

Armed Conflict and the Location of Extractive FDI

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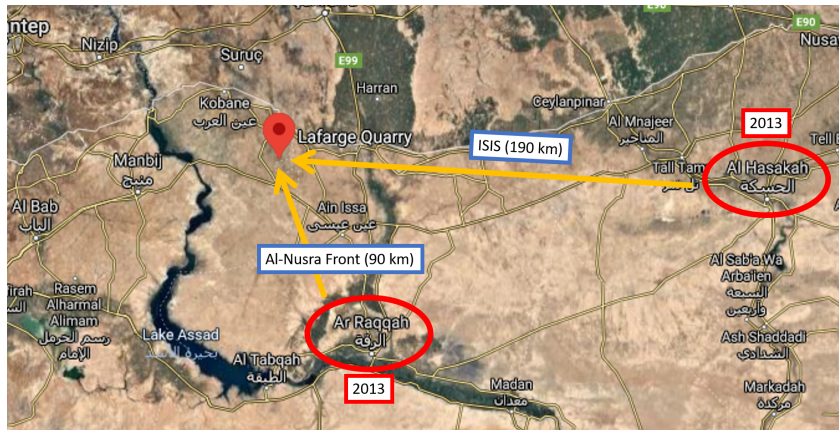
Texas A&M University

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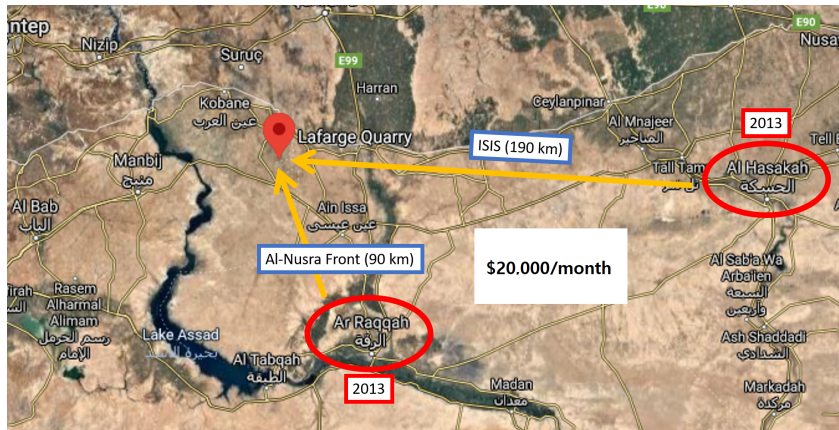
The Lafarge Cement Factory, Syria (2007)



The Lafarge Cement Factory, Syria (2013-2014)



The Lafarge Cement Factory, Syria (2013-2014)



The Lafarge Cement Factory, Syria (2019)



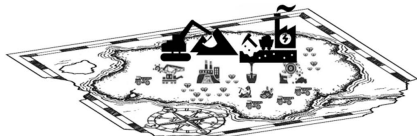
The Lafarge Cement Factory, Syria (2019)



Extractive FDI



About a quarter of the global FDI in 2003
American extractive FDI in 2020 was \$154 trillion



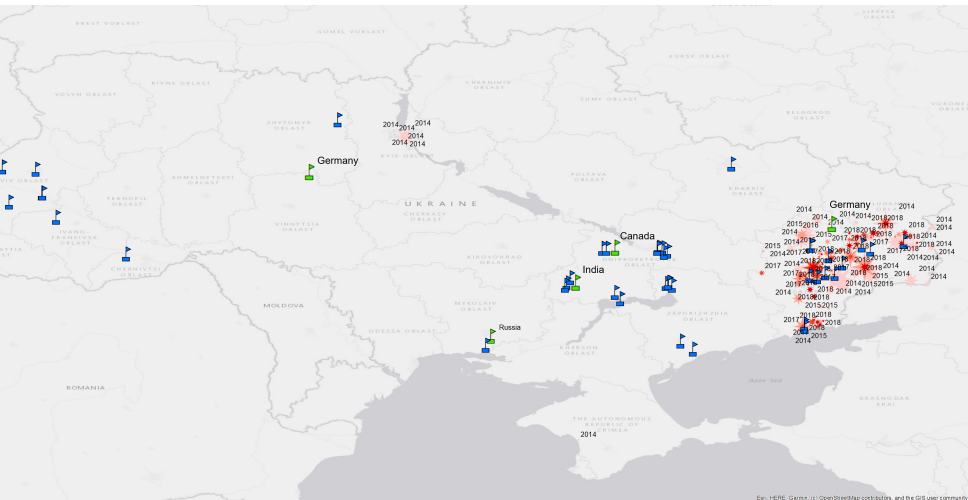
Extractive FDI

- ▶ Protecting US miners abroad is strategically important
- ▶ Stable supply of raw materials
- ▶ Competition for natural resources
- ▶ Political and economic ties with host countries

Research Question

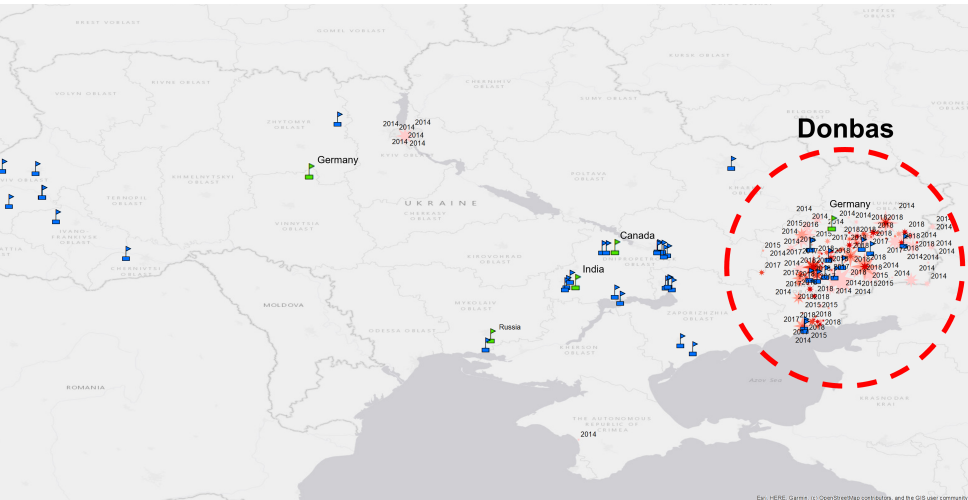
- ▶ Mining industries are vulnerable to insurgent attacks and even enhance greed and grievance (e.g. Collier 1998, 2004, Holden&Jacobson 2007)
- ▶ How does extractive FDI affect the location of armed conflict?
- ▶ Does extractive FDI invite armed conflict in the vicinity or prevent it?
- ▶ Why do some foreign miners locate their facility in conflict-prone areas, while others don't?

