Agricultural Harvests and Seasonal Conflict

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Agriculture and conflict can be linked... literally

Agriculture may also be linked with conflict causally

We focus on low- and middle-income countries of Southeast Asia, where agriculture employs and pays large shares of population.

We ask the question:

> Do harvest-time agricultural shocks lead to changes in forms of conflict?

More violence and less protests at harvest time

Relative to the rest of the year, at harvest time we estimate:

- more than ten percent increase in violence against civilians
- up to ten percent increase in battles*
- up to ten percent decrease in protests*

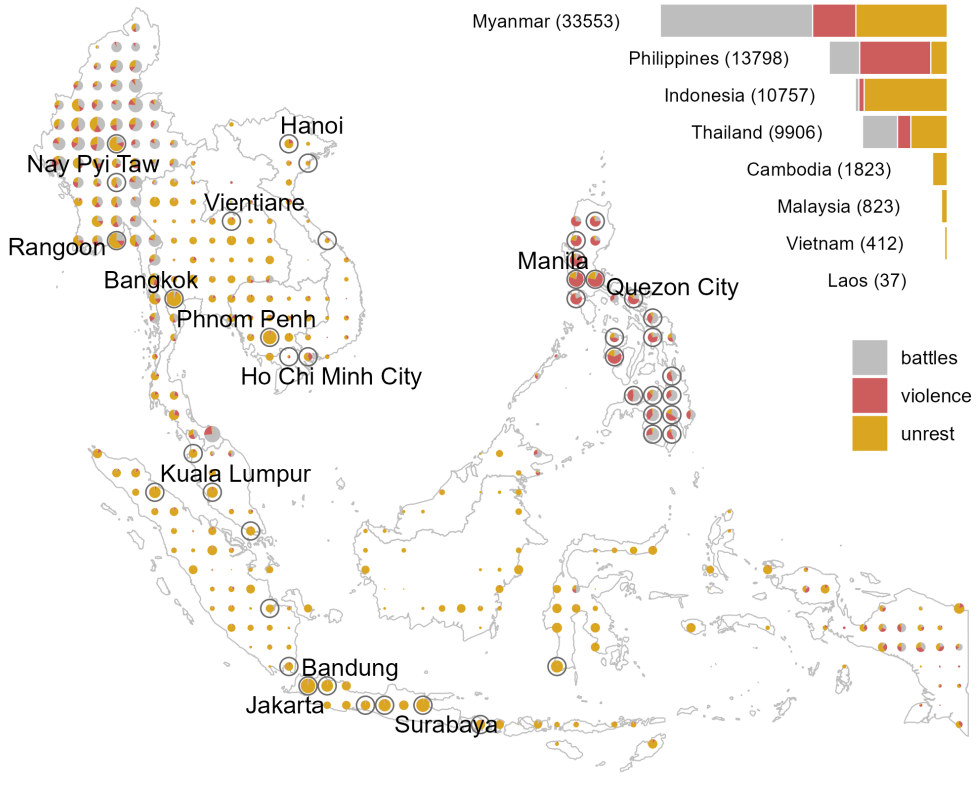
*sensitive to data subsetting or changes in model specification.

Conflicts happen all across Southeast Asia

From the ACLED Project, over 70 thousand incidents of:

- **battles**,
- **explosions/remote violence**,
- **violence against civilians**,
- **riots**, and
- **protests**

observed over the 2010-2022 period.

