Maskin mechanism

A social choice rule (SCR) maps preferences into optimal allocations. A SCR is monotonic if whenever chooses allocation A it keeps the same choice when A is equally or more preferred in the ranking of all agents. An SCR satisfies no veto power if it chooses A when A is top ranking for, at least, all agents minus one.

A mechanism is a message space and a function mapping messages into allocations. A mechanism implements an SCR in Nash Equilibrium (NE) if for any preference profile optimal allocations coincide with those yielded by NE.

Maskin conjectured that, with more than two agents, any SCR satisfying monotonicity and no veto power was implementable in NE. He constructed a 'universal mechanism' to do the job. This is the Maskin mechanism. Even though the spirit was correct, the original proof was not. Repullo, Saijo, Williams and McKelvey offered correct proofs.

In the Maskin mechanism each agent announces the preferences of all agents, an allocation and an integer. There are three possibilities. The first is complete agreement: all agents announce the same preferences and allocation and this allocation is optimal for the announced preferences. The allocation is the one announced by everybody.

The second possibility is a single dissident: a single agent whose announcement differs from the others. The allocation cannot improve the dissident's payoff if her preferences were announced by others. The third possibility is several dissidents: several agents whose messages differ. The allocation is announced by the agent whose message is the highest integer.

The interpretation of the mechanism is that the dissident must prove that she is not manipulating the mechanism in her favour, but pointing out a plot of the other agents to fool the mechanism. With several dissidents, the 'law of the jungle' holds.

This mechanism has been critized because the strategy space is not bounded (if bounded, there might be NE yielding suboptimal allocations) and because, with several dissidents, allocations are dictatorial (if agents renegotiated these allocations, there might be NE yielding suboptimal allocations).

Experiments run with this mechanism suggest that both criticisms are far from the mark. The true problem is that to become a single dissident might be profitable and never hurts. If this deviation is penalized, the frequency of suboptimal NE is about 18 per cent.

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Bibliograpby

Maskin, E. (1999), 'Nash equilibrium and welfare optimality', Review of Economic Studies, 66, 23--38; originally published with the same title as an MIT mimeo, in 1977.