HETEROGENEITY IN ASSORTATIVE VOLUNTARY CONTRIBUTION GAMES

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Do good outcomes exist for players with heterogeneous endowments?

N players with initial endowment \( w_i \) play the following public-goods game (Social Dilemma):

1. **Actions.** Each player \( i \) decides how much to contribute \( \alpha_i \).
2. **Matching.** Rank players by their effective contributions. Then, assign them to groups according to their ranking:
3. **Outcome.** Payoffs $\phi_i$ based on the contribution total in each group:

$$\phi_i (\alpha_i \mid \alpha_{-i}) = w_i (1 - \alpha_i) + Q \sum_{j \in G_i} \alpha_j^\gamma w_j$$

- The exponent $\gamma$: a measure of “how good” the public-good provision efficacy is.
- Heterogeneity in initial endowments $w_i$: indicates how much the players differ from each other.
Efficiency loss in case of heterogeneous players for $Q = 0.6$

- 100% loss
- 0% loss

Efficiency gain