Armed Conflict in Ukraine



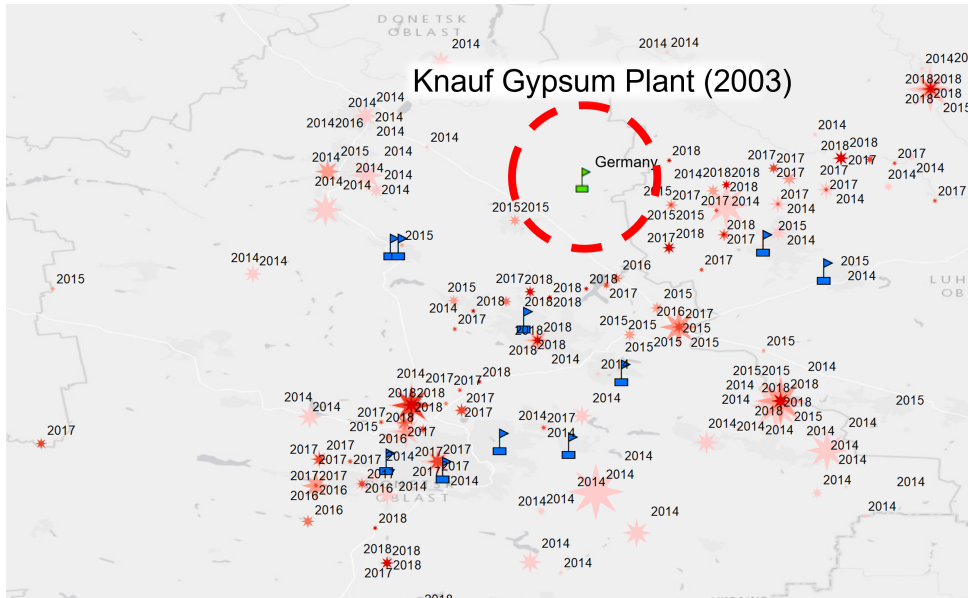
Exp: HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

Armed Conflict in Donbas, Ukraine



Esri, HERE, Garmin, (c) OpenStreetMap contributors, and the GIS user community

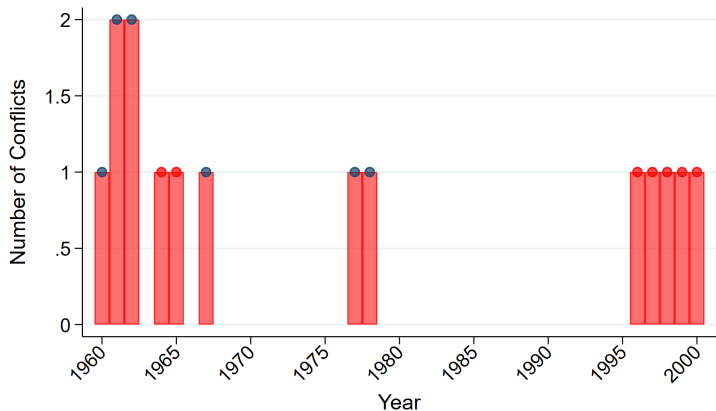
Armed Conflict in Donbas, Ukraine



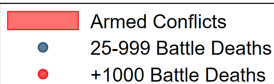
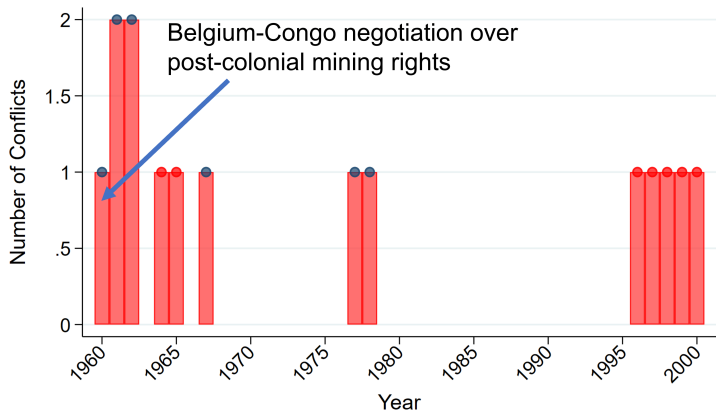
Preview

- ▶ Theory
The Restraining Effect of Extractive FDI on Armed Conflict
- ▶ Research Design
Causal inferences with fine-grained data
- ▶ Extractive FDI pacifies conflict areas

