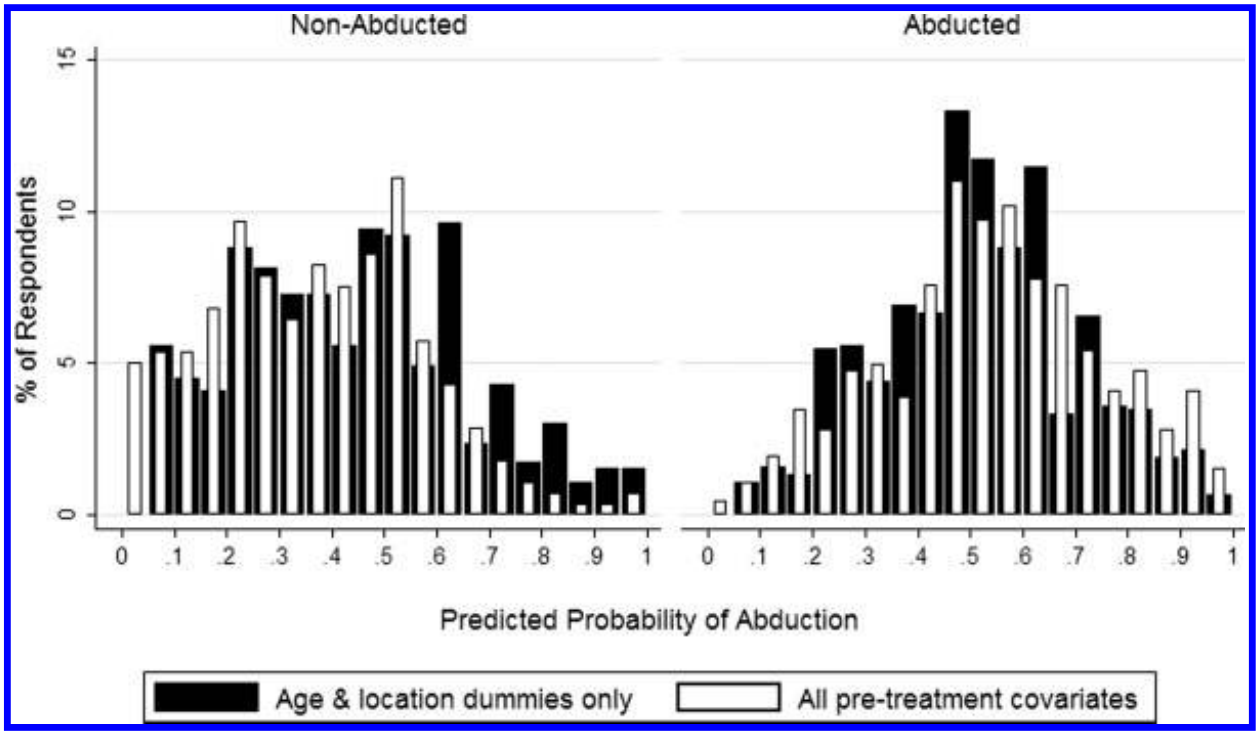
Propensity score

- Selection on observables: Observable characteristics explain why some are abducted (*Treated*) and some are not
- Conditional on covariates, *Treated* is exogenous
- Logit regression of *Treated* on baseline covariates, e.g., age dummies, location dummies, parents' educ
- For each observation, have predicted value from the regression (propensity score)
- Systematically, people who were *Treated* will have a higher propensity score
- But some people will have a high propensity score yet weren't in fact treated, and vice versa

Propensity to be abducted

FIGURE 3.—DISTRIBUTIONS OF THE PREDICTED PROBABILITY OF ABDUCTION BASED ON AGE AND LOCATION ALONE VERSUS ALL PRETREATMENT COVARIATES (BY ABDUCTION STATUS)



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How the paper uses the propensity score

- Propensity score gives us a single index so that we can use weighting in our regression analysis
- Weighted regression
  - $w_i = \frac{T_i}{\widehat{PS}_i} + \frac{1-T_i}{1-\widehat{PS}_i}$
  - Put more weight on treated obsns with low propensity score and vice versa

Impacts

TABLE 3.—ESTIMATES OF THE AVERAGE TREATMENT EFFECT OF ABDUCTION

Dependent Variable	(1) ATE	(2) Nonabducted mean	(3) %Δ
Educational and labor market outcomes			
Years of education	−0.75 [0.17]***	7.6	−10%
Indicator for functional literacy	−0.15 [0.04]***	0.80	−19%
Indicator for any employment in the past month	0.03 [0.04]	0.61	5%
Indicator for capital- or skill-intensive work	−0.05 [0.02]**	0.12	−43%
Log (Daily wage)	−0.33 [0.15]**	n.a	n.a
Psychosocial and health outcomes			
Index of psychological distress	0.57 [0.20]***	3.8	15%
Indicator for top quartile of distress	0.11 [0.04]***	0.23	49%
Index of social support	−0.16 [0.14]	5.5	−3%
Indicator for hostile attitudes	0.03 [0.01]**	0.07	40%
Indicator for physical fights	–0.02 [0.02]	0.07	–29%

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Attrition

- A lot of attrition of both abducted and non-abducted
- More attrition among the abducted (mortality, still in LRA)
- What if the people who the researchers couldn't track down had especially good outcomes? Bad outcomes?
- Can bound what the effects would be in these scenarios
- Drop obsns of the non-abductees such that attrition rate is equalized, dropping either those with the best or worst outcomes

