ETH zürich

Avoiding 1984: coercion’s limits

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Introduction

- **Goal**: investigate rebellious dynamics as a function of the government's actions directed towards mantaining stability.

- **Government's influence**: of two kinds
  - violent: police action
  - non violent: propaganda

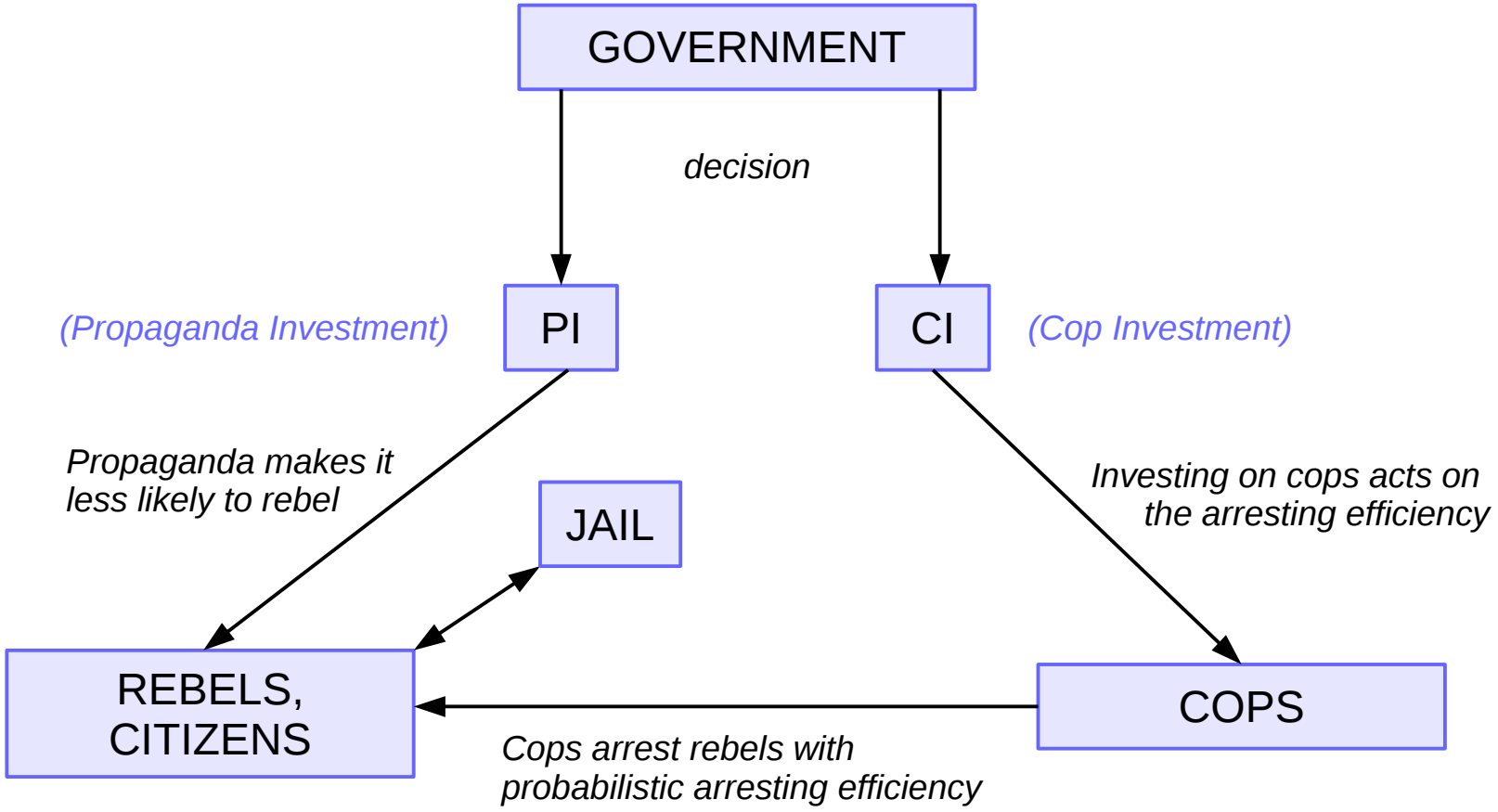
- **Why** "Avoiding 1984":
  - bottom limit for govenrment's influence, that should be not overtaken