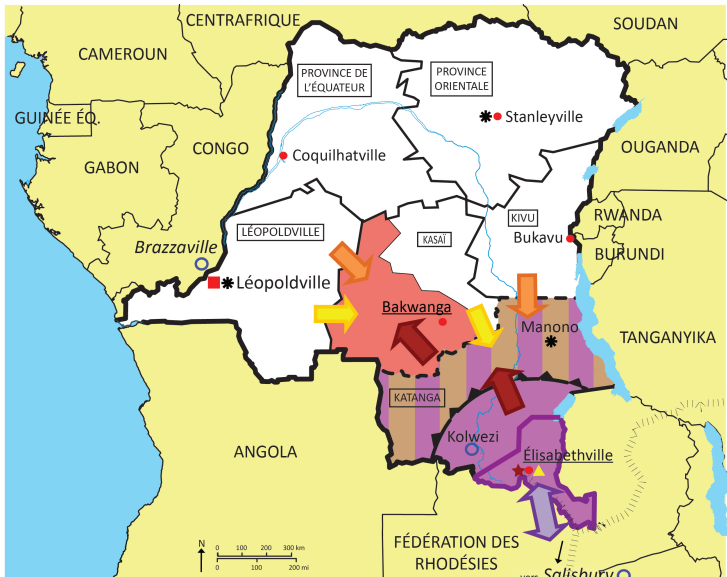
Armed Conflict in the DRC



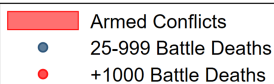
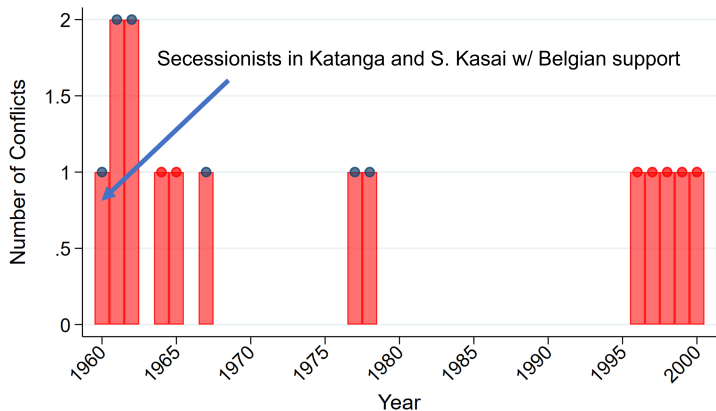
Armed Conflict in the DRC



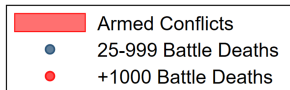
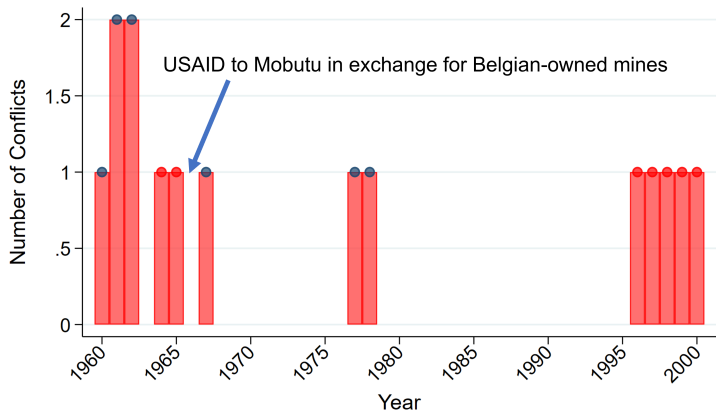
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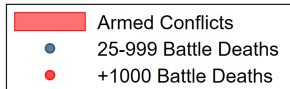
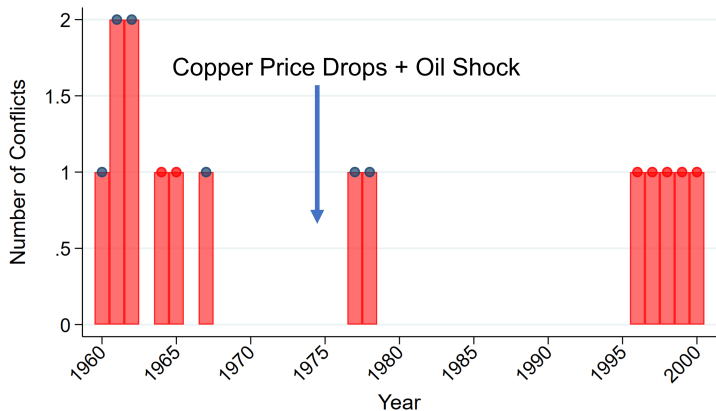
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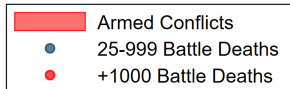
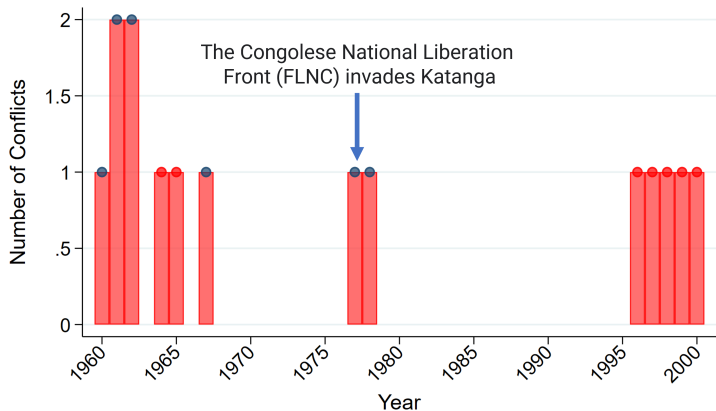
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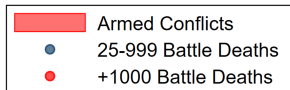
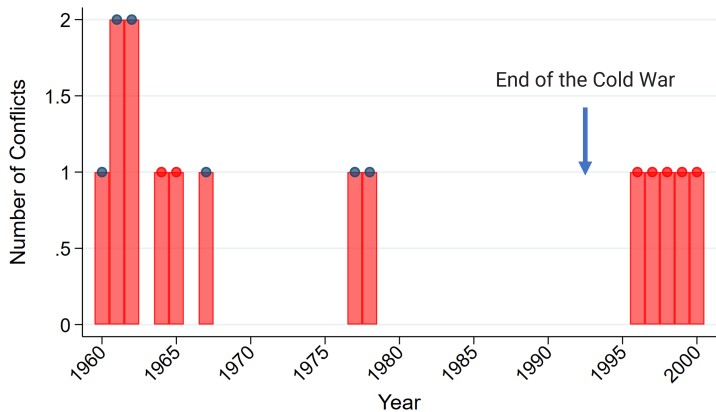
Armed Conflict in the DRC



Armed Conflict in the DRC



Armed Conflict in the DRC



The Restraining Effect of Foreign Ownership

- ▶ Belligerents **distinguish** between domestic-owned mines and foreign-owned mines
- ▶ Use of Military Force in the Protection of Nationals Abroad
- ▶ Direct and Indirect Military Intervention in Conflict