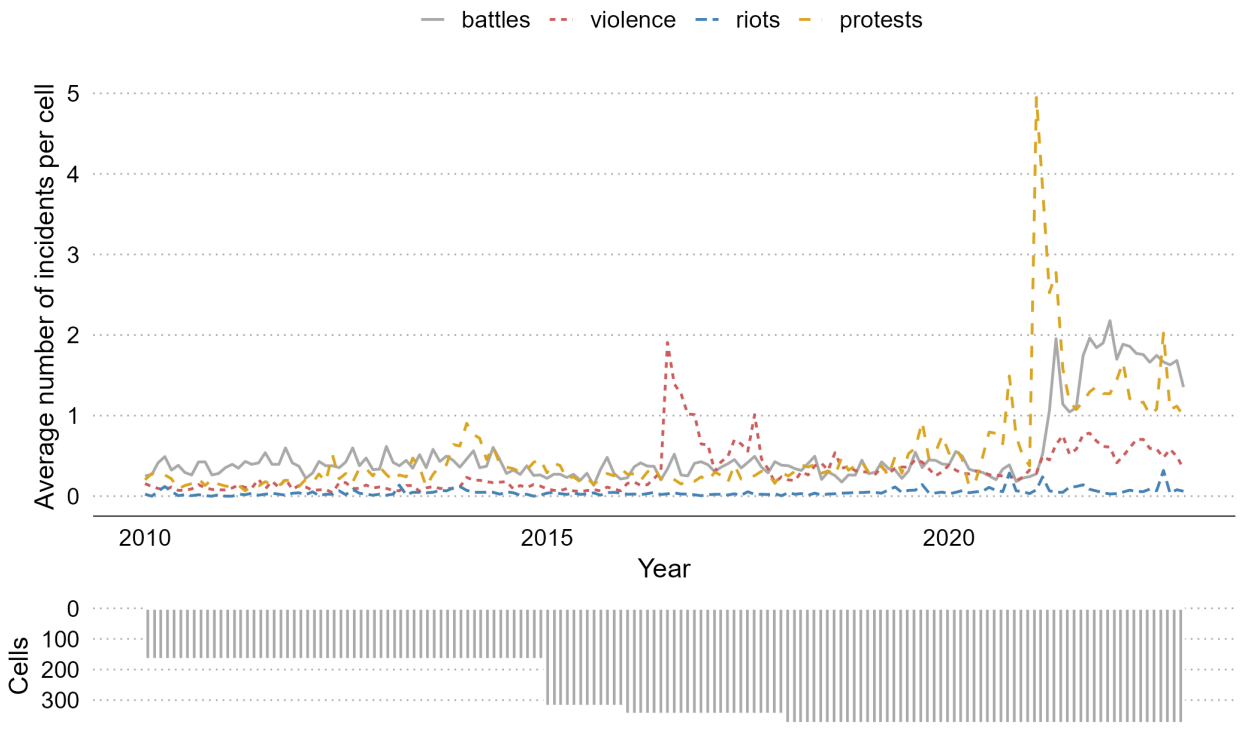


Conflicts happen all the time in Southeast Asia

Unbalanced panel of eight countries.

For most countries, the data are available from 2010 onward, except for:

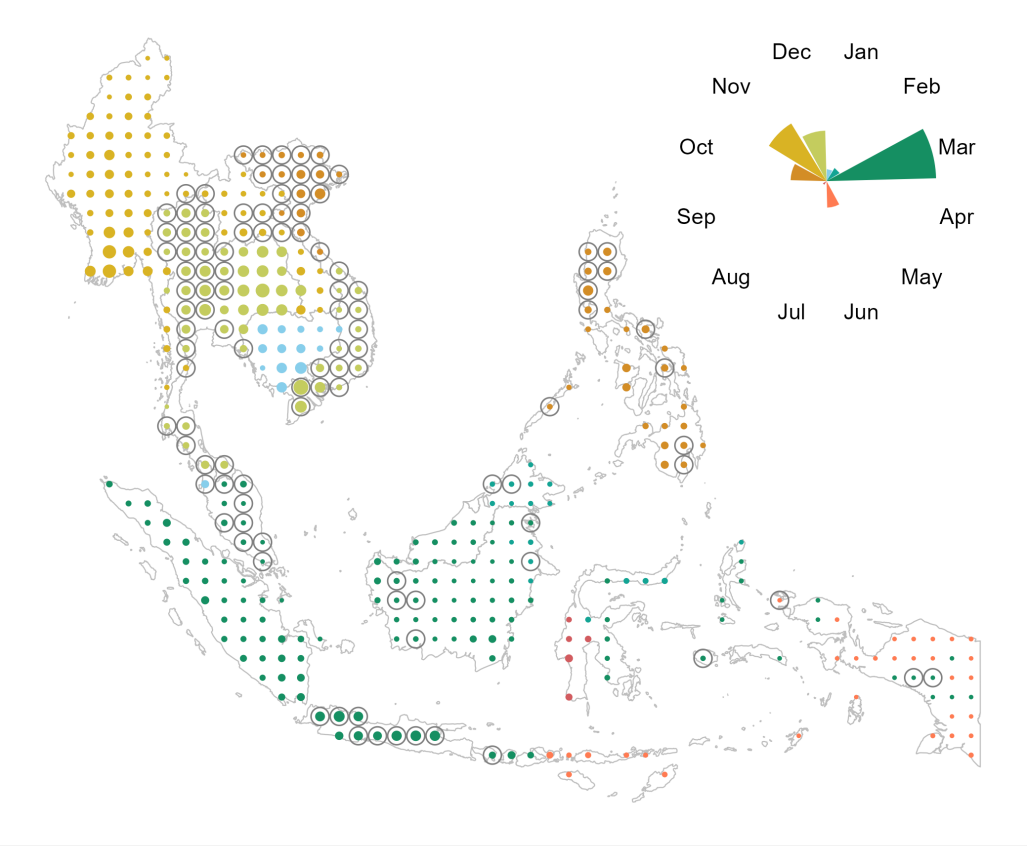
- Indonesia (2015-)
- Philippines (2016-)
- Malaysia (2018-)



Rice is cultivated across all of Southeast Asia

From IFPRI's Spatial Production Allocation Model (SPAM) and Monfreda et al. (2008),