Description of our model

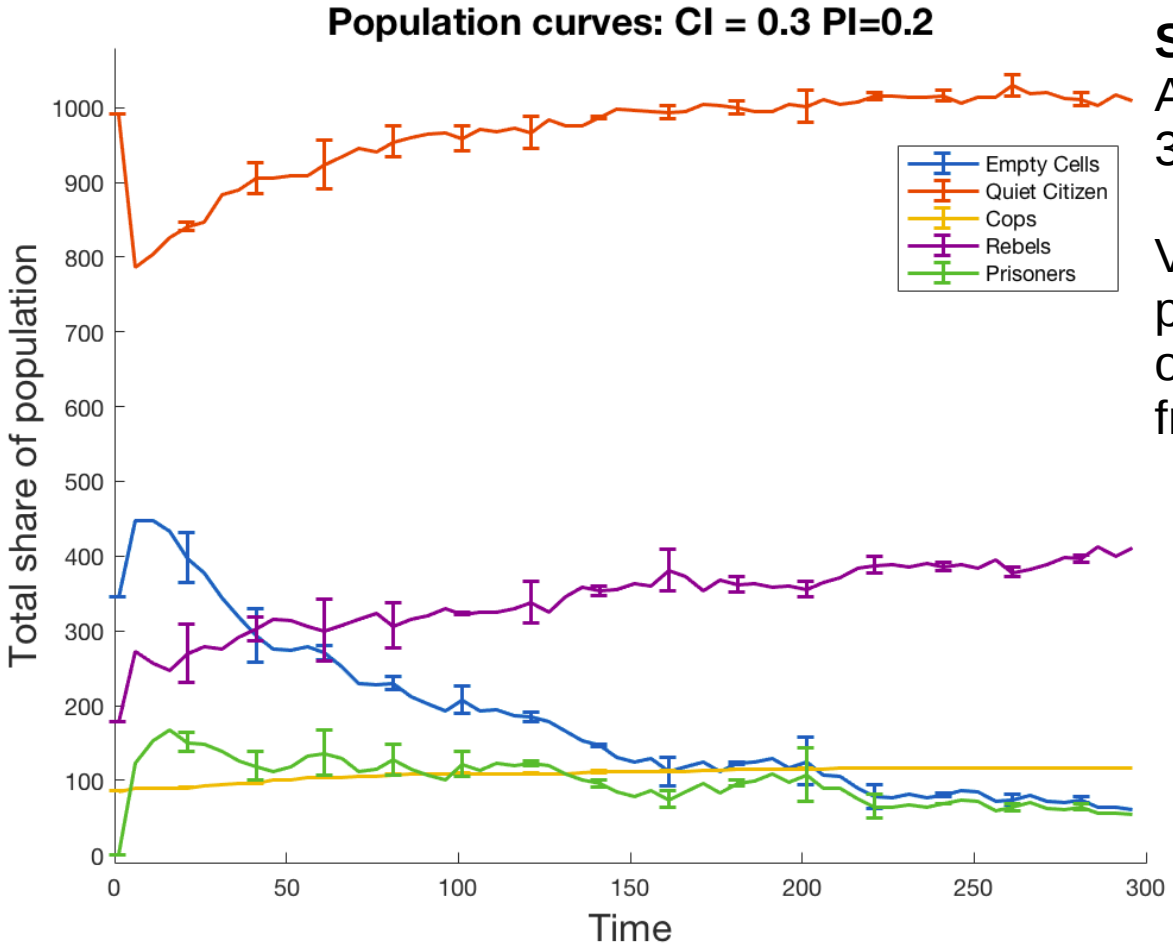
- **Base**: Epstein, 2002, *Modeling civil violence: an agent-based computational approach*
  - three kind of actors: quiet citizens, rebels and cops
  - introduces parameter describing relation between government and citizen (Hardship, Legacy)
  - **Citizens:** are either quiet or rebel depending on those parameters and on personal properties
  - **Cops:** cannot change their state, arrest rebels with probabilistic efficiency

- **Inspiration**: Alesina, Reich, 2012, *Nation-building*
  - Relation between investments (violent or non violent) of the government and behaviour of the polulation