The Restraining Effect of Foreign Ownership

- ▶ US intervention in Colombia to protect Caño Limón Coveñas Oil Pipeline in 2001
- ▶ Anti-piracy measures in Somalia since 2008
- ▶ Angola's intervention in Guinea-Bissau in 2012
- ▶ French intervention in Niger to protect Areva in 2013
- ▶ Russian intervention in Africa through private military companies (e.g. Wagner Group, Vegacy, E.N.O.T., and Vostok Battalion) since 2017

The Restraining Effect of Foreign Ownership

- ▶ Fear of Foreign Military Intervention (Insurgents)
 - ▶ Shirking Responsibility for Protection (Counter-insurgents)
- ⇒ Fewer armed conflict from the vicinity of foreign-owned mines

The Restraining Effect of Foreign Ownership

- ▶ “Shirking Responsibility for Protection” may incentivize Insurgents to attack
 - ▶ Counter-insurgents do not fight back at this area until they can get enough expected foreign support to have a decisive battle
- ⇒ Fewer armed conflict in the vicinity of foreign-owned mines

Hypotheses

- H1 Areas around foreign-owned mines are less likely to experience armed conflict than areas with domestic-owned mines.
- H2 The restraining effect of foreign ownership is greater for firms whose home countries have greater military capabilities.

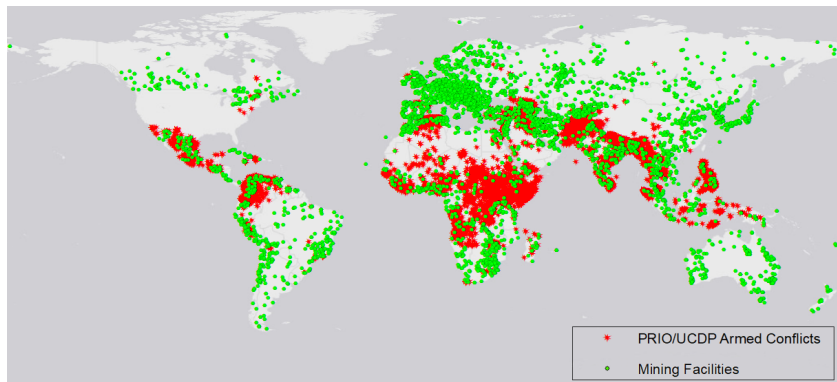
Research Design

- ▶ DV: the number of armed conflict within 300 km (UCDP/PRIO GED 19.1)

- ▶ IV: Foreign Ownership of a Mining Facility (Mineral operations outside the United States, USGS 2010)

- ▶ 6,222 mining facilities in 148 countries (except the US) which started operation between 2003-2008

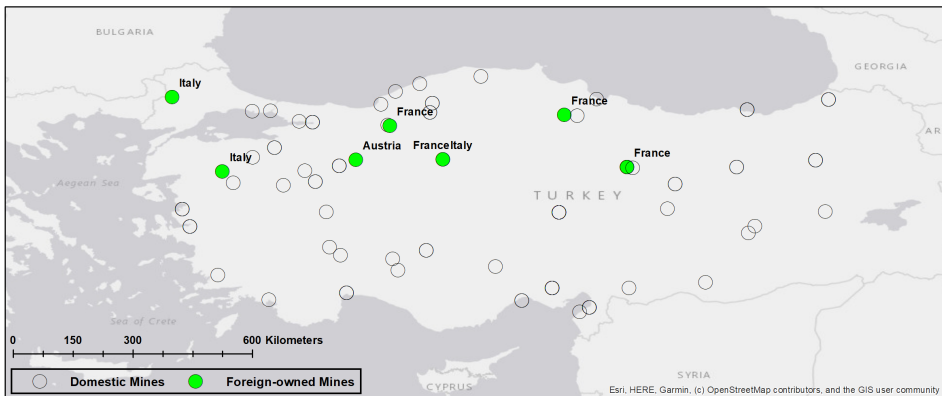
USGS Mines Data (2010)



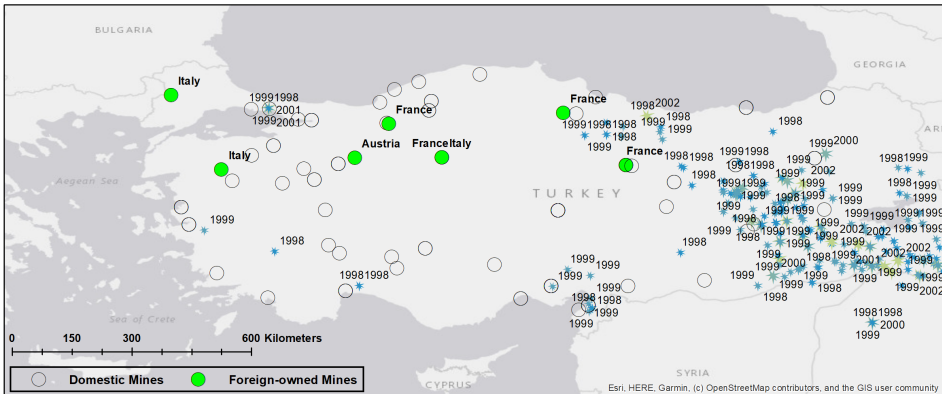
Research Design

- ▶ Staggered Difference-in-differences design
- ▶ Treatment variable: foreign ownership of a mine
- ▶ Intervention: each mine's starting year of operation