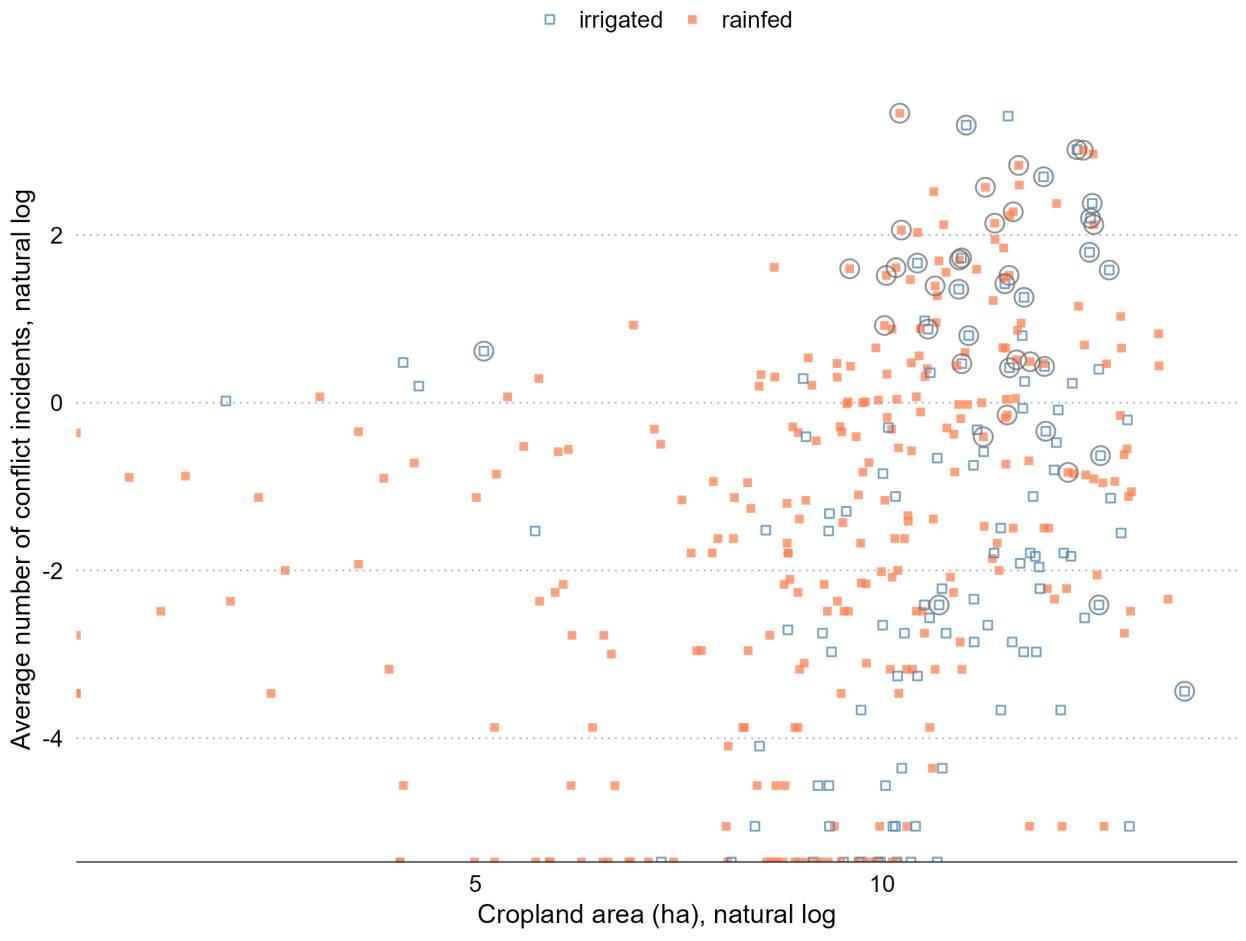
- regional variation in the sizes of harvested area
- regional variation in the timing of harvest seasons
- regional variation in the proportions of irrigated land



Positive correlation between conflict and croplands

Generally positive relationship between the size of croplands and the average number of incidents in the cell

Seemingly negative relationship between these two variables in 'urban' cells



We study the effect of harvest on forms of conflict

The outcome variable is the incidence of conflict in a given cell at a given period (year-month). We consider:

- all forms of conflict combined, and
- each form of conflict separately.

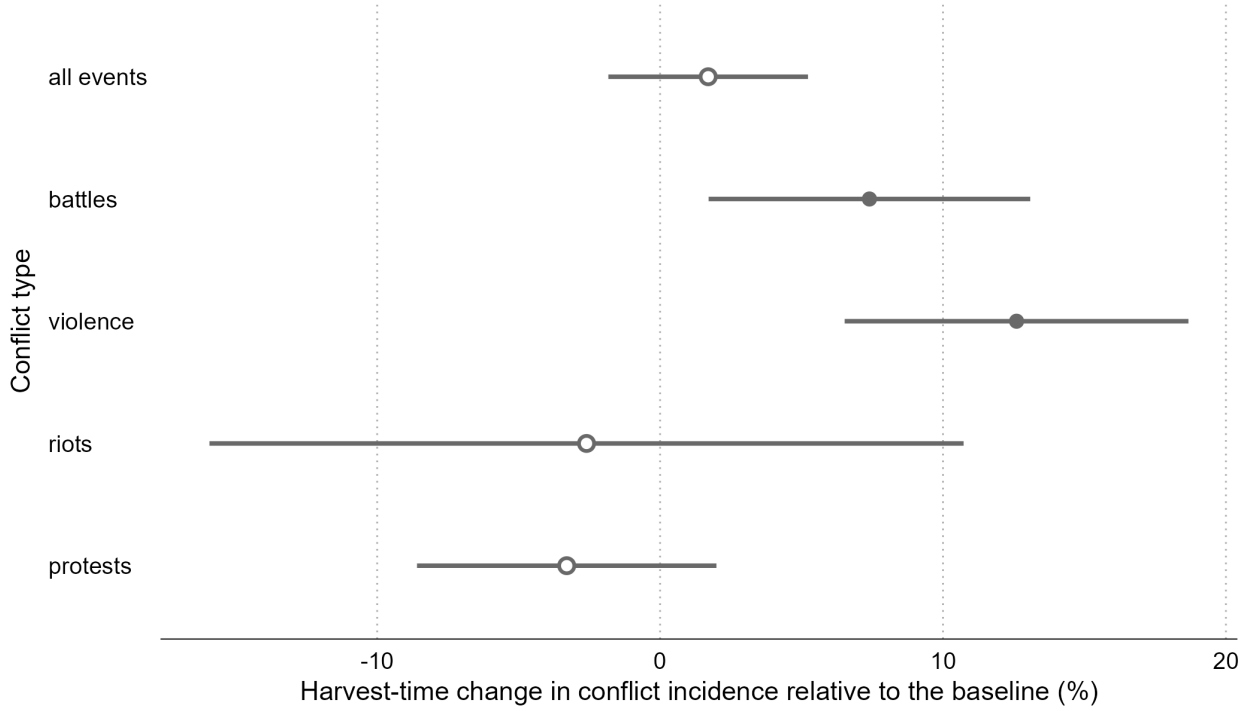
The treatment variable is the product of the cropland indicator (harvest area $\geq$ 10,000ha) and harvest season indicator.