Description of our base model



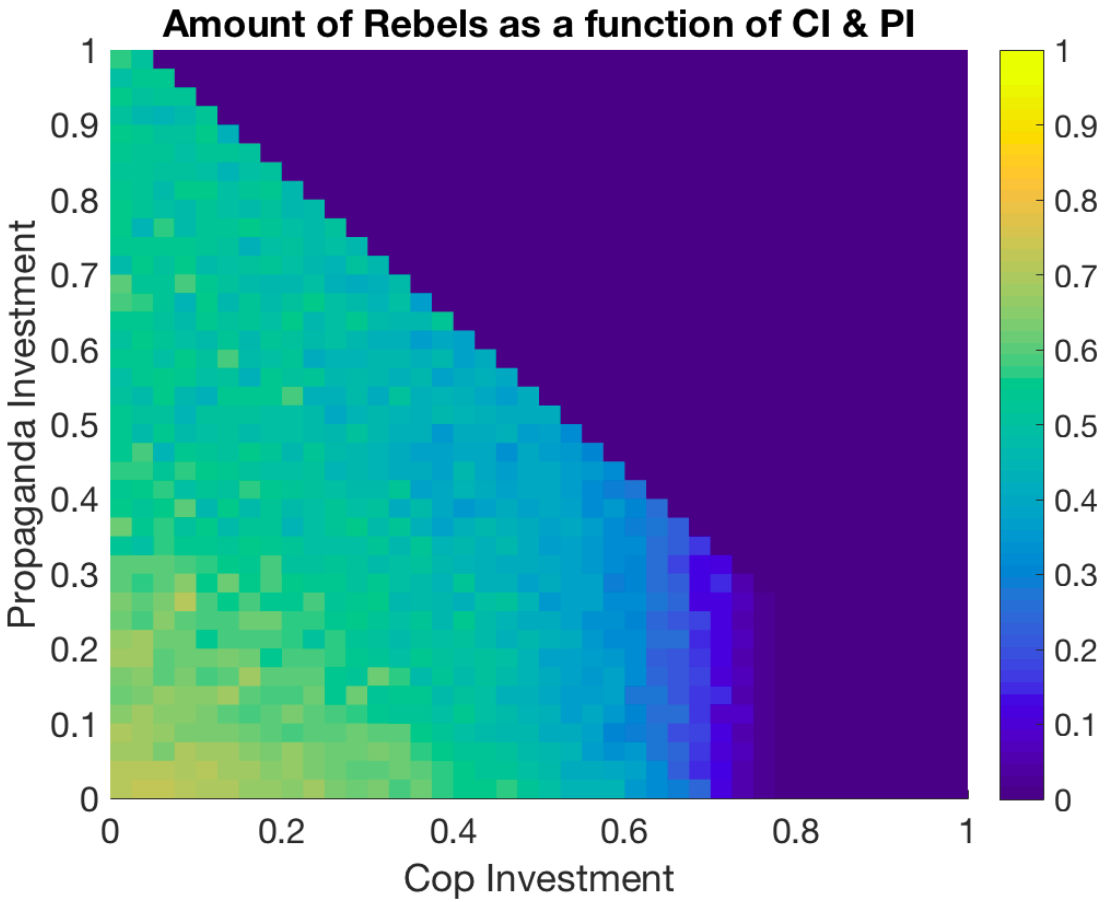
Results and discussion of the base model



Steady state
Average of the last 30 years of evolution

Values of population percentual as a function of PI and CI are obtained from such an average

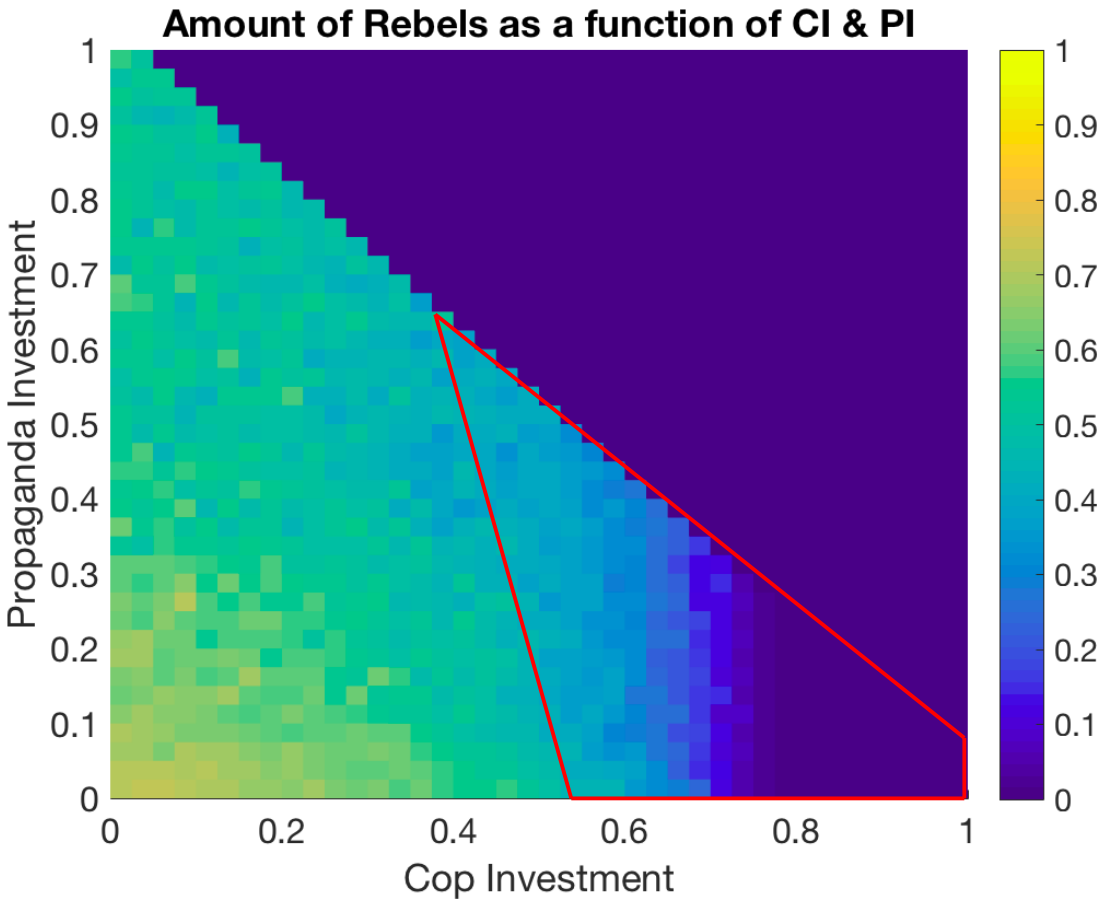
Results and discussion of the base model