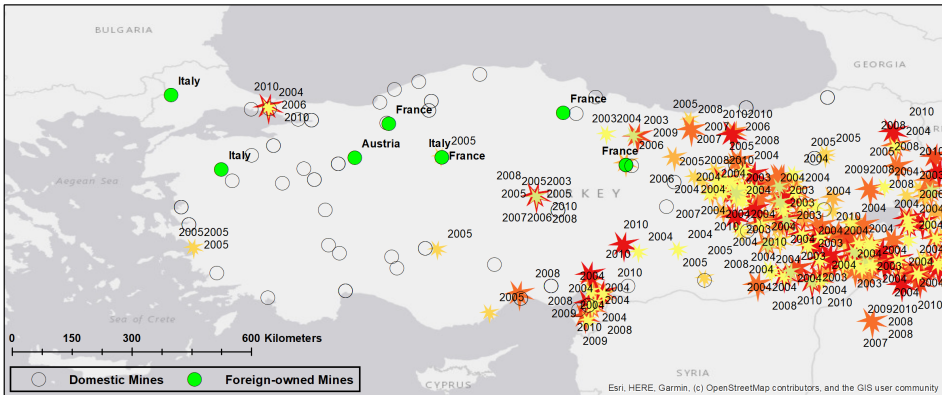
Treatment / Control Group



Pre-operation

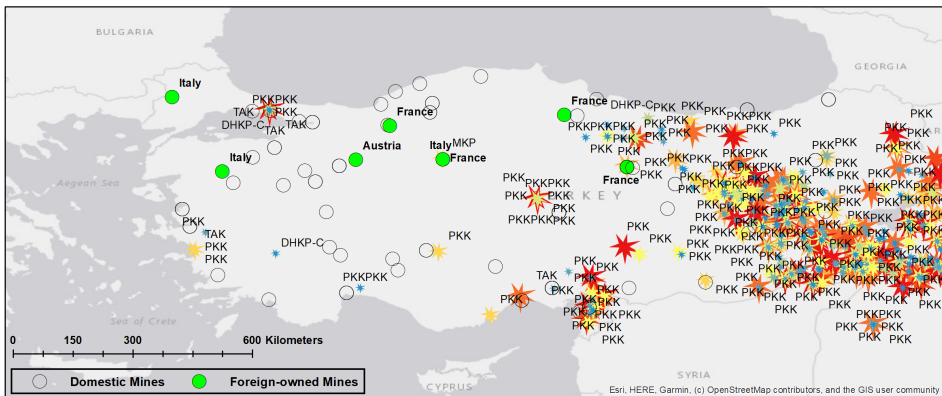


Post-operation



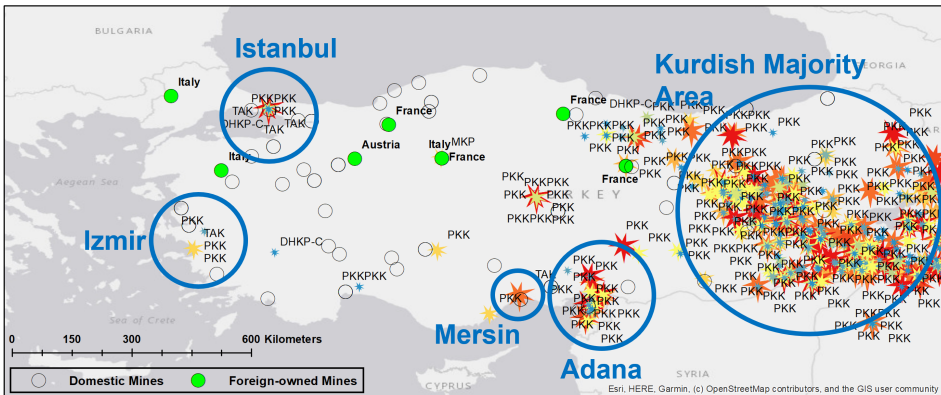
Region-specific Factors

γ_i : administrative division FE



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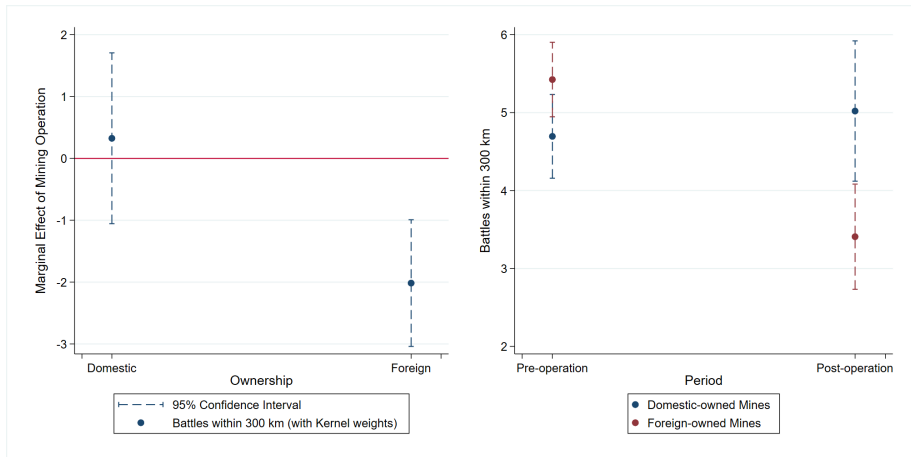


Model Specification

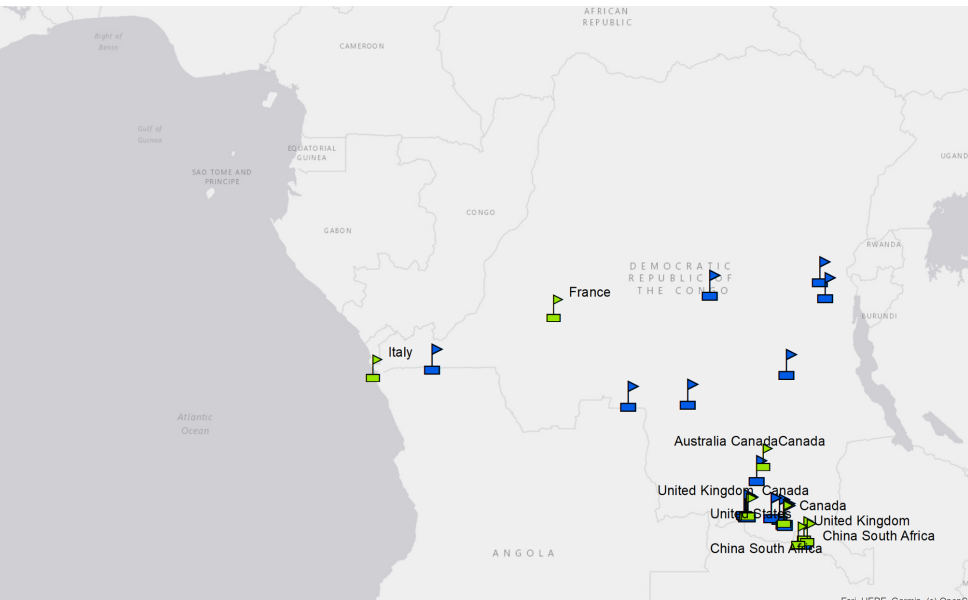
$$\text{Armed Conflict}_{i,t} = \beta_0 + \beta_1 \text{Foreign}_i + \beta_2 T_{i,t} + \beta_3 \text{Foreign}_i \times T_{i,t} \\ + \beta_4 V_{c,t} + \beta_5 W_i + \beta_6 Z_{j,t} + \gamma_i + \delta_t + u_i$$

