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EDITORIAL

Introduction

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The five papers included in this special issue on Networks address two of the main concerns in the current research agenda on the economics of social networks, namely, understanding the formation of