Fixed effects: cell, country-year, year-month.

Battles and violence increase and protests decrease

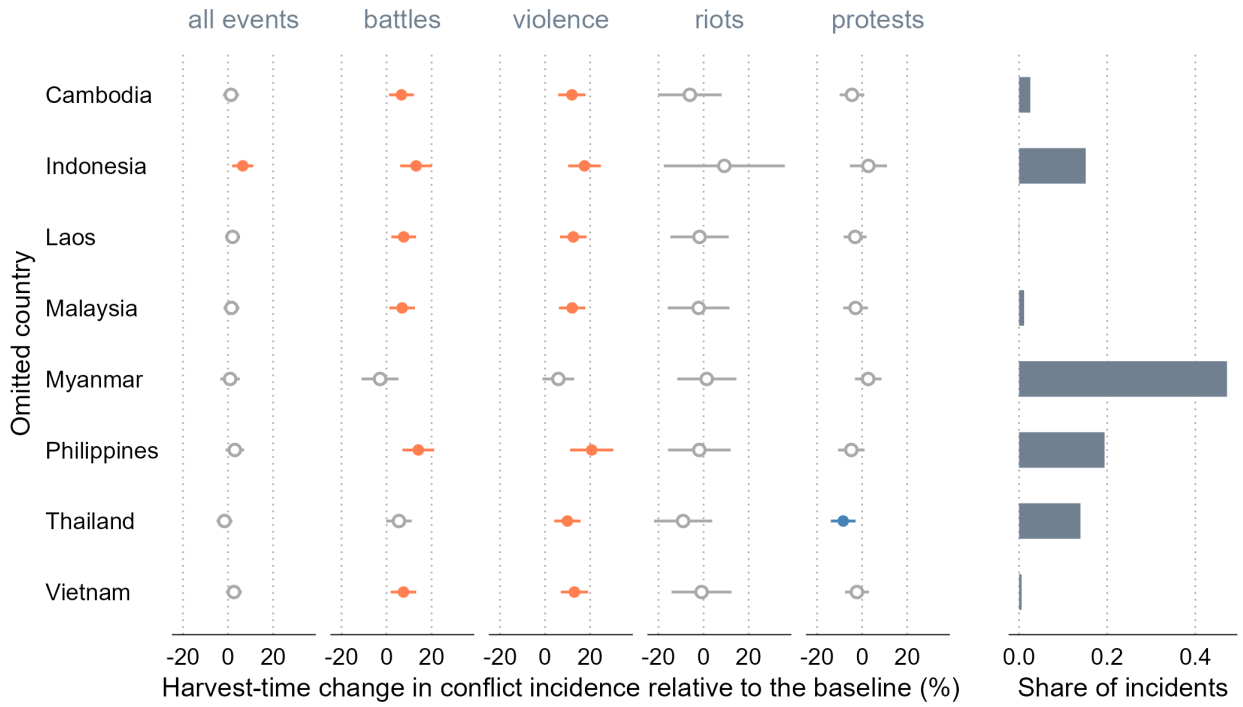
The estimated effect is evaluated at the average size of the cropland and relative to the average conflict.

The dots are point estimates, and errorbars denote 95% confidence interval.



