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Título: Study of taxes, regulations and inequality using machine learning algorithms

Resumo:

Genetic machine learning (ML) algorithms to train agents in the Yard–Sale model proved very useful for finding optimal strategies that maximize their wealth. However, the main result indicates that the more significant the fraction of rational agents, the greater the inequality at the collective level. From social and economic viewpoints, this is an undesirable result since high inequality diminishes liquidity and trade. Besides, with very few exceptions, most agents end up with zero wealth, despite the inclusion of rational behaviour. To deal with this situation, here we include a taxation–redistribution mechanism in the ML algorithm. Previous results show that simple regulations can considerably reduce inequality if agents do not change their behaviour. However, when considering rational agents, different types of redistribution favour risk-averse agents, to some extent. Even so, we find that rational agents looking for optimal wealth can always arrive to an optimal risk, compatible with a particular choice of parameters, but increasing inequality.