- ▶ γ_i : administrative division FE
- ▶ δ_t : year FE
- ▶ $V_{c,t}$: logged unit price, and annual price growth rate
- ▶ W_i : ruggedness (mean, minimum, maximum, and std. dev.)
- ▶ $Z_{j,t}$: battles within 5 yrs, POLITY, GDPPC, GDPPC², GDPPC³, logged bilateral foreign aid, and Political Corruption
- ▶ Standard errors are clustered at facility (i). Kernel-based PS Matching is used to address treatment assignment bias.

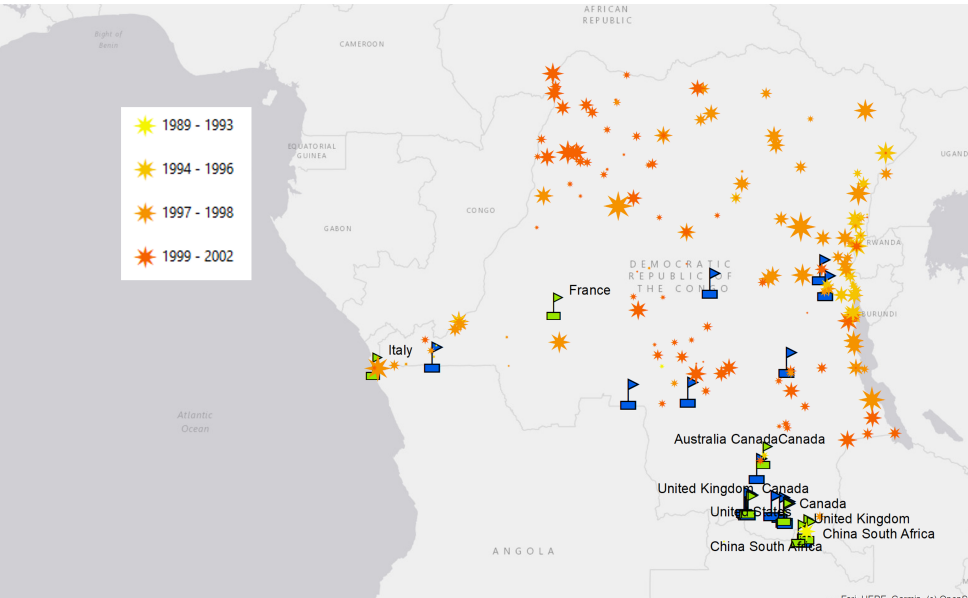
The Effect of Foreign Ownership (Model 2)