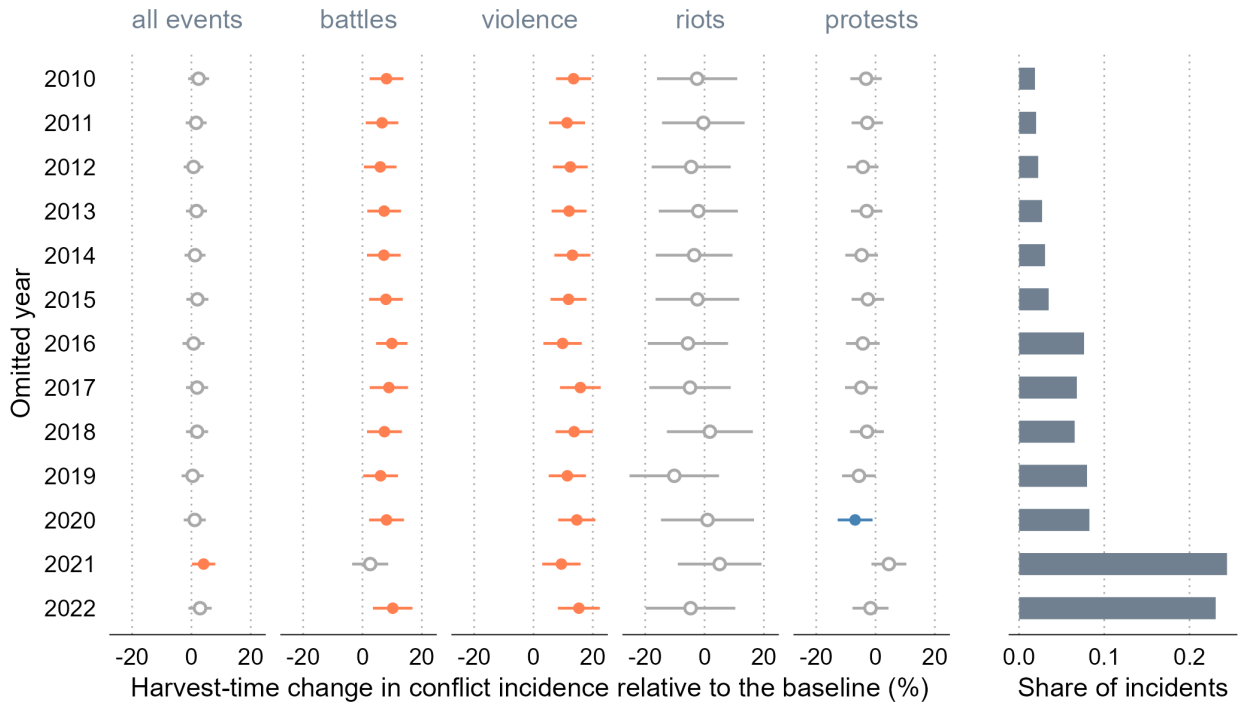
Myanmar is driving the results

This comes hardly as a surprise, since nearly half of the observations come from Myanmar.

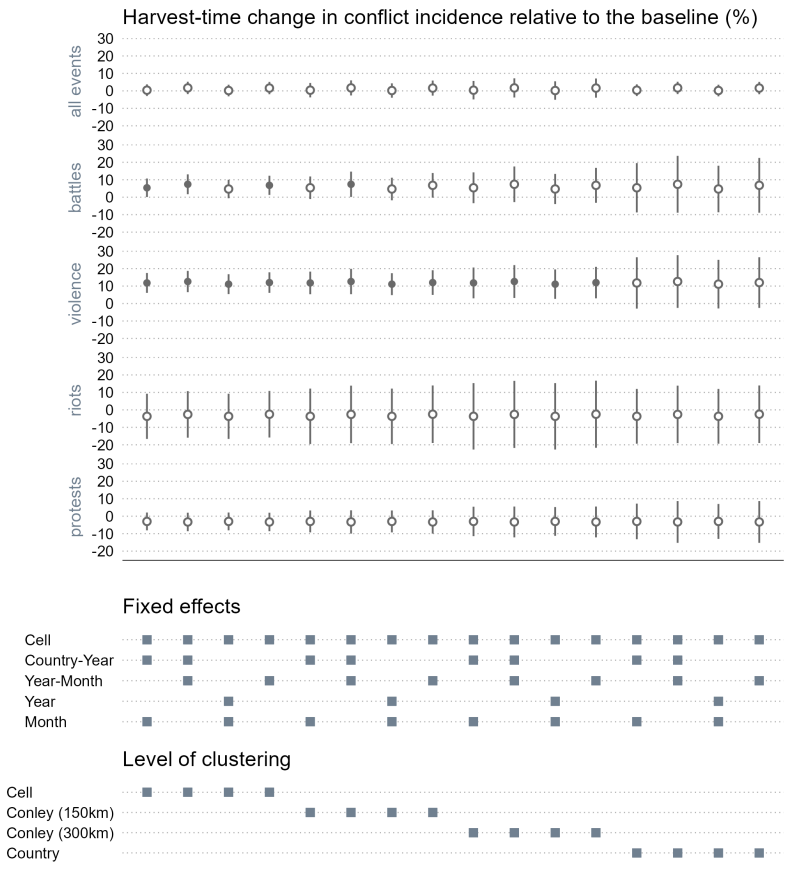


2020 and 2021 are driving (some of) the results

Likely linked with pandemic-related restrictions in 2020, and the onset of the Myanmar conflict in 2021.



