

The Agent-based Model of Civil Conflicts and Ethnic Grievance

Alexander Kustov

(University of Essex)
University of Mannheim

Higher School of Economics, Moscow
7 November 2012

The Great Shift of Violence

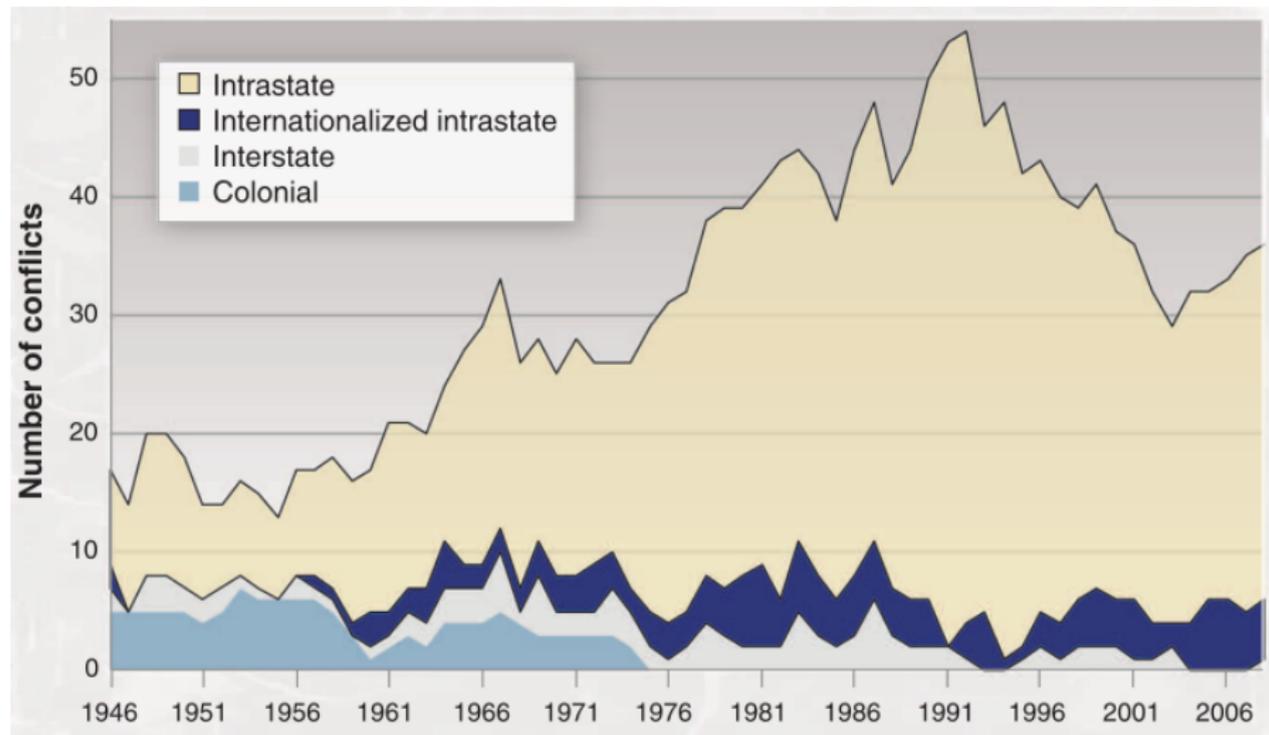


Figure: Armed conflicts by type, UCDP data (Esteban et al)

Determinants of Civil Wars

- Greed and Grievance - the most prominent model (Collier-Hoeffler)

Determinants of Civil Wars

- Greed and Grievance - the most prominent model (Collier-Hoeffler)
- Greed - opportunities for rebellion, economic factors

Determinants of Civil Wars

- Greed and Grievance - the most prominent model (Collier-Hoeffler)
- Greed - opportunities for rebellion, economic factors
- Grievance - conflicts over identity issues, political and cultural factors

Determinants of Civil Wars

- Greed and Grievance - the most prominent model (Collier-Hoeffler)
- Greed - opportunities for rebellion, economic factors
- Grievance - conflicts over identity issues, political and cultural factors
- Most civil conflicts are of ethnic nature (Esteban et al, Sambanis)

