

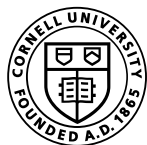
# ARMED CONFLICT AND UNDERNOURISHMENT: A CROSS-COUNTRY ANALYSIS

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# Introduction

- It is widely understood that armed conflict exacerbates hunger and undernutrition through multiple channels. A partial list includes:
  - Destruction of crops and livestock
  - Destruction of infrastructure needed for food production
  - Displacement of rural populations from land
  - Diverting labor from agriculture to armed conflict
  - Reduced public expenditures on agriculture
- There is a large micro-econometric literature on these topics
- To the best of my knowledge, the aggregate effects of armed conflict on hunger, are less well understood; much of this literature appears to be either conceptual studies, or bivariate analyses. This is problematic as conflict-prone countries differ from non-conflict countries in many possible ways and these differences may well also contribute to hunger and undernourishment.
- Given this gap in the literature, this paper provides an associational assessment of the relationship between armed conflict and hunger

## Data and model set-up

- Dependent variable is the Prevalence of Undernourishment (“an estimate of the proportion of the population whose habitual food consumption is insufficient to provide the dietary energy levels that are required to maintain a normal active and healthy life”). This is one of the indicators tracked for SDG2
- Main explanatory variable is the number of battle-related deaths per million people as reported in the Uppsala Conflict Data Program (UCDP) Battle-related Deaths Dataset version 21.1 (Pettersson et al, 2021). This includes both military and civilian deaths
- The sample is low, low-middle, and upper-middle income countries with data on both the Prevalence of Undernourishment and on battle related deaths for the period 2001-2019 and where there was at least one year in which a conflict took place that resulted in at least 25 battle related deaths.
- Country-level data are available for 52 countries for 19 years. Because PoU data is missing for some country-years, the sample consists of 963 country-year observations

# Data and model set-up

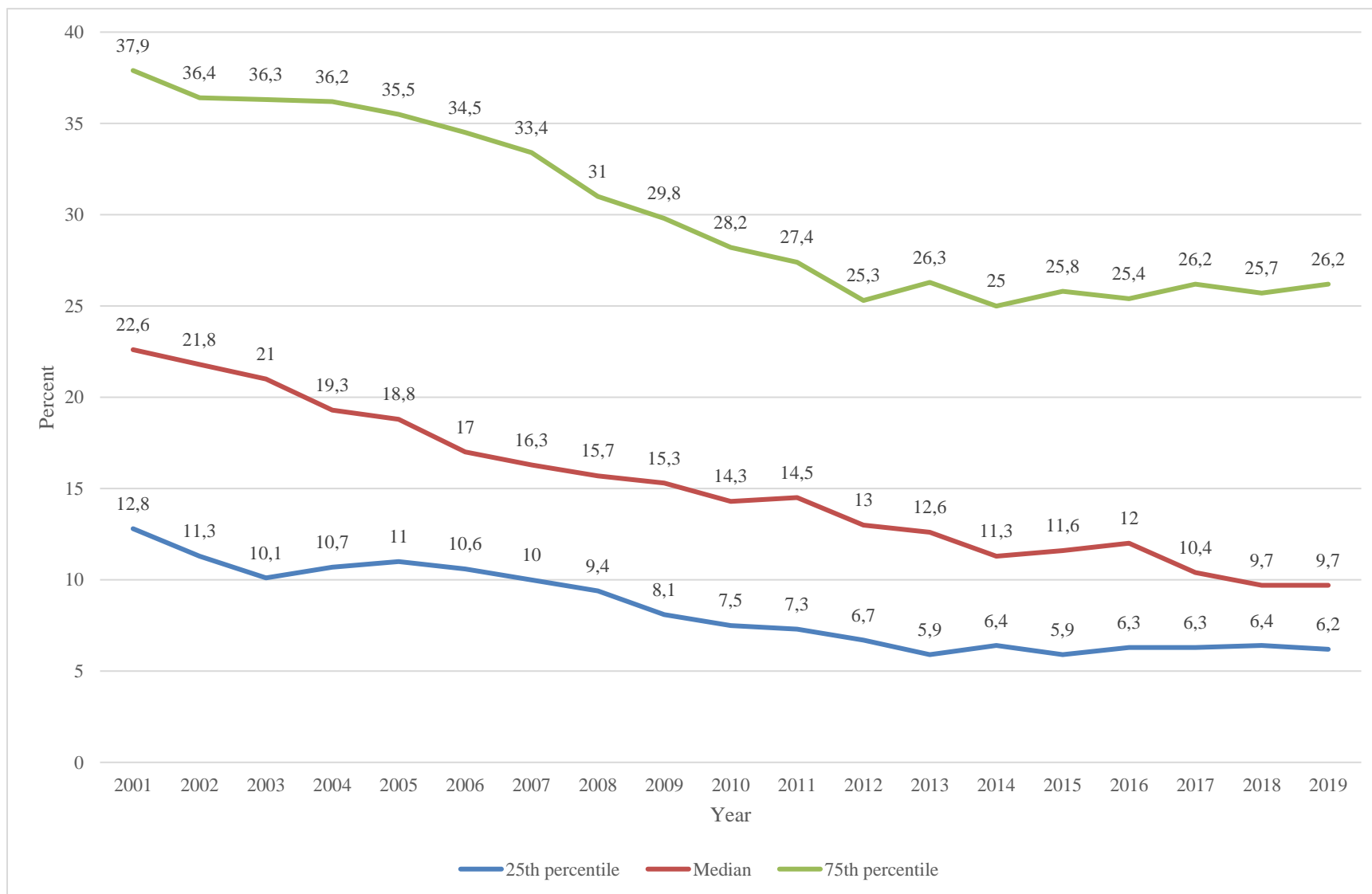
- We estimate the following model:

$$\text{POU}_{c,t} = \beta \cdot \text{Conflict}_{c,t} + \tau \cdot X_{c,t} + \theta \cdot C_c + \varepsilon_{c,t}$$

Where:

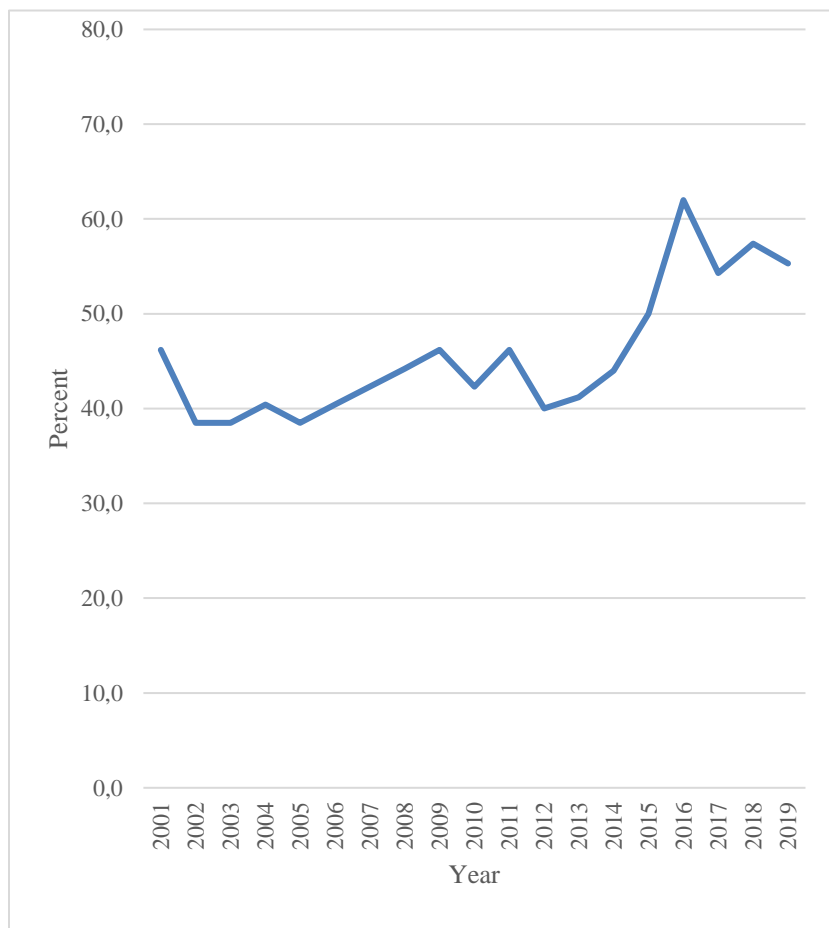
- Conflict is the representation of number of deaths from armed conflict for country  $c$  in year  $t$ .  
This variable is transformed using the inverse hyperbolic sine transform
- $C_c$  are country fixed effects,
- $X_{c,t}$  are time varying country characteristics (log population, persons affected by other shocks, government effectiveness indicator)
- $\beta$ ,  $\tau$ , and  $\theta$  are parameters to be estimated
- $\varepsilon_{c,t}$  is the disturbance term.