Bounding results due to attrition

TABLE 6.—TREATMENT EFFECT BOUNDING FOR SELECTIVE ATTRITION

	(1)	(2)	(3)	(4)	(5)
	% Missing Data[a]		Treatment Effect Bounds[c]		
Dependent Variable	Not Abducted	Abducted	Untrimmed ATE[b]	"Best Case" Attrition Bound	"Worst Case" Attrition Bound
Educational and labor market outcomes					
Years of education	11%	23%	−0.53 [0.20]**	−1.19 [0.24]***	0.23 [0.24]
Indicator for functional literacy	11%	23%	−0.12 [0.03]***	−0.23 [0.04]***	−0.09 [0.03]***
Indicator for any employment in the past month	11%	23%	0.11 [0.03]***	0.17 [0.04]***	0.03 [0.04]
Indicator for capital- or skill-intensive work	28%	30%	−0.04 [0.02]	−0.05 [0.02]	−0.02 [0.04]
Log (Daily wage)	59%	54%	−0.13 [0.12]	−0.38 [0.15]**	0.14 [0.15]
Psychosocial and health outcomes					
Index of psychological distress	28%	30%	0.56 [0.17]***	0.71 [0.30]**	0.49 [0.22]**
Indicator for top quartile of distress	28%	30%	0.13 [0.03]***	0.15 [0.05]***	0.12 [0.04]***
Index of social support	28%	30%	−0.10 [0.19]	−0.20 [0.27]	0.05 [0.28]
Indicator for hostile attitudes	28%	30%	0.03 [0.02]	0.05 [0.04]	0.03 [0.02]
Indicator for physical fights	28%	30%	0.00 [0.02]	0.02 [0.04]	−0.01 [0.02]

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Short-run economic impact

- A nice study of the economic impact – in the short run – of conflict comes from Spain
- This study examines the impact of Basque terrorism that began in the late 1960s
- ETA targeted entrepreneurs and firms, e.g., to raise funds
- Compares GDP per capita in the Basque country to other provinces which were chosen to match the Basque country before terrorism started (synthetic control)
- Findings: about a 10% reduction in output per-capita due to the conflict
- Note: not much capital destroyed (i.e., not like World War II in Europe), so this is mostly capturing flight of workers, lack of investment

Basque country versus synthetic control group

TABLE 3—PRE-TERRORISM CHARACTERISTICS, 1960'S

	Basque Country (1)	Spain (2)	"Synthetic" Basque Country (3)
Real per capita GDP[a]	5,285.46	3,633.25	5,270.80
Investment ratio (percentage)[b]	24.65	21.79	21.58
Population density[c]	246.89	66.34	196.28
Sectoral shares (percentage)[d]			
Agriculture, forestry, and fishing	6.84	16.34	6.18
Energy and water	4.11	4.32	2.76
Industry	45.08	26.60	37.64
Construction and engineering	6.15	7.25	6.96
Marketable services	33.75	38.53	41.10
Nonmarketable services	4.07	6.97	5.37
Human capital (percentage)[e]			
Illiterates	3.32	11.66	7.65
Primary or without studies	85.97	80.15	82.33
High school	7.46	5.49	6.92
More than high school	3.26	2.70	3.10