Determinants of Civil Wars

- Greed and Grievance - the most prominent model (Collier-Hoeffler)
- Greed - opportunities for rebellion, economic factors
- Grievance - conflicts over identity issues, political and cultural factors
- Most civil conflicts are of ethnic nature (Esteban et al, Sambanis)
- Grievance variables show little empirical support (Laitin, Fearon)

Determinants of Civil Wars

- Greed and Grievance - the most prominent model (Collier-Hoeffler)
- Greed - opportunities for rebellion, economic factors
- Grievance - conflicts over identity issues, political and cultural factors
- Most civil conflicts are of ethnic nature (Esteban et al, Sambanis)
- Grievance variables show little empirical support (Laitin, Fearon)
- ELF - the most widely used and controversial predictor

Conceptualization of Ethnic Tensions

- ELF indicates the probability of a different ethnic background for two randomly chosen people
- Higher ELF \Rightarrow more conflicts or less conflicts?

Suggested amendments

- Ethnic, linguistic and religious diversity (Alesina)
- Ethnic polarization (Estaban, Reynal-Querol)
- N index, politically relevant groups (Cederman)

Still, the link between ethnic composition of populations and conflict is insufficiently specified. Seemingly, researchers have implicit primordial assumptions

Conceptualization of Ethnic Tensions

- Relative deprivation theory and “Minorities at risk” project (Gurr)

Conceptualization of Ethnic Tensions

- Relative deprivation theory and “Minorities at risk” project (Gurr)
- Horizontal Inequalities (Cederman at al.) - rich and poor groups fight more

Conceptualization of Ethnic Tensions

- Relative deprivation theory and “Minorities at risk” project (Gurr)
- Horizontal Inequalities (Cederman at al.) - rich and poor groups fight more
- Ethnic diversity AND horizontal inequality \Rightarrow ethnic mobilization \Rightarrow civil conflict

Proposal

Question:

What are the mechanisms that link ethnic identity to civil violence?

Task:

Specify the relationship between ethnicity and conflict by modeling the dynamics of intergroup comparison and mobilization. Revealed patterns might be then used to generate new hypotheses which can be tested empirically (e.g. using existing conflict datasets)

Method:

Agent-based Modeling

Regression Analysis

Hypotheses: to be announced...

Agent-based Modeling

computational models for simulating (social) systems

Constituents

- Agents that follow simple micro-level rules
- Their heuristics, actions and interactions
- Environment

Aims

- Analyze complex systems and make predictions
- Model bounded rationality
- Reveal emergent macro patterns
- Trace dynamics

Modeling Civil Violence

- Epstein (2002) - first AMB model of civil conflict
- The model has two sets of actors - cops and citizens
- When citizens' grievance exceed their risk, they rebel

Grievance is a function:

- 1 Perceived hardship (randomly distributed)
- 2 Government legitimacy (constant across agents)

Risk is a function:

- 1 Probability of being caught (interdetermined by other rebel neighbors)
- 2 Risk aversion (randomly distributed)

Epstein's model

Revealed:

- *the unexpected emergence of individually deceptive behavior, in which privately aggrieved agents hide their feelings when cops are near, but engage in openly rebellious activity when the cops move away*
- *surface stability prevails despite deep and widespread hostility to the regime*

However, the model treats grievance as a black box

ABM Model of Ethnic Civil Violence*

Goal: make grievance endogenous via ethnic identity

Modifying Epstein's model

- 1 Add new set of agents - "agents2"
- 2 Add new endogenous variable - "unhappiness" (Schelling)
- 3 Make "unhappiness" a function of agent's environment
- 4 Make "unhappiness" a constituent of grievance

* initial "promordial" model

New Assumptions

- 1 Risk aversion, perceived hardship, feeling of legitimacy and rules of action for two sets of agents are similar
- 2 Agent is unhappier when he is surrounded by more dissimilar agents