	CI	PI	Rebels
CI	1	0	-0.7641
PI	0	1	-0.9274
Rebels	-0.7641	-0.9274	1

For low CI & PI
very high rebel percentual

Results and discussion of the base model



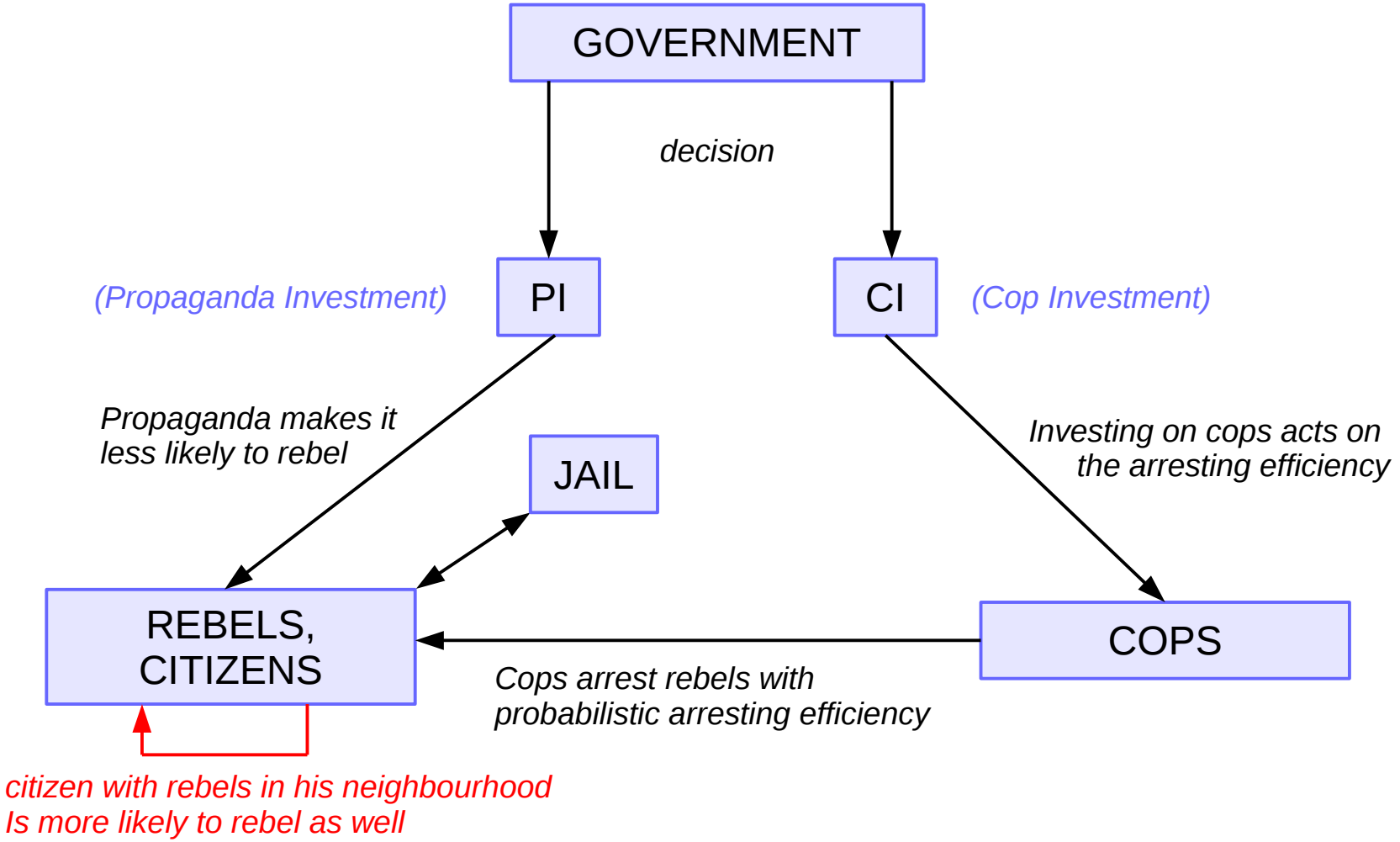
	CI	PI	Rebels
CI	1	0	-0.7641
PI	0	1	-0.9274
Rebels	-0.7641	-0.9274	1