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Short-run economic impact

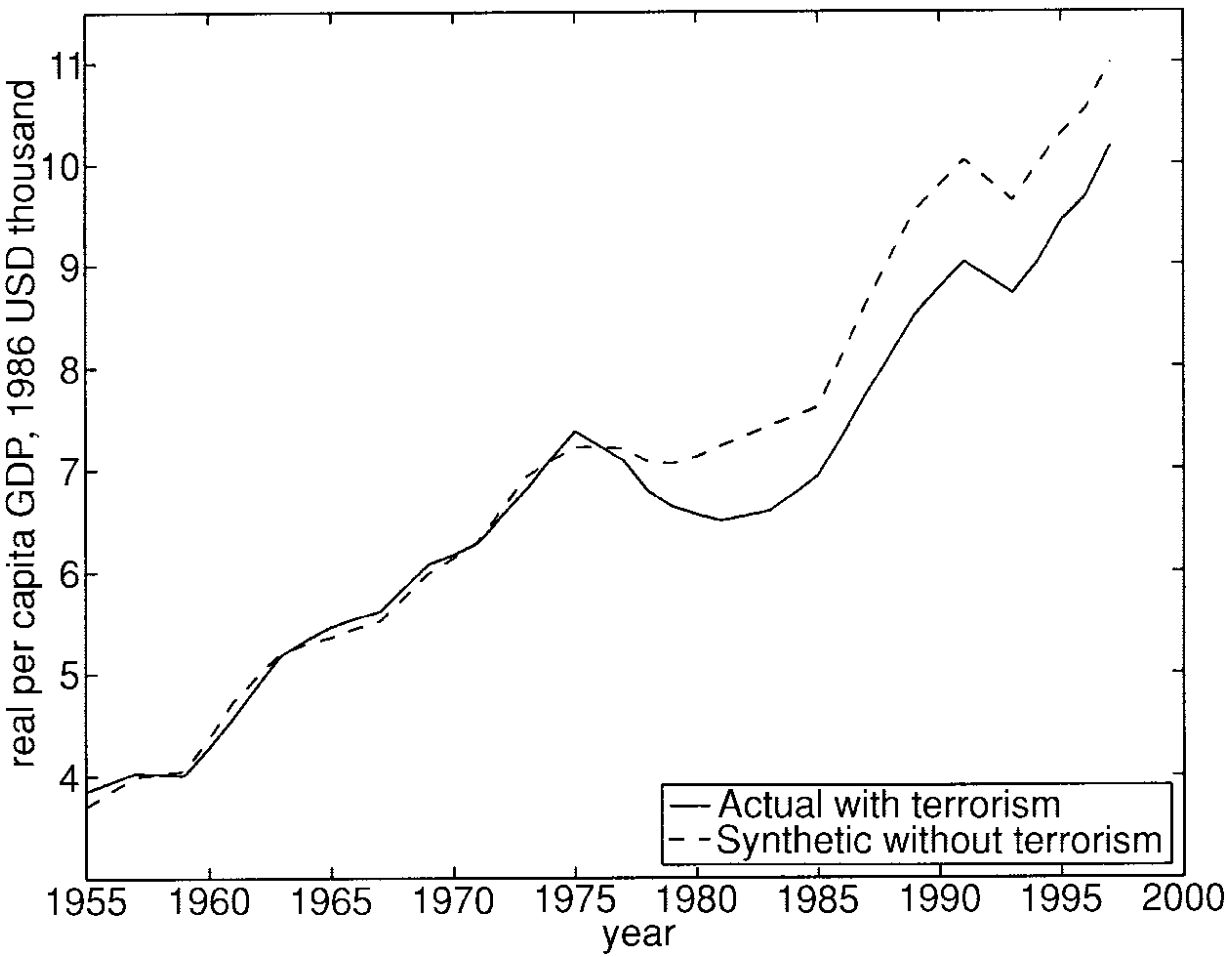

FIGURE 1. PER CAPITA GDP FOR THE BASQUE COUNTRY

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GDP gap versus killings

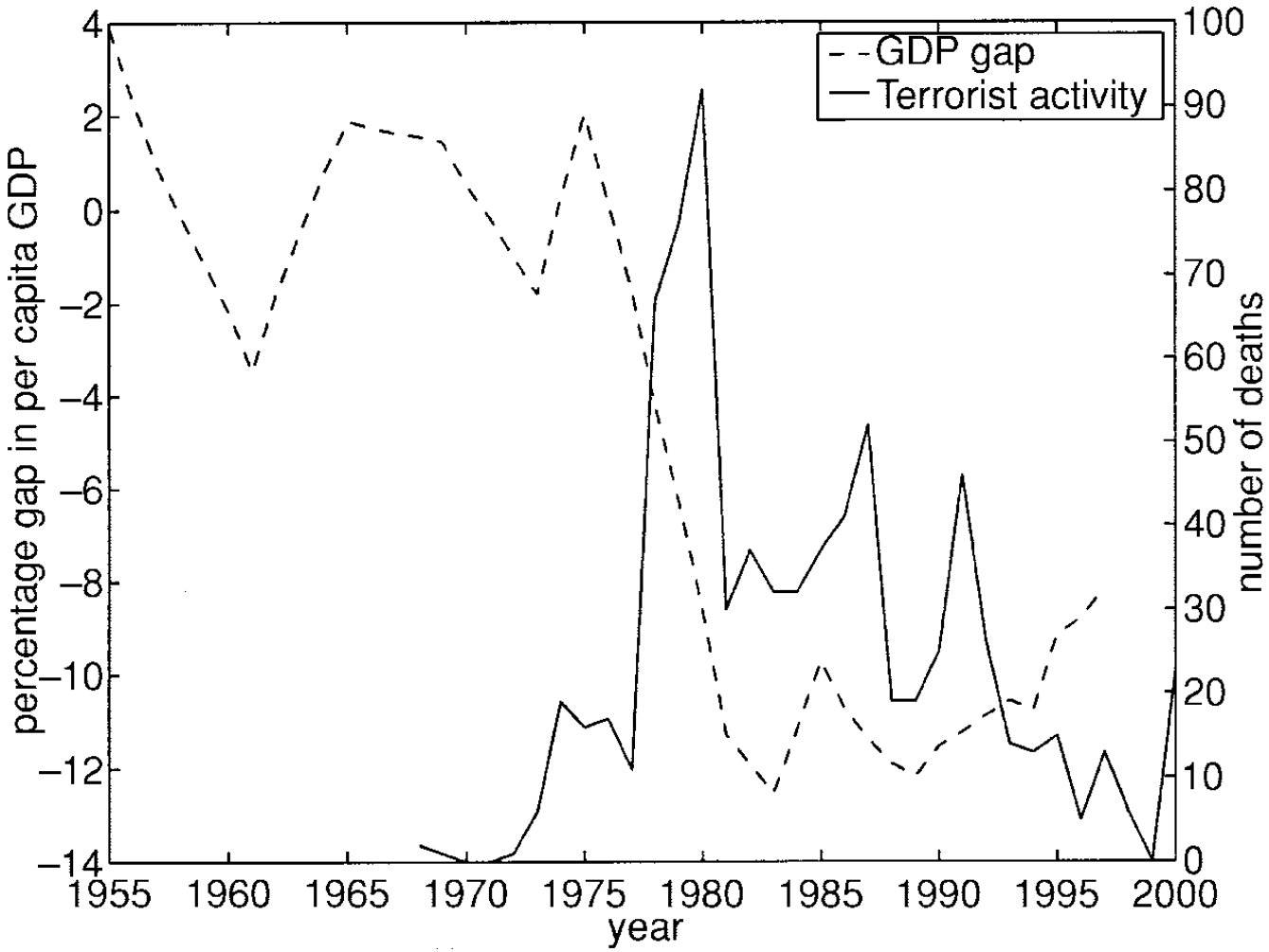

FIGURE 2. TERRORIST ACTIVITY AND ESTIMATED GAP

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"Placebo" test using another region