# Descriptive statistics: Selected percentile values of the Prevalence of Undernourishment

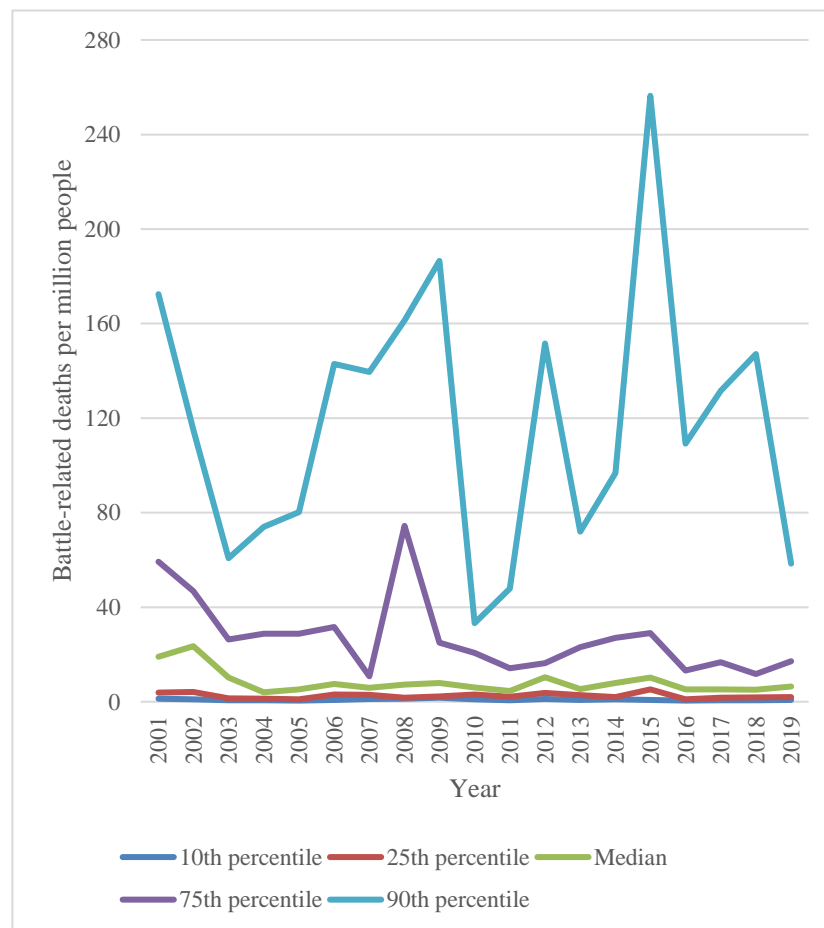


# Descriptive statistics of battle-related deaths

## Percent countries reporting battle-related deaths



## Percentile values of number of battle deaths per million



# Basic Results

	(1)	(2)	(3)	(4)	(5)
Battle deaths per million, IHS transform	1.224***	0.393**	0.472***	0.548***	0.516***
	(0.319)	(0.160)	(0.147)	(0.148)	(0.147)
Country fixed effects	No	Yes	Yes	Yes	Yes
Year fixed effects	No	No	Yes	Yes	Yes
Time varying controls: Population and other shocks	No	No	No	Yes	Yes
Time varying controls: Government effectiveness	No	No	No	No	Yes
Sample size	963	963	963	963	963
Number of countries	52	52	52	52	52