For low CI & PI
very high rebel percentual

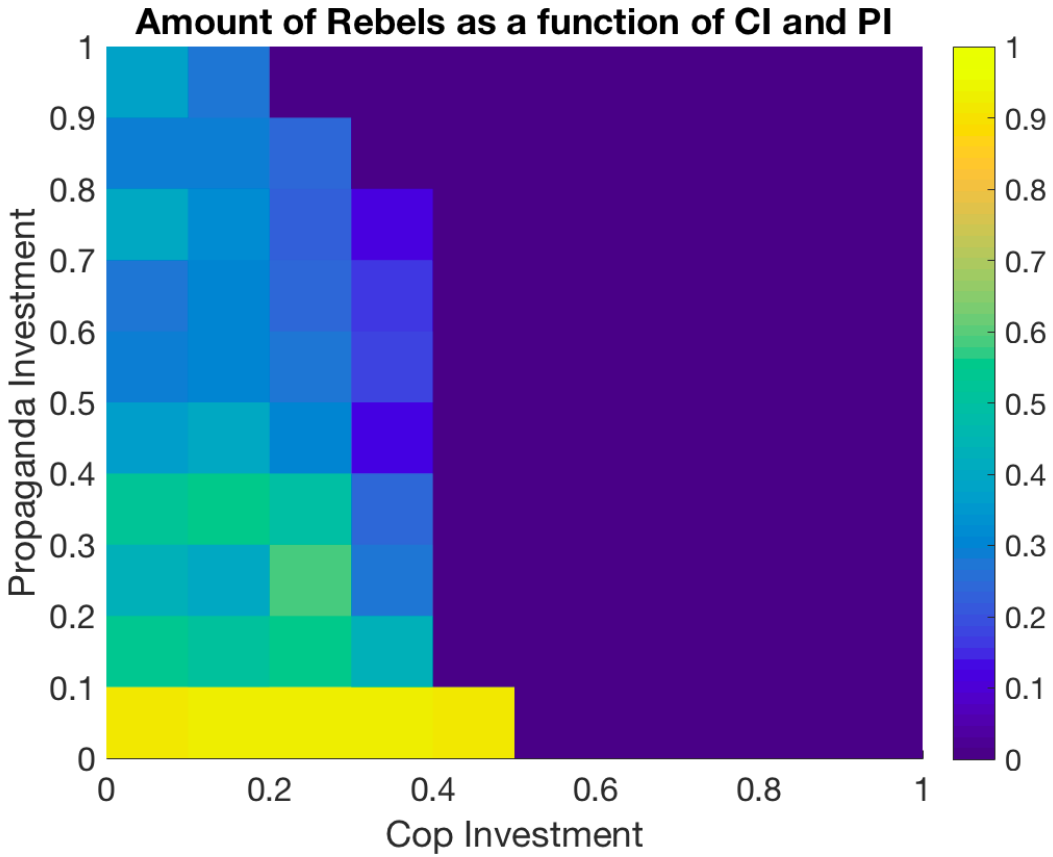
For a broad range
no or very little rebels