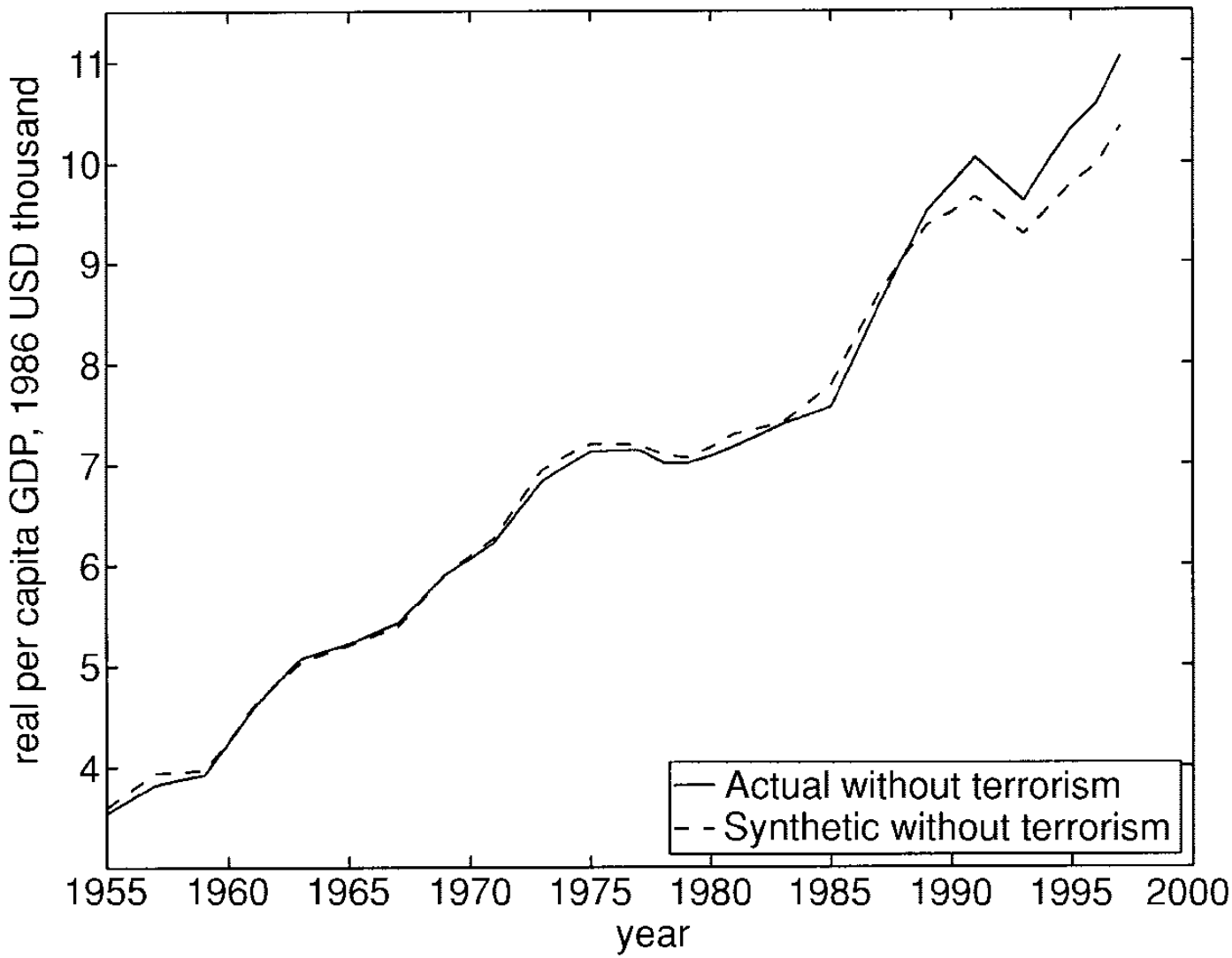

FIGURE 4. A "PLACEBO STUDY," PER CAPITA GDP FOR CATALONIA

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What about the long run?

- At the micro and macro level, conflict seems to impose costs when it happens
  - Lost economic activity
  - Reduced human capital
- Do you think these shocks should persist? i.e. after a war, do you think you are permanently poorer, or do you recover?
- Thoughts?