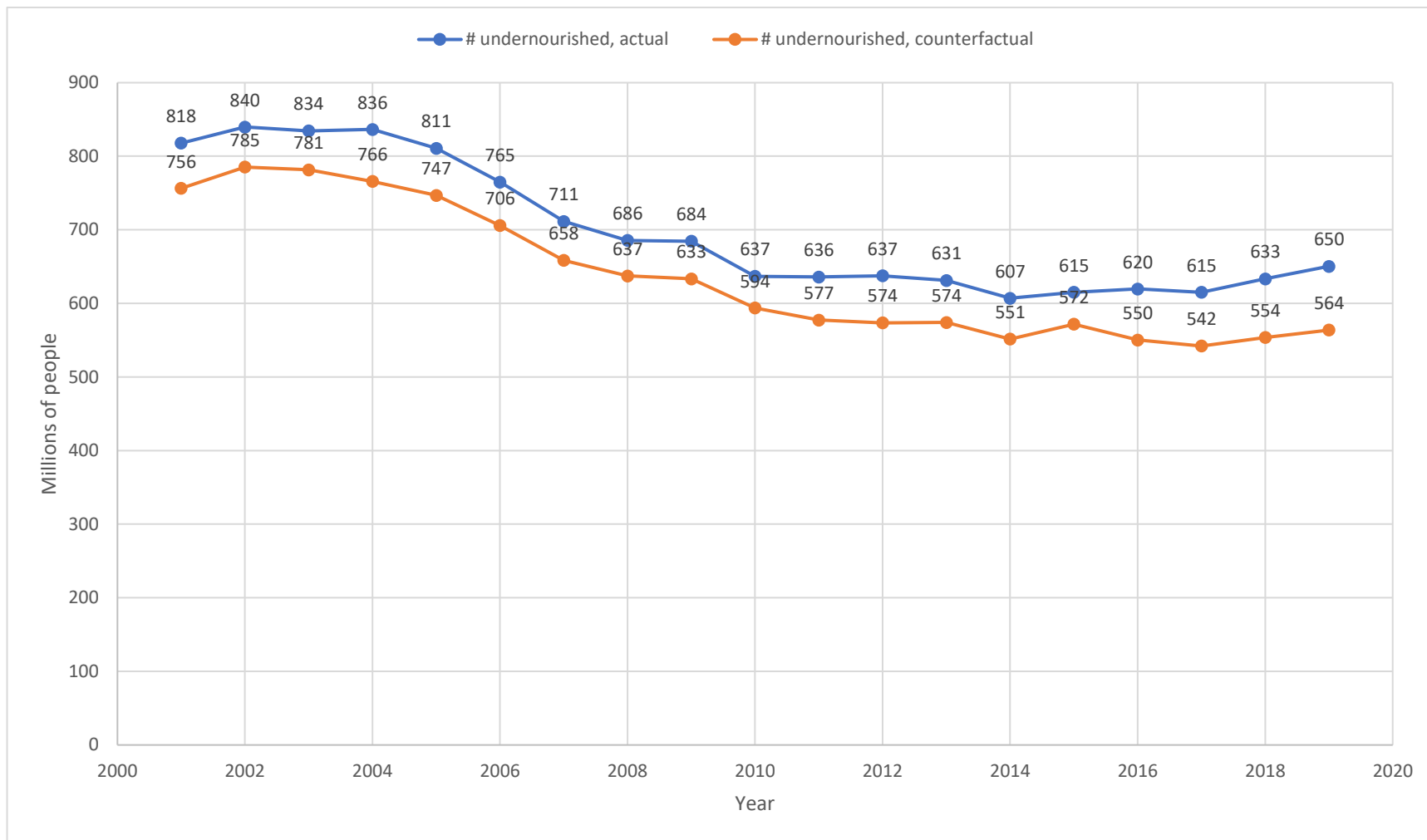
Standard errors in parentheses. Standard errors in column (1) are robust to heteroscedasticity of unknown form. \*, \*\*, \*\*\* are statistically significant at  $p < 0.10$ ,  $p < 0.05$ ,  $p < 0.01$  respectively. Time varying controls are log population; the IHS transform of the number of persons affected by: natural disasters (volcanoes, earthquakes); meteorological events (storms, including cyclones); hydrological events (flood, waves, landslides); drought; and complex disasters (famine); and the value of government effectiveness as described in the World Bank's World Governance Indicators

# Robustness checks and extensions

- Results are robust to:
  - Measurement of battle deaths
  - Exclusion of countries with high levels of battle deaths
  - Country selection
  - Specification of non-conflict shocks
- Extensions show that
  - Associations are concentrated in low and low-middle income countries
  - Associations are larger in countries where armed conflict occurs more frequently. In these countries (battle deaths in six or more years), a 10% reduction in conflict deaths is associated with a reduction in PoU of 8.1 percentage points.



# Counterfactual



# Summary

- After controlling for country and year fixed effects and a range of time varying country characteristics, we find that a 10 percent reduction in battle deaths arising from armed conflicts is associated with a reduction of 4.9 percentage points in the Prevalence of Undernourishment
- This result is robust to changes in sample composition, variable definition, and selection of controls
- They imply that armed conflict contributed to an additional 86 million persons undernourished in 2019.
- Globally the number of persons whose undernourishment is associated with armed conflict (the difference between the actual number and the counterfactual) as a percentage of all undernourished persons rose from 7.5 percent in 2001 to 13.3 percent in 2019.