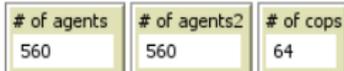
Presumable Implications

- 1 Grievance and thus rebellion is dependent on individual environment derived from the distribution of group sizes.
- 2 The smaller group would be more inclined to rebellion and is easier for the police to get imprisoned

First Results

- Settings: Two groups - 50/50
- People are more aggrieved (agents have neighbors of not their own kind)
- Huge initial outburst and quiet stable system, but half of imprisoned population
- With decreased jail term, conflict is not cyclic as in Epstein's model, but rather constant

Initial settings

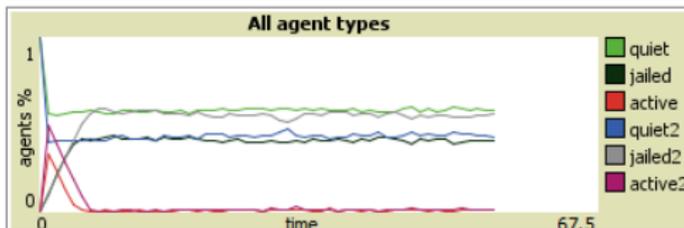
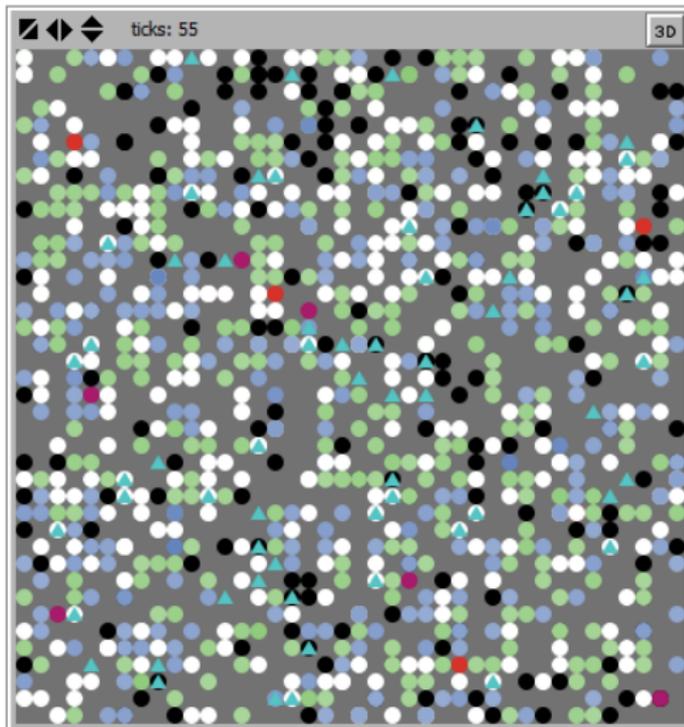


setup

go



On movement?
Off



First Results

- Settings: Two groups - 70/30
- People are more aggrieved than when 50/50
- NB! Majority is relatively more rebellious than minority
- When majority is 6x larger than minority, minority remains silent

Future research

New assumptions to escape plain primordialism

- Agent is ready for mobilization if she is resentful
- Resentment occurs if individual and group resources are below average

To do

- 1 Introduce n-number of groups
- 2 Introduce individual and group resources
- 3 Introduce interaction between agents and groups (e.g. games - competitions for resources, violence)
- 4 Make “Legitimacy” varying across groups/agents

Pseudo Code

```
grievance = perceived hardship * (1 - government legitimacy) * unhappiness  
perceived hardship - randomly given and assigned across agents  
government legitimacy - manipulable and constant across all agents  
unhappiness = (log (1 / (count agents in neighborhood* /  
(count agents2 in neighborhood + count agents in neighborhood)) * 100)) / 2  
* neighborhood - manipulable vision limits of agents  
"1 /" - to describe UNhappiness, "log" to squeeze the differences,  
"/ 2" to make it 1 one agent is surrounded by similar agents
```

Conclusions

- Drawing on HI theory, this work attempts to give a new insight on the mechanics of ethnic cleavages
- Simulating conflicts under a number of theoretically justified parameters can reveal new unexpected patterns
- These patterns can then be tested empirically using existing conflict datasets.

Thank you for your attention!