Why you might be permanently poorer

- The key question is whether there is a poverty trap or not
- Consider the following very simple model
- Suppose

$$y = f(k)$$

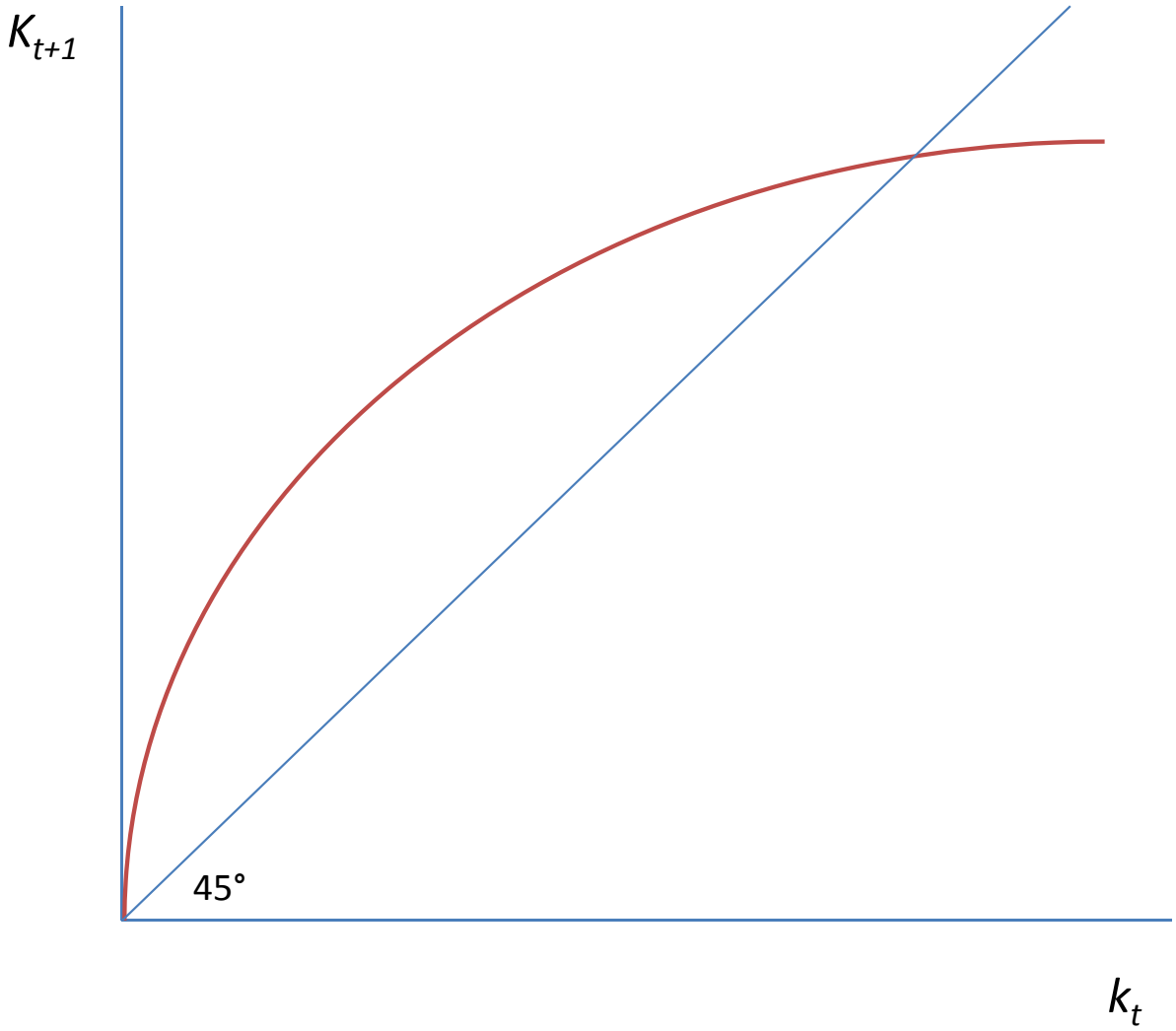
where $f(k)$ is the aggregative production function as a function of the per-person capital stock k

- Suppose people invest a constant fraction α of output. Capital depreciates at rate δ. Then