Conclusion
Stability condition is reached for different CI and PI values

Description of 1st variant: social interaction



Results and discussion of 1st variant: social interaction

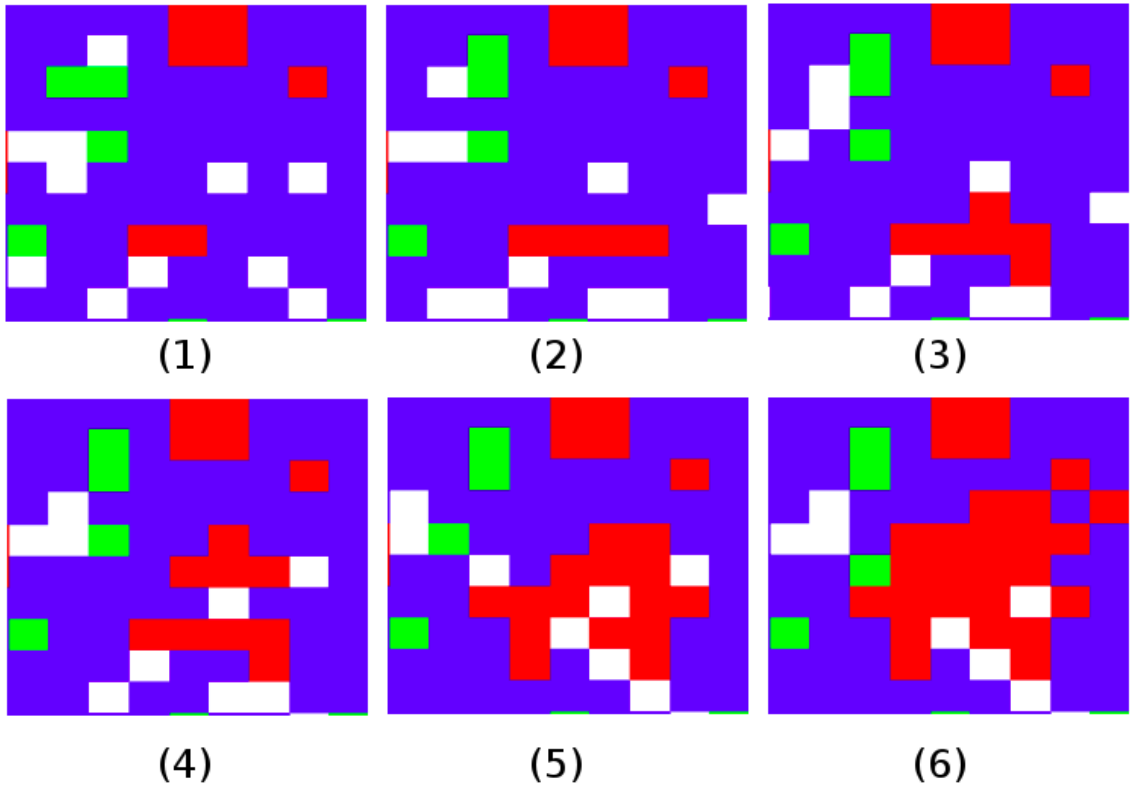


	CI	PI	Rebels
CI	1	0	-0.8809
PI	0	1	-0.5383
Rebels	-0.8809	-0.5383	1

For low CI & PI
very high rebel percentual

Higher dependance on CI
propaganda is less effective due to interaction between citizens