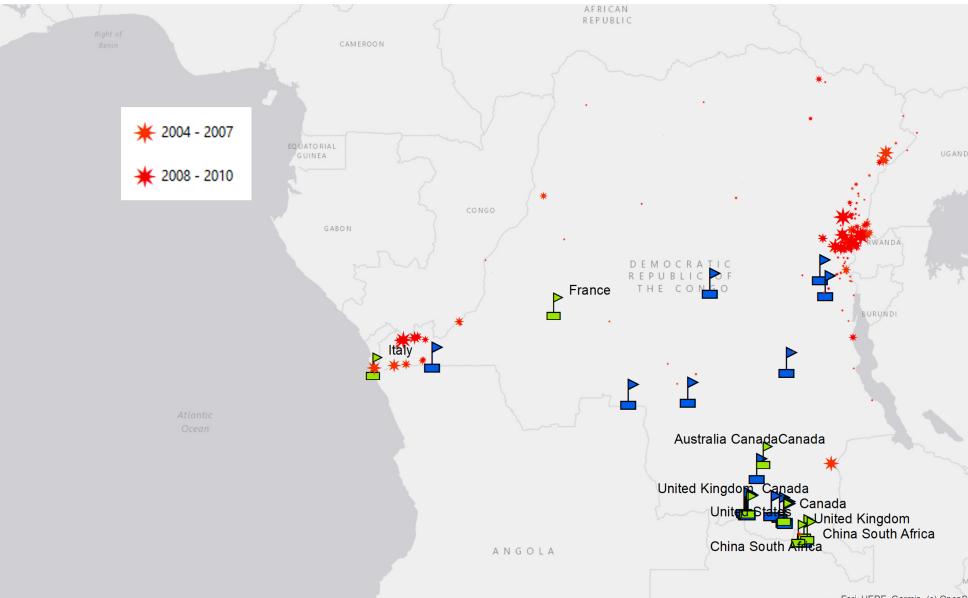
Armed Conflict in the DRC



Pre-2003 Armed Conflict in the DRC



Post-2003 Armed Conflict in the DRC

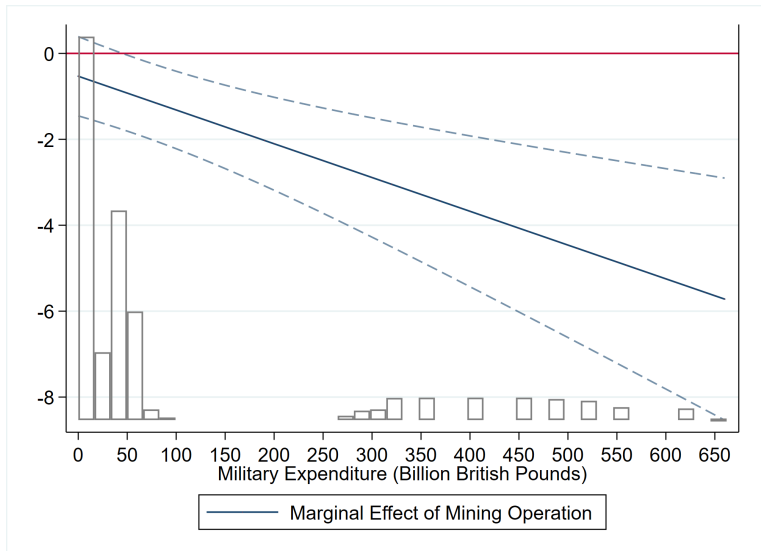


Heterogeneous Effects of Foreign Ownership

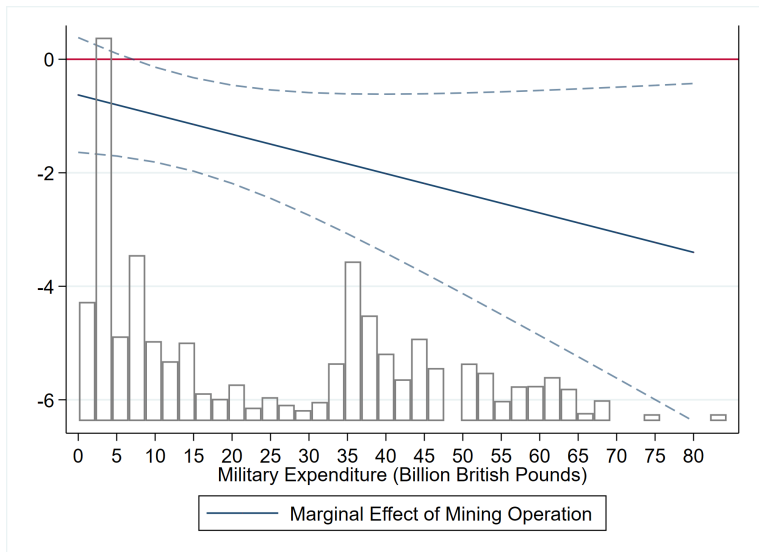
- ▶ Interaction effects of military expenditure of foreign owner's home country and the operation timing

$$\begin{aligned} \text{Armed Conflict}_{i,t} &= \beta_0 + \beta_1 \text{Mil. Exp.}_{i,t-1} + \beta_2 T_{i,t} \\ &\quad + \beta_3 \text{Mil. Exp.}_{i,t-1} \times T_{i,t} \\ &\quad + \beta_4 V_{c,t} + \beta_5 W_i + \beta_6 Z_{j,t} + \gamma_i + \delta_t + u_i \end{aligned}$$

Effects of Home Country's Military Capability



Home Country's Military Capability (excluding US)



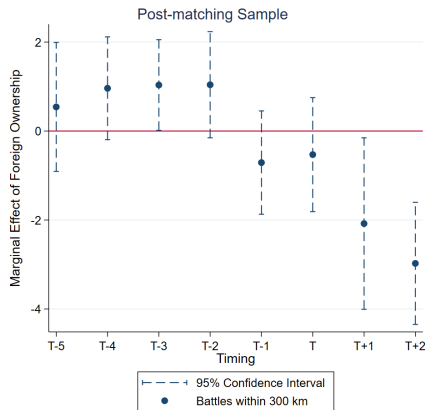
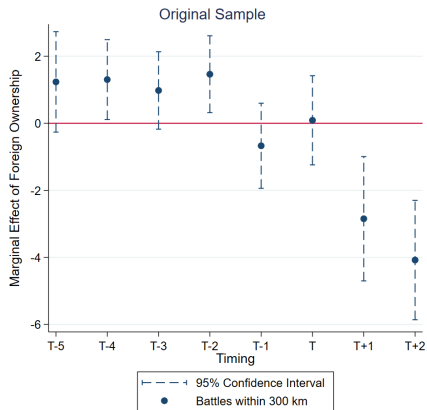
Robustness Check: Alternative Explanations

- ▶ Bribery 1: Firm bribes insurgents to appease
- ▶ Bribery 2: Host government bribes firms to pacify conflict-prone areas
- ▶ Bribery 3: Firm bribes host government for protection
- ▶ Mercenary: Deterrence vs. Increased Grievances + Battles between security forces and insurgents
- ▶ Information: Foreign miners may have more information and experiences vs. Local information

Rough Tests for Alternative Explanations

- ▶ Firm Size $\uparrow \Rightarrow$ Affordability of bribes, mercenaries, and information \uparrow
- ▶ Measuring firm size with the number of foreign mines in t
- ▶ (1) Control for Firm Size in Model 1 and 2;
(2) Analyze the subset of foreign-owned mines with the interaction between Firm Size and Intervention
- ▶ No significant results

Foreign Ownership \times Timing Dummies



Reverse Causation: Foreign Ownership on Battles

Pre-matching	T-3	T-2	T-1	T	T+1	T+2
Battle _{<i>i,t</i>}	-0.00001 (0.00004)	-0.00002 (0.00006)	-0.00001 (0.00006)	0.00002 (0.00005)	-0.00002 (0.00004)	-0.00001 (0.00004)
Obs.	31110	37332	43554	49776	43554	37332
Adj. R^2	0.568	0.548	0.533	0.518	0.504	0.488
FEs	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Post-matching	T-3	T-2	T-1	T	T+1	T+2
Battle _{<i>i,t</i>}	-0.00013 (0.00012)	-0.00010 (0.00012)	-0.00002 (0.00009)	0.00001 (0.00009)	-0.00000 (0.00010)	-0.00002 (0.00008)
Obs.	31110	37332	43554	49776	43554	37332
Adj. R^2	0.549	0.532	0.519	0.505	0.494	0.480
FEs	Yes	Yes	Yes	Yes	Yes	Yes
Controls	Yes	Yes	Yes	Yes	Yes	Yes

Note: Entries in parentheses are standard errors clustered at facility (*i*). * $p < 0.1$, ** $p < 0.05$, *** $p < 0.01$

Recapitulation

- ▶ Theory: The location of extractive FDI shapes the geographical pattern of armed conflict
- ▶ Data: georeferenced data of battles and mining facilities
- ▶ Identification through Staggered DID and Kernel-based PS Matching Strategy
- ▶ Findings are robust across differently sized distance bands (100 km and 500 km) and casualty levels (more than 10 deaths and more than 20 deaths).