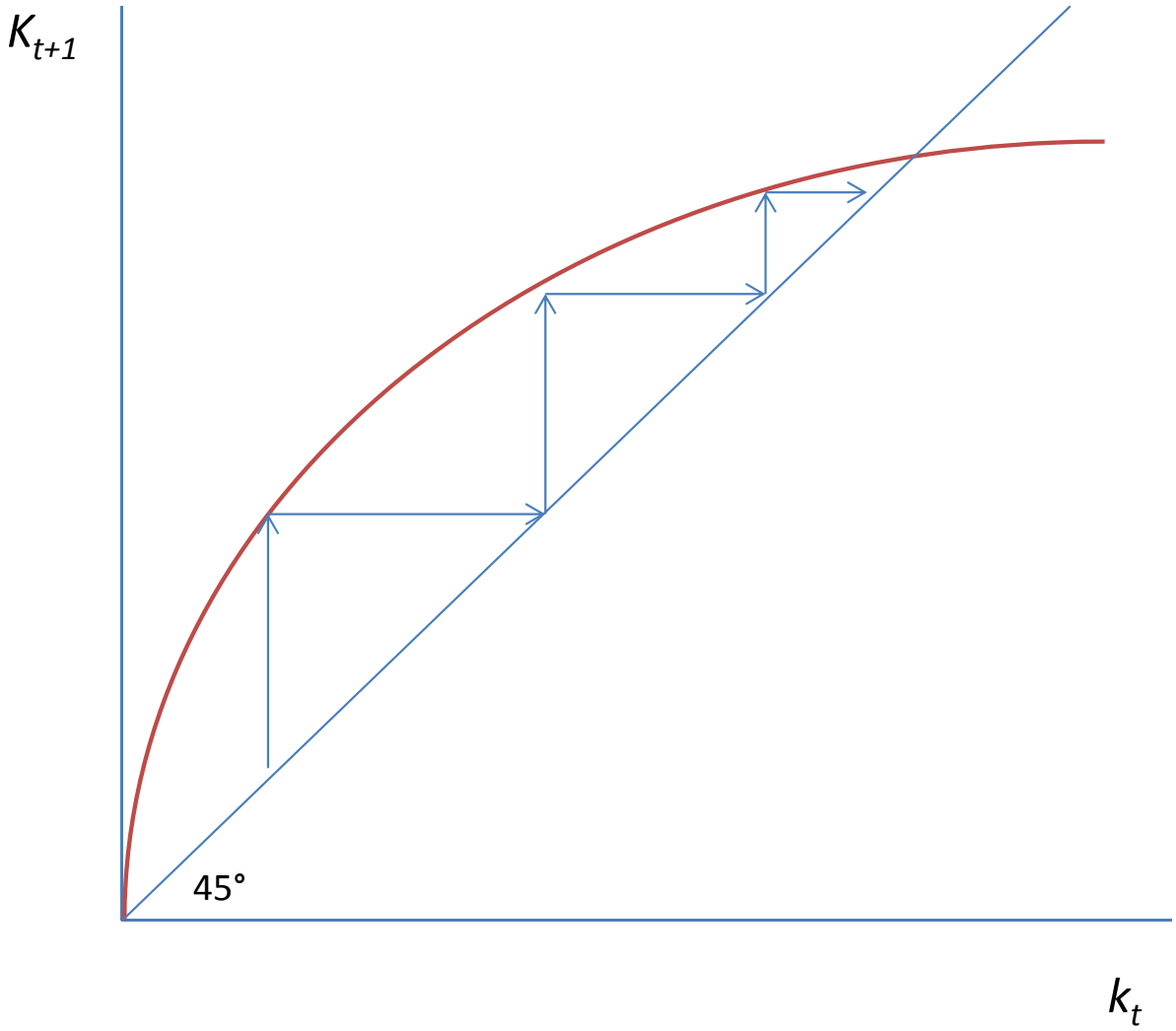
$$\begin{aligned} k_{t+1} &= k + \alpha f(k) - \delta k \\ &= (1-\delta) k + \alpha f(k) \end{aligned}$$

- We can think of a war as a shock to k – we reduce k by some amount.
- What is the long run effect?
- Answer: it depends on the production function