Results and discussion of 1st variant: social interaction

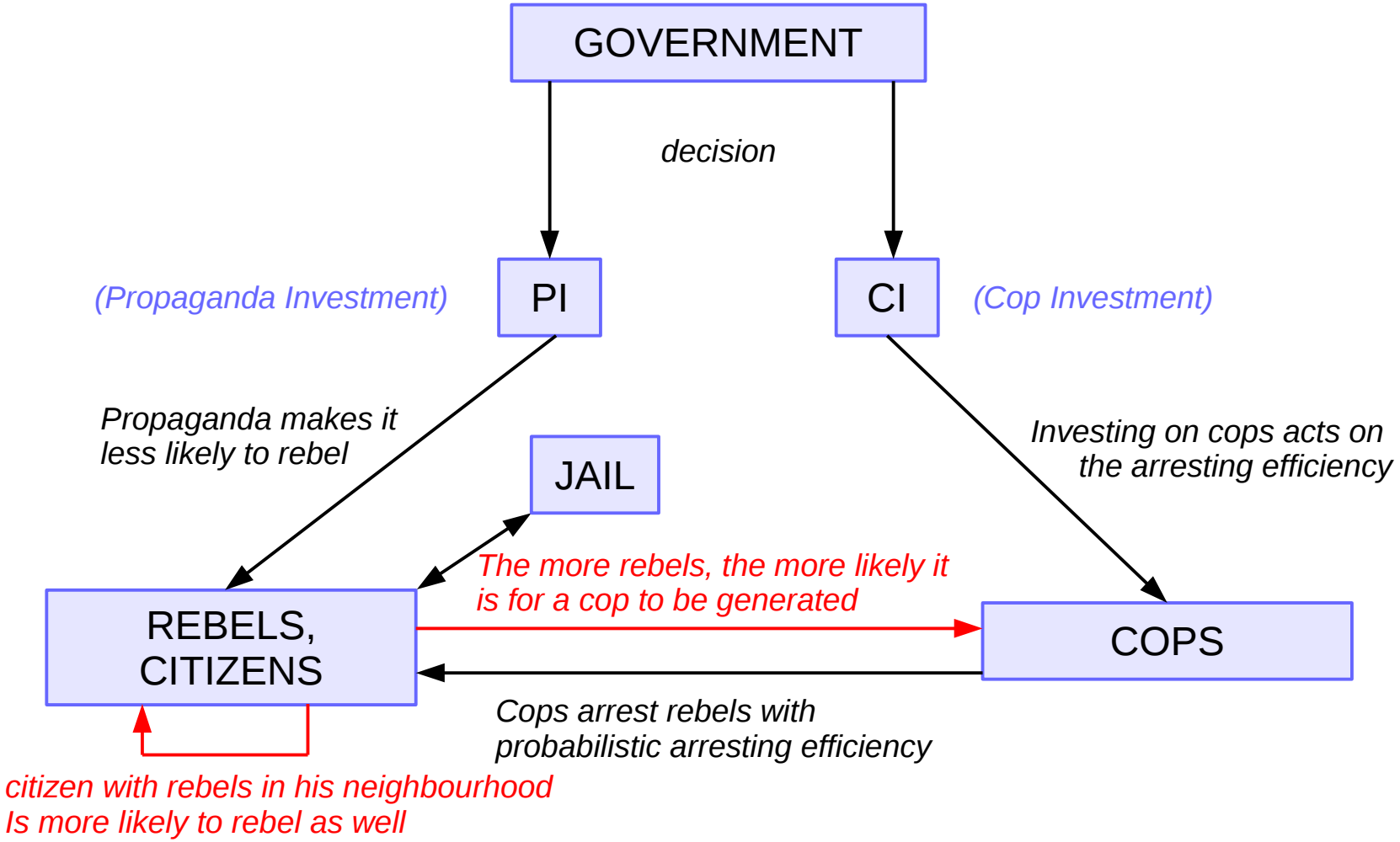


Result of social interaction
Formation of groups of rebels

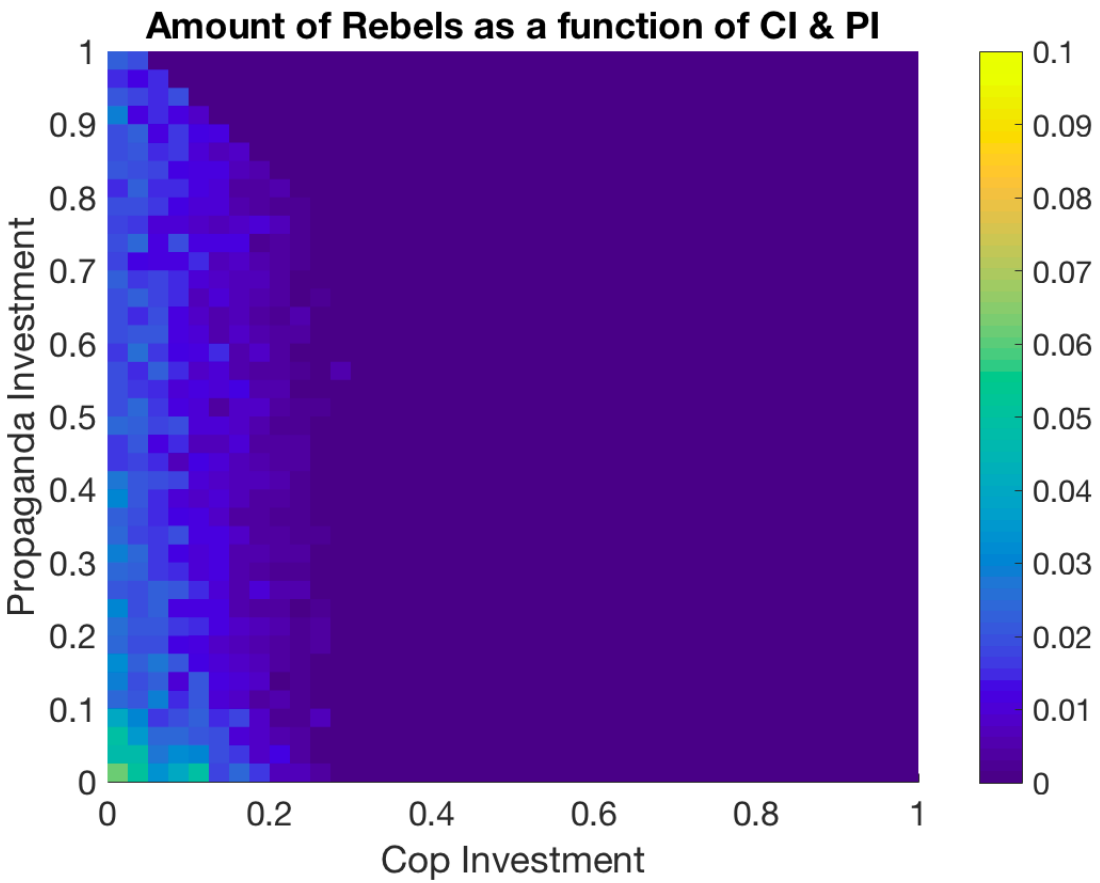
→ **VIDEO**

Colormap: red – rebels, blue – quiet citizen
green – cop, white – empty

Description of 2nd variant: cops adaptation



Results and discussion of of 2nd variant: cops adaptation



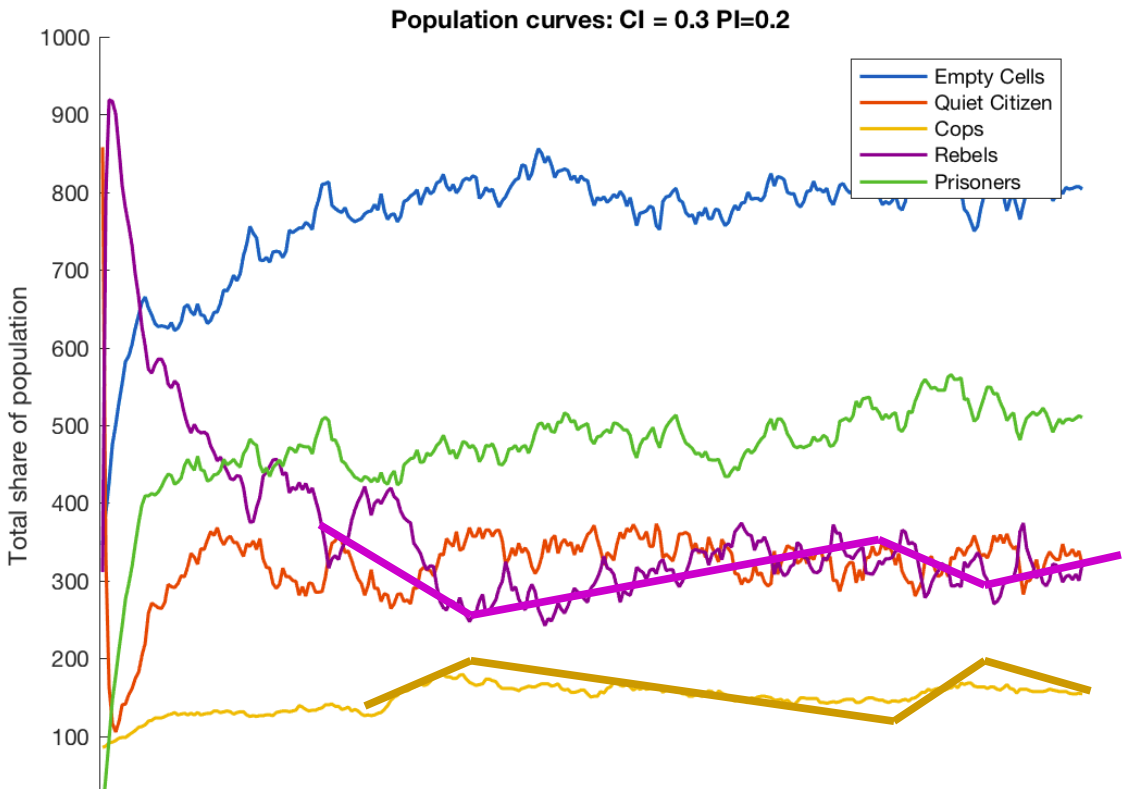
Note the change of scale
Rebel outbursts significantly reduced

Results and discussion of 2nd variant: cops adaptation

Tradeoff

Between number of cops and number of rebels

Results and discussion of 2nd variant: cops adaptation



	CI	PI	Rebels	Cops
CI	1	0	-0.4220	0
PI	0	1	-0.8123	0
Rebels	-0.4220	-0.8123	1	~ 0.25
Cops	0	0	~ 0.25	1

Tradeoff
Between number of cops and number of rebels

Generation characterization
since cops stay cops until the end of their lives, after their generation as a result of a high number of rebels, we will have many cops and less rebels for a period, until cops die and rebel numbers increase again

Conclusions

- Numerical value have a relative meaning
- But the dynamics of the model make realistic sense and help building significant evolutions

Questions?