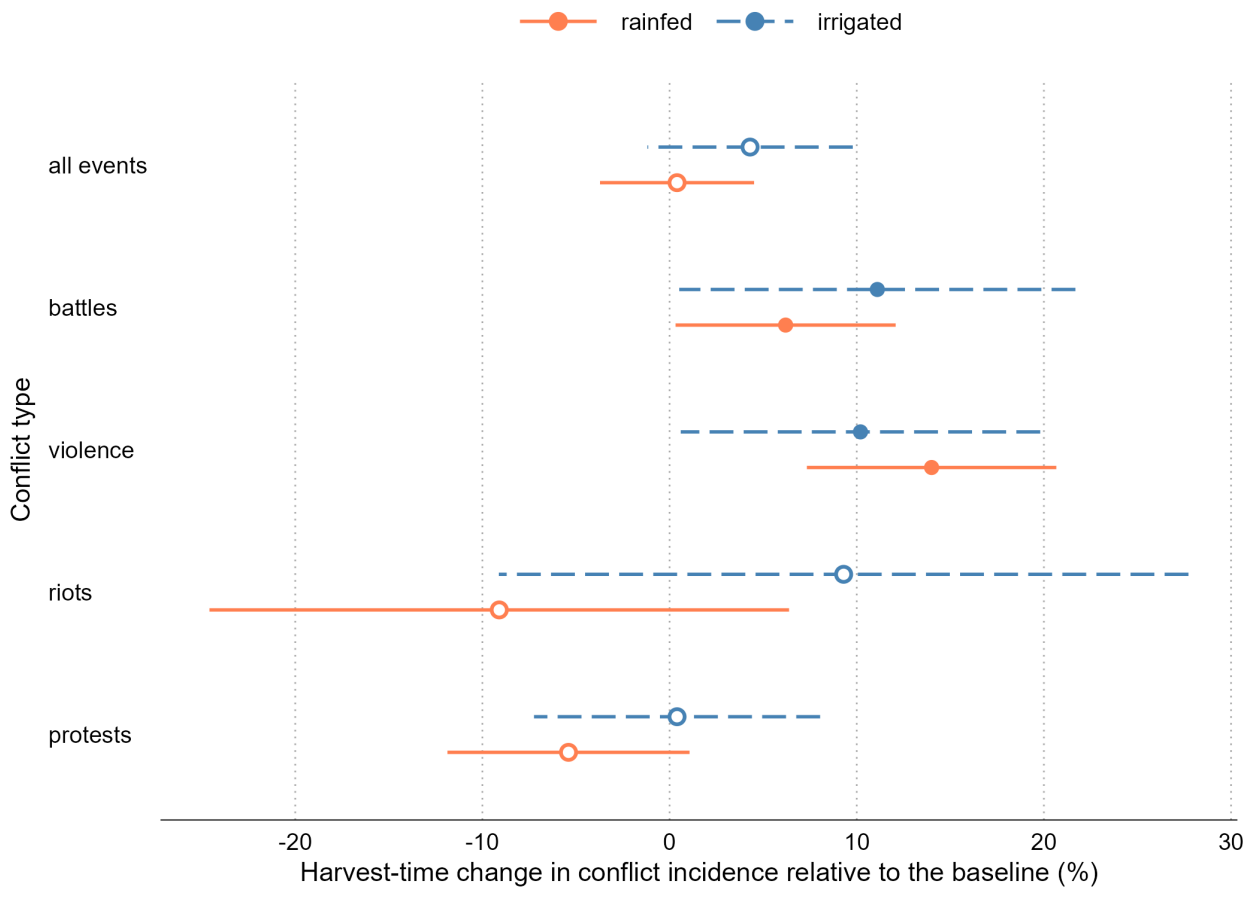
The specification chart



The effect on violence robust across most specifications.

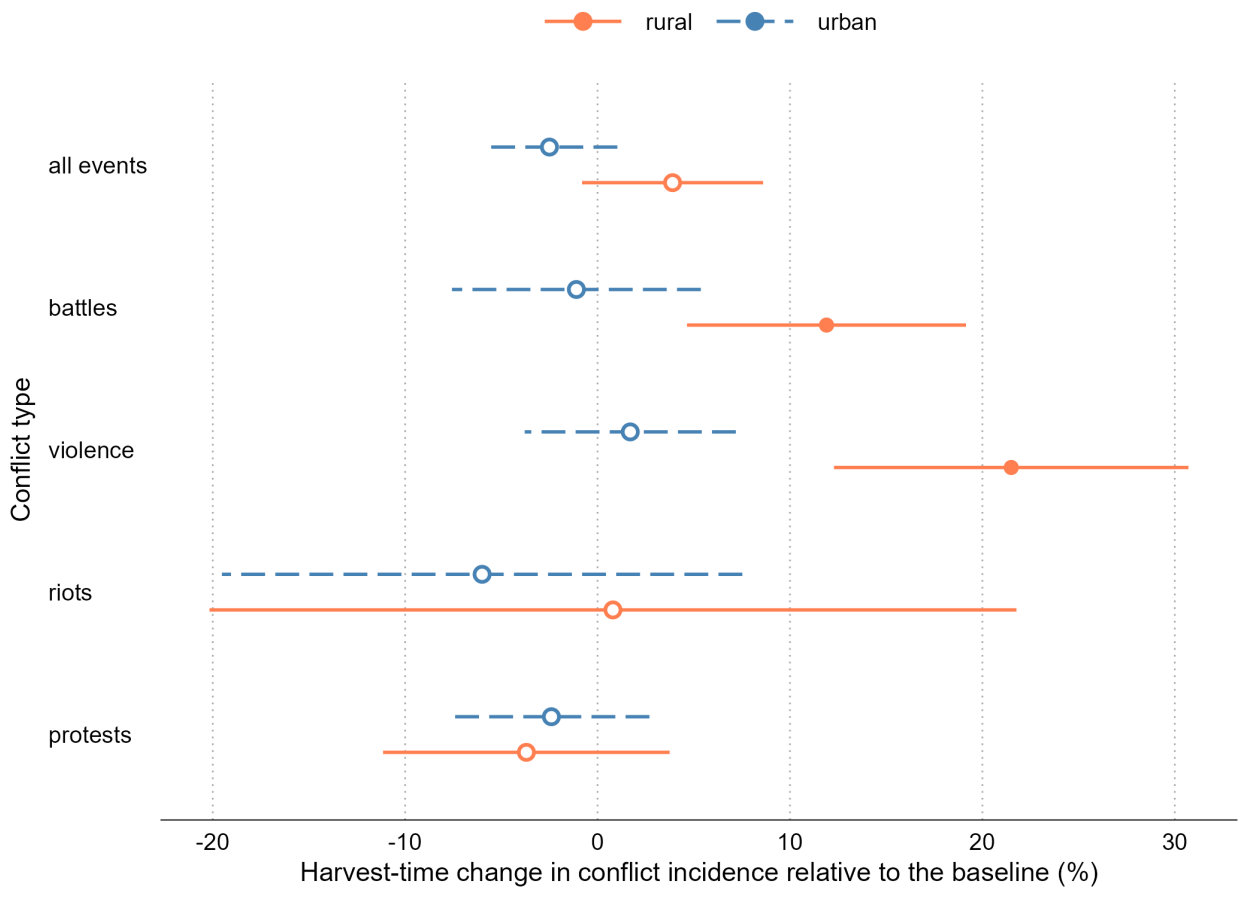
Heterogeneity: rainfed vs irrigated

The harvest-time increase in violence and (statistically insignificant) decrease in protests more prominent in rainfed locations.