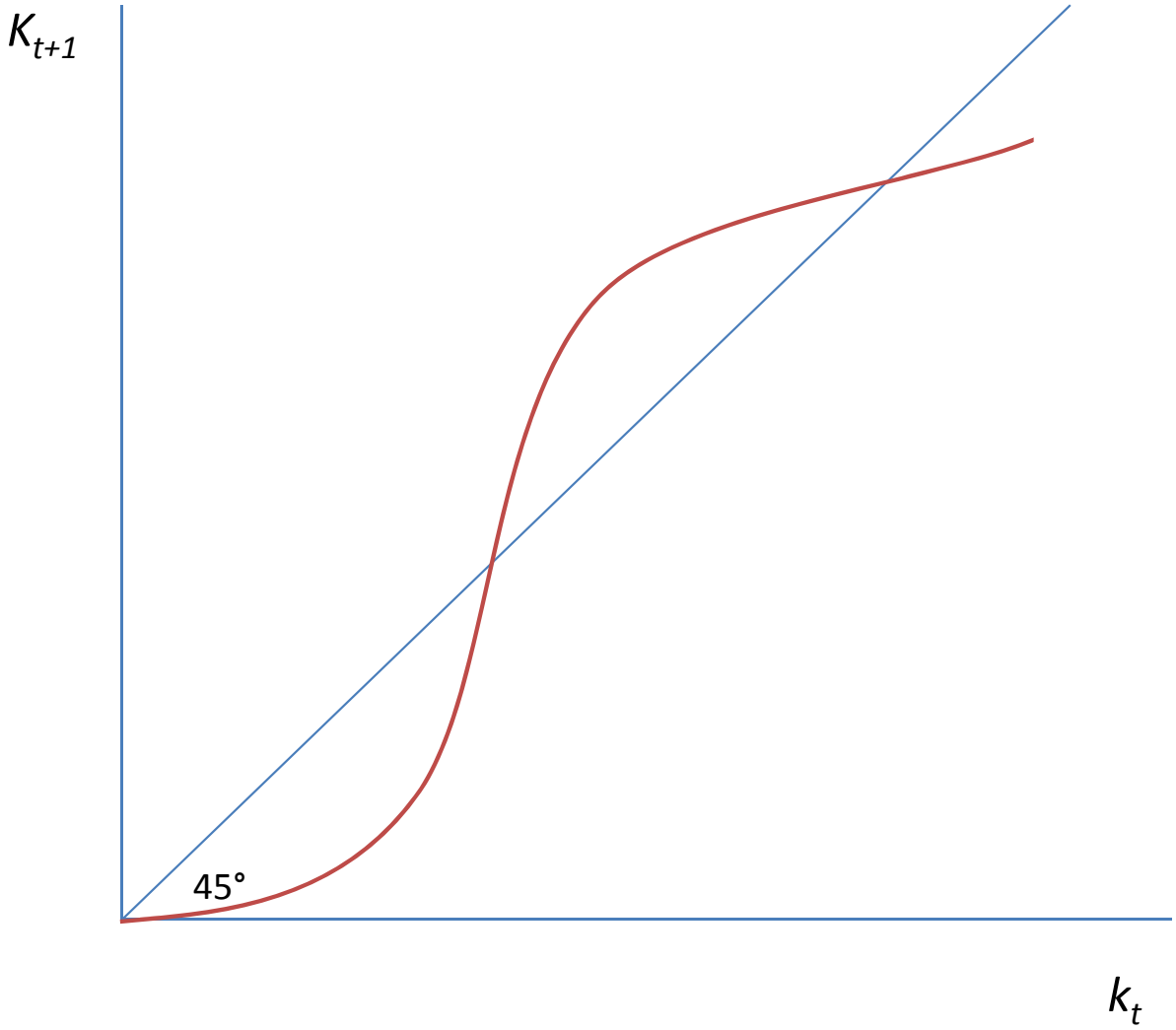
Example with no poverty traps



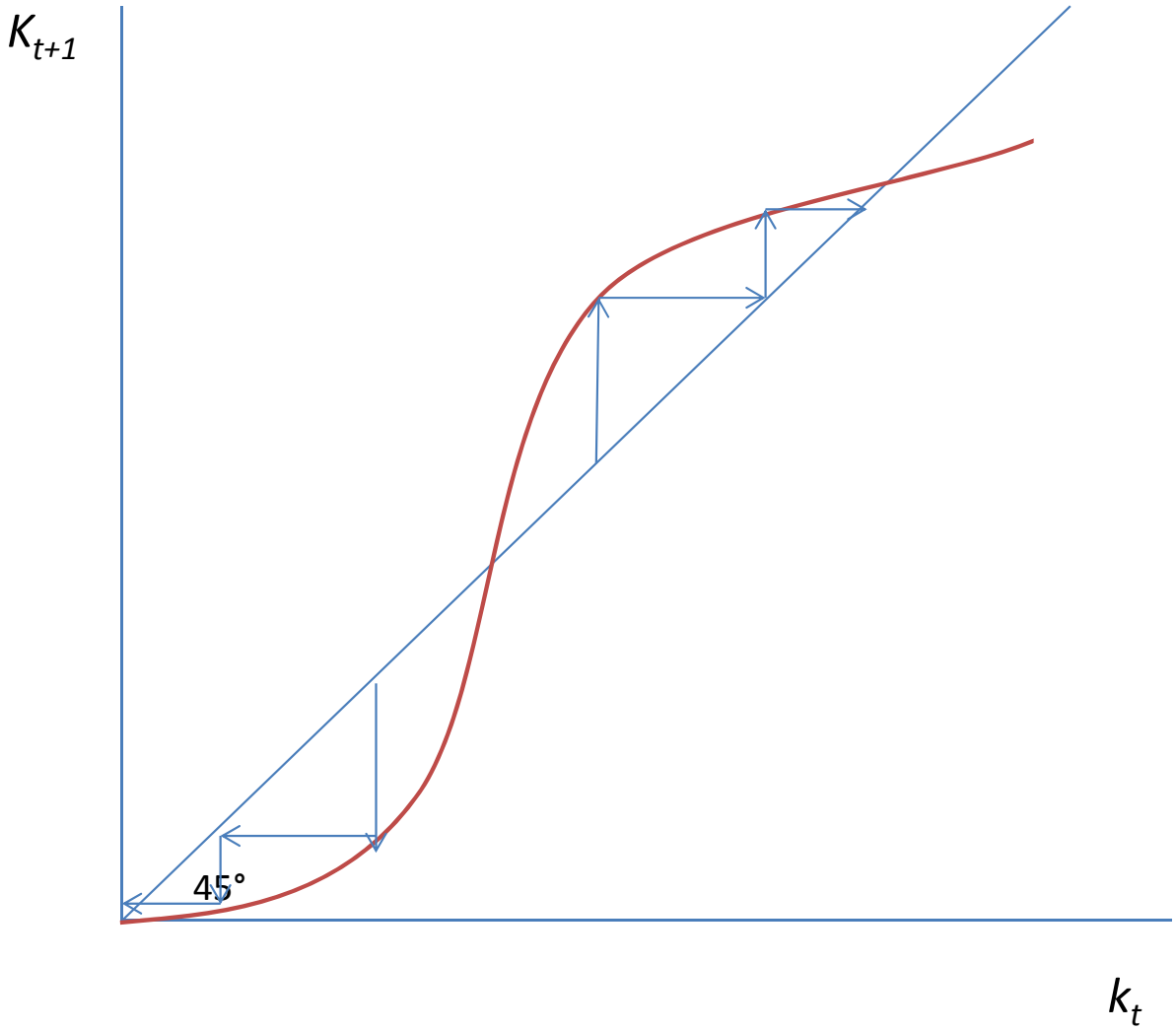
Example with no poverty traps



Example with poverty traps



Example with poverty traps

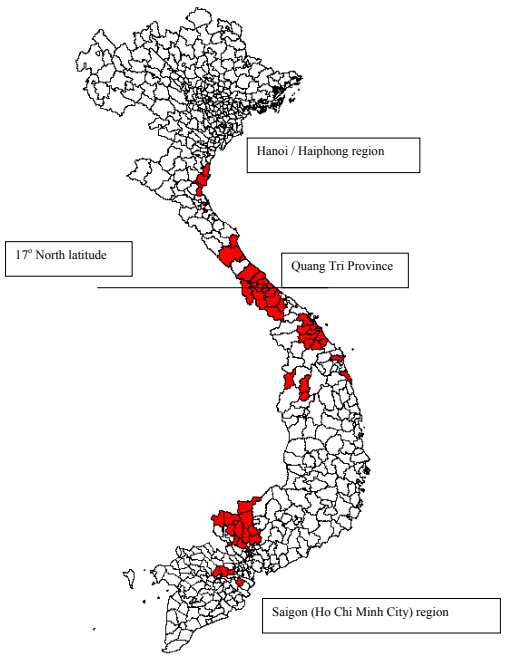


Some evidence

Miguel and Roland 2010: "The Long Run Impact of Bombing Vietnam"

- The US dropped *a lot* of bombs on Vietnam during the Vietnam War
- The bombing was concentrated – roughly 70% of total ordinance was dropped in 10% of districts

Figure 1: Map of Vietnam – 10% of districts with the highest total U.S. bombs, missiles, and rockets per km^2 shaded



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Empirical strategy

Miguel and Roland 2010: "The Long Run Impact of Bombing Vietnam"

- Empirical approach:
  - Compare areas that were more heavily bombed to those that were less heavily bombed, controlling for geography, etc.
  - Use closeness to 17th parallel – North/South border and center of fighting – as IV for bombing
- Thoughts on IV strategy?

Results

Bombing does increase poverty in the medium-run

Table 4: Local bombing impacts on estimated 1999 poverty rate

	Dependent variable: Estimated poverty rate, 1999					
	OLS	OLS	OLS	OLS	OLS	IV-2SLS
	(1)	(2)	(3)	(4)	(5)	(6)
Total U.S. bombs, missiles, and rockets per km^2	-0.00087*	-0.00040*	-0.00065***	-0.00079***		0.00026
	(0.00048)	(0.00022)	(0.00012)	(0.00016)		(0.00042)
Population density (province), 1960-61 (÷100)	-0.0089***	-0.0021**		-0.0023**	-0.0021**	-0.0020*
	(0.0016)	(0.0009)		(0.0010)	(0.0010)	(0.0010)
Former South Vietnam	-0.317***	-0.174**		-0.122*	-0.139**	-0.104
	(0.087)	(0.071)		(0.071)	(0.058)	(0.082)
Proportion of land area 250-500m	0.341***	0.339***	0.182***	0.325***	0.342***	0.349***
	(0.096)	(0.070)	(0.067)	(0.069)	(0.070)	(0.073)
Proportion of land area 500-1000m	0.386**	0.261***	0.157**	0.261***	0.253***	0.257***
