A General Framework for Rational Learning in Social Networks

Manuel Mueller-Frank
PhD candidate
Department of Economics
Northwestern University

Abstract

This paper provides a formal characterization of the process of rational learning in social networks. A finite set of agents select an option out of a choice set under uncertainty in infinitely many periods observing the history of choices of their neighbors. Choices are made based on a common behavioral rule. We find that if learning ends in finite time and the choice correspondence is union consistent, then every action selected by any agent once learning ends is optimal for all his neighbors. Local indifference across neighbors, however, does not in general imply global indifference across all agents in the network. We further provide sufficient conditions for the existence of a finite time for every state of the world such that every action chosen by an agent from that time period onward is optimal for all his neighbors in the limit. If only common knowledge of rationality rather than common knowledge of strategies is assumed, the validity of the aforementioned results depends on the network structure. If the network is complete, the result of local indifference across neighbors once learning ends still holds, while it can fail in incomplete networks. Our results have direct implications for the literature on social learning, knowledge and consensus, and coordination games.