Heterogeneity: rural vs urban

The harvest-time increase in battles and violence is a rural phenomenon.



Harvest-time violence may be linked to rapacity

Ubilava et al. (2023) investigate the effect of cereal price change on seasonal violence in the croplands of Africa.

The key finding: much of the annually accrued effect—which is positive, statistically significant, and economically meaningful—happens during the first three months of the crop year.

Accords with the *rapacity mechanism*: farmers attacked when most gains are to be made (or maximum damage incurred).

Opportunity cost may explain less protests

The *opportunity cost mechanism* often is portrayed as a trade-off a person faces between farming and fighting.

Agricultural shocks may push a person in one direction or another... but this is a longer term engagement.

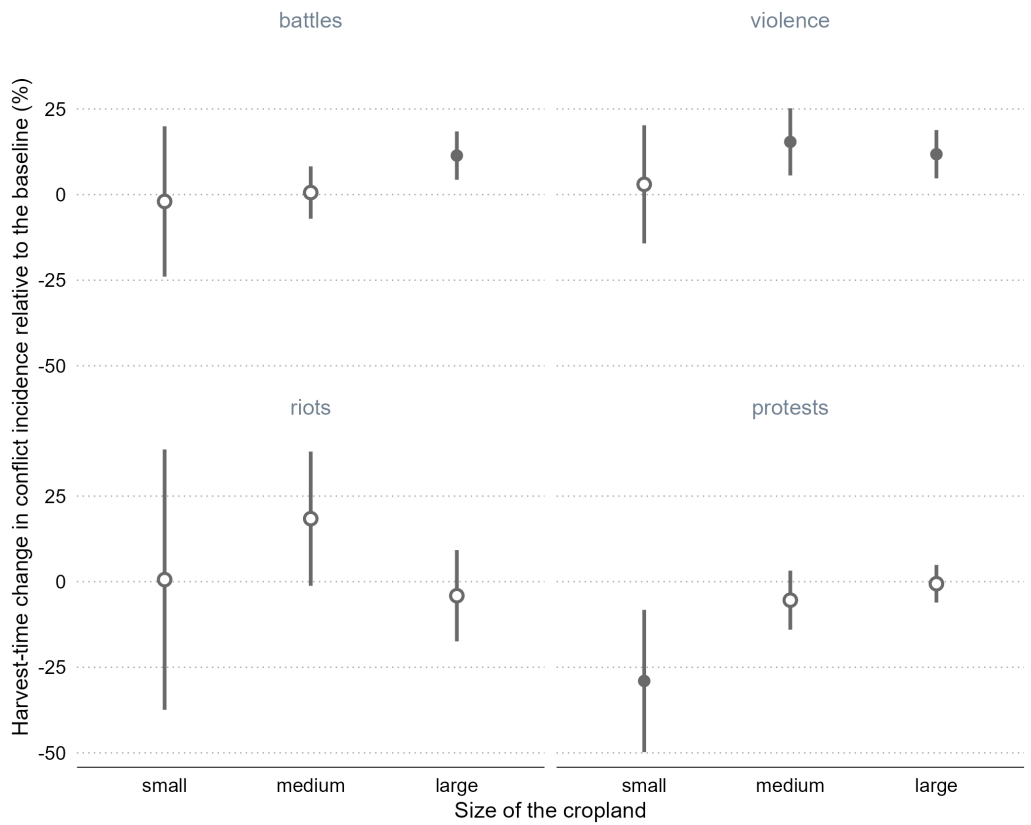
In the short run, the opportunity cost mechanism is well-suited to explain the lack of protests at harvest time.

But, some of this may be offset by *resentment*, i.e., when people feel being worse off only because others are doing well.

Mechanisms: harvest intensity

The harvest-time increase in battles and violence is more prominent in larger croplands.