	(0.172)	(0.052)	(0.062)	(0.053)	(0.054)	(0.055)
Proportion of land area over 1000m	0.571**	-0.048	-0.001	-0.066	-0.044	-0.043
	(0.231)	(0.113)	(0.159)	(0.111)	(0.120)	(0.116)
Average precipitation (cm)	0.00027	0.00111***	0.00060	0.00110***	0.00068*	0.00063
	(0.00044)	(0.00035)	(0.00046)	(0.00033)	(0.00038)	(0.00044)
Average temperature (celsius)	0.033	-0.012	-0.034	-0.013	-0.0143	-0.0143
	(0.029)	(0.019)	(0.022)	(0.020)	(0.0196)	(0.0199)
Latitude (^{o}N)	-0.0127	-0.0088	0.038	-0.0044	-0.0051	-0.0025
	(0.0108)	(0.0088)	(0.026)	(0.0088)	(0.0081)	(0.0100)
| Latitude – 17^{o}N |					-0.0044	
					(0.0069)	
District soil controls	No	Yes	Yes	Yes	Yes	Yes
Province fixed effects	No	No	Yes	No	No	No
Exclude Quang Tri province	No	No	No	Yes	No	No
Observations	55	584	584	576	584	584
R^2	0.75	0.61	0.79	0.63	0.60	-
Mean (s.d.) dependent variable	0.39 (0.16)	0.41 (0.20)	0.41 (0.20)	0.41 (0.20)	0.41 (0.20)	0.41 (0.20)

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Conclusions

- Coase theorem suggests a key puzzle is why conflict occurs in equilibrium – and much theory is about providing explanations for this phenomenon... and developing tests of their implications
- Empirics on causes of conflict largely limited to date by cross-country nature of conflict, which makes identification challenging
- Within-country approach therefore seems promising
  - e.g., Dube and Vargas testing natural resource curse theories
- This approach may or may not work for some questions of commitment, leaders, etc., that operate at national level, but thinking about how to test these concepts within countries is an open direction
- On consequences of conflict, more well-identified work exists, but high returns to devising smart counterfactuals to examine long-run and aggregate impacts
  - e.g., Abadie estimating cost of Basque conflict in Spain

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