

Arrovian aggregation of convex preferences

Felix Brandt

Abstract

We consider social welfare functions that satisfy Arrow's classic axioms of independence of irrelevant alternatives and Pareto optimality when the outcome space is the convex hull of some finite set of alternatives. Individual and collective preferences are assumed to be continuous and convex, which guarantees the existence of maximal elements and the consistency of choice functions that return these elements, even without insisting on transitivity. We provide characterizations of both the domains of preferences and the social welfare functions that allow for anonymous Arrovian aggregation. The domains admit arbitrary preferences over alternatives, which completely determine an agent's preferences over all mixed outcomes. On these domains, Arrow's impossibility turns into a complete characterization of a unique social welfare function, which can be readily applied in settings involving divisible resources such as probability, time, or money.

Joint work with: Florian Brandl