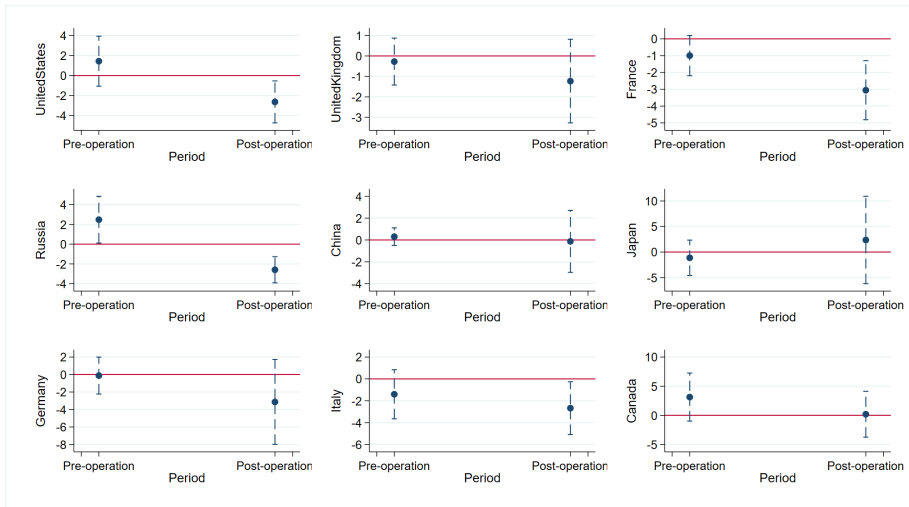
Theoretical Implication

- ▶ FDI has not only effects on economic development but also local pacifying effect.
- ▶ Welfare Implication: moving the location of armed conflict rather than promoting peace

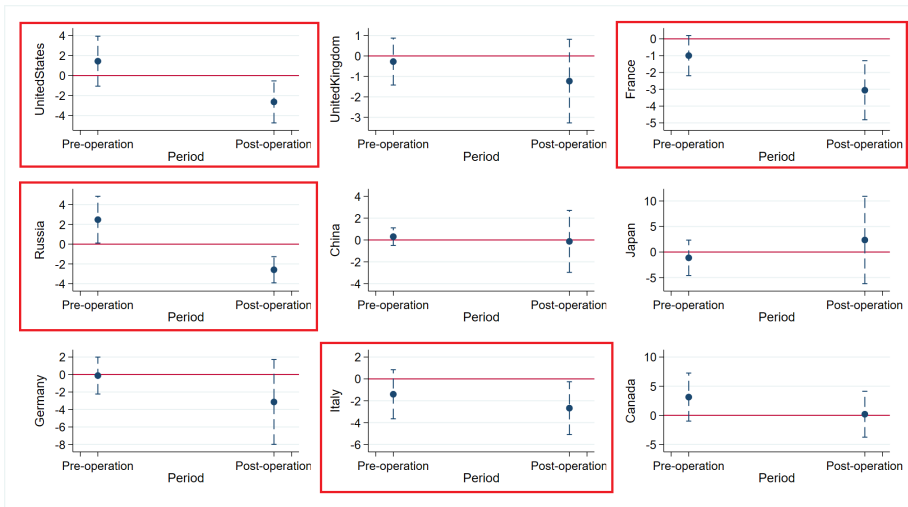
Policy Implication

- ▶ Knauf Gypsum in Donbas closed its factory on Feb 24, 2022.
- ▶ Threat perception is the key
If home country's military intervention is not likely,
the foreign miners cannot pacify their vicinity

The Effect of Nationality



The Effect of Nationality



Policy Implication

- ▶ Knauf Gypsum in Donbas closed its factory on Feb 24, 2022.

- ▶ Threat perception is the key

If home country's military intervention is not likely,
the foreign miners cannot pacify their vicinity

⇒ Home governments can increase protection for their nationals abroad by building reputation of security engagement in host country.

⇒ Host governments can promote peace by attracting FDI from great powers into strategically important places.

Policy Implication

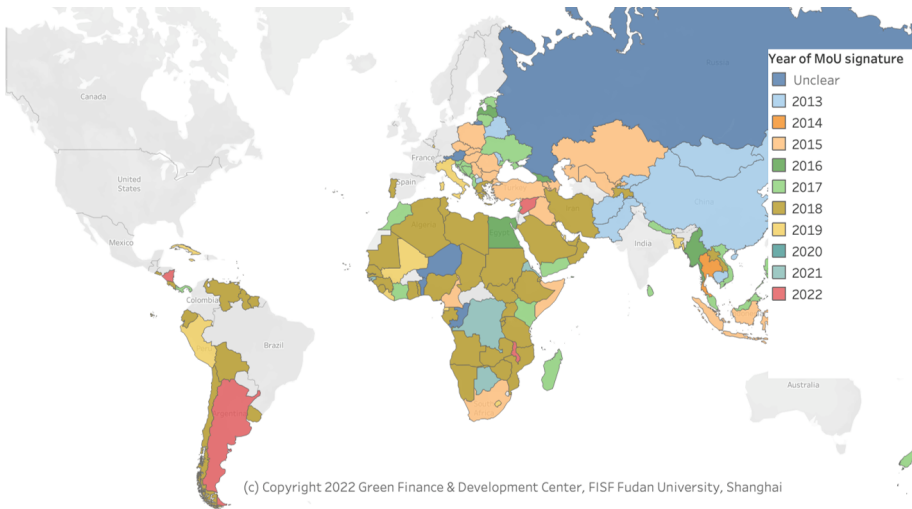
- ▶ The Belt and Road Initiative
- ▶ China's Military Engagement in Africa



Chinese troops and armoured vehicles parade at the base in Djibouti, located at a strategic bottleneck leading to the Suez Canal, in 2017 as the base was first opened

Policy Implication

► The Belt and Road Initiative



Policy Implication

- ▶ The Belt and Road Initiative
- ▶ China's Military Engagement in Africa
 - UN Peace Keeping Missions (2003, 2012)
 - PLA Support Base in Djibouti (2017)
 - Police Training in Liberia (2014)
 - Sharing Drone Intelligence with Nigeria (2016)

Thank You