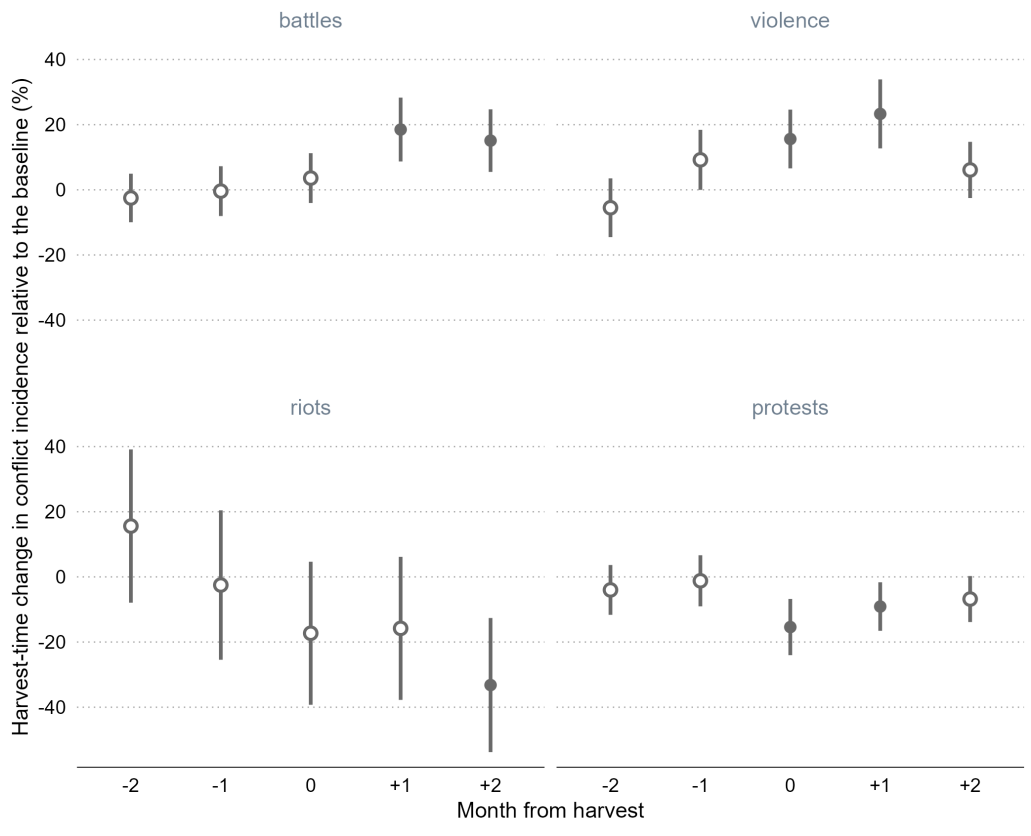
The harvest-time decrease in protests observed in small croplands only.



Mechanisms: harvest timing

The harvest-time increase in battles lingers post-harvest (possibly picking up the dry-season effect).

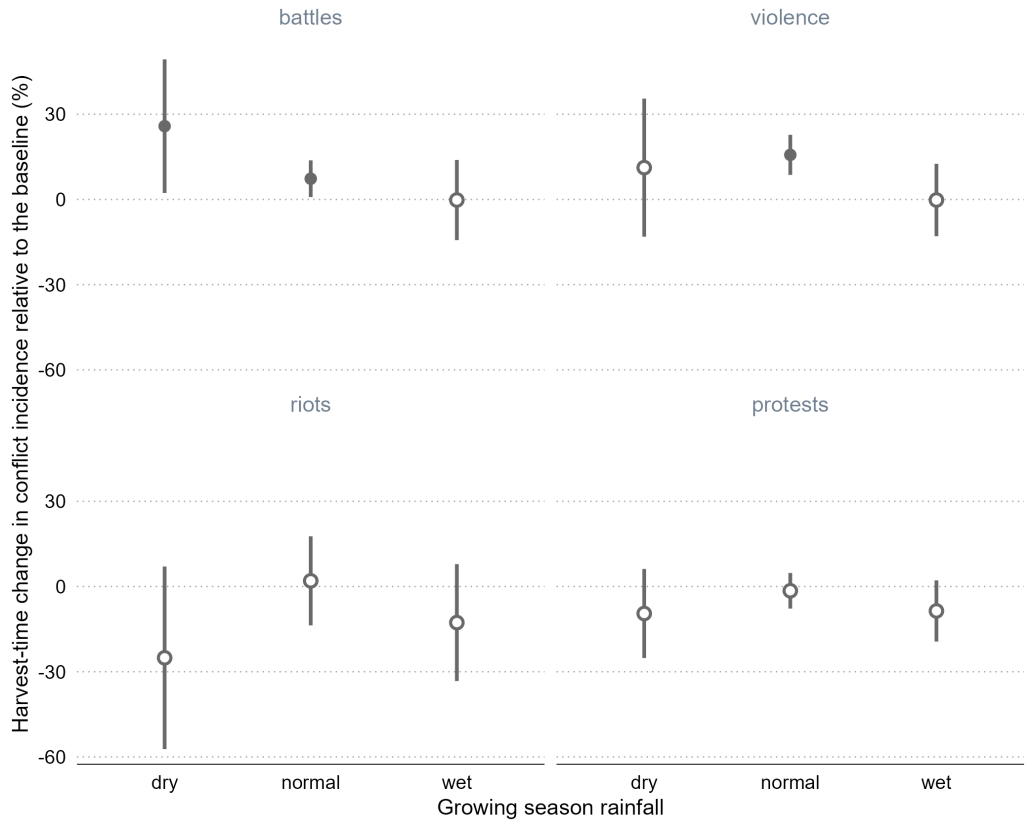
The harvest-time increase in violence and decrease in protests are centered on the harvest month.



Mechanisms: harvest quality

The harvest-time increase in battles negatively correlated with the growing season rainfall.

The harvest-time decrease in violence, as well as protests and riots, have inverted V-shaped patterns relative to the growing season rainfall.



We contribute to three strands of conflict literature

Climate shocks and conflict (Burke et al., 2009; Hsiang et al., 2013; Crost et al., 2018)

Economic roots of conflict (Berman et al, 2011; Crost and Felter, 2020; McGuirk and Burke, 2020)

Seasonality of conflict (Harari and La Ferrara, 2018; McGuirk and Nunn, 2023; Guardado and Pennings, 2023; Ubilava et al., 2023)