

Impact of economic inequality on the emergence of intolerance in reputation-based societies

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Economic inequality has been reducing among nations during the last decades, however the difference between economic classes within countries has been continuously rising. Increasing evidence indicates that inequality could be one of the key causes of the emergence and expansion of intolerance, at least at the same level as the absolute economic income. On the other hand, modern societies have become highly dependent on public reputation systems, which shape their social dynamics.

Taking an evolutionary game theoretical perspective, this work studies how economic inequality impacts the emergence of intolerance [1]. A previous model of indirect reciprocity based on reputations [2] has been adapted to include inequality and intolerance. In indirect reciprocity, individuals assign other individuals reputations following the actions they witness and base future decisions on that reputation. The so-called *leading eight* strategies were found evolutionarily stable, with high payoffs, promoters of cooperation and robust against errors and cheating in this framework [3, 4]. In order to account for the effect of inequality in the current model, the population is also divided into two groups with different economic power, which limit their resources to cooperate. In addition, individuals are considered tolerant, if they follow a base leading eight strategy regardless the group of the others, and intolerant, if they always assign bad reputation to individuals from the opposite group, refuse to help them and assign bad (good) reputation to anyone who helps (refuses to help) someone from that opposite group. In this setup, it is studied under what circumstances intolerant behaviours can evolutionarily invade tolerant populations and under what conditions tolerance can be restored.

Results show that inequality is a powerful catalyser of intolerance. When inequality is significant, initial discriminatory behaviours escalate to the whole population even without introducing new intolerant individuals in the other group. It also changes the behaviour of individuals that manage to remain tolerant, especially among disfavoured minorities. Some of these individuals opt to behave as cooperatively as possible with their own in order to avoid the spread of bad reputation originated by the scarcity of resources, but reducing the punishment also against individuals that have fairly acquired bad reputation. On the other hand, disfavoured strategists that remain more strict tend to help more to wealthier individuals than to their own kind even if they receive discrimination in return.

This work also studies the efficacy of the redistribution of wealth as a mechanism to avoid intolerance (see Fig. 1). Results show that this policy can be successful, but only if it increases equality and, for a significant amount of scenarios, if it is applied before intolerance invades part of the population.

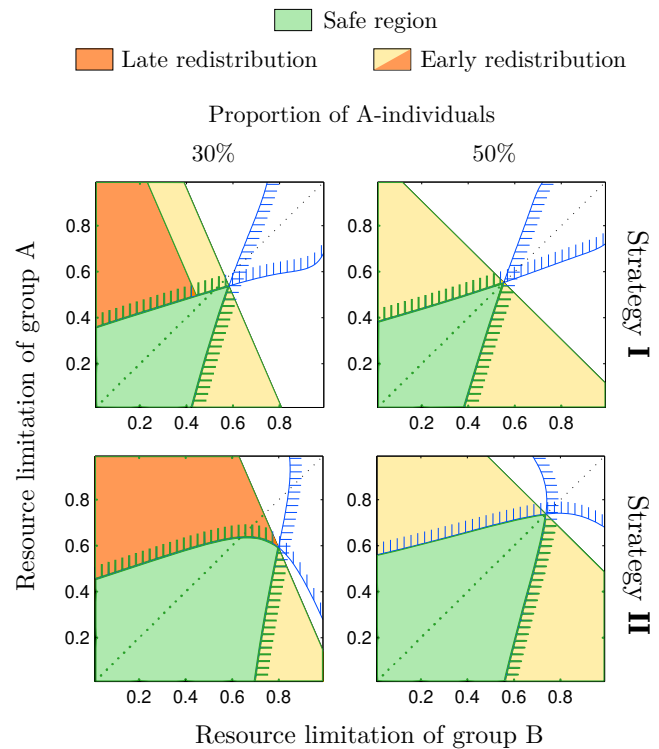


Fig. 1. Redistribution of wealth capacity to prevent intolerance for different proportions of individuals belonging to each group, resource limitations and base strategies. The area in green is safe from an invasion of intolerance while the yellow population can prevent intolerance through redistribution of wealth only if applied before intolerance appears. Redistribution of wealth can restore tolerance in the orange region, even after intolerance has invaded one group. Blue lines limit the parameter regions where intolerance can successfully invade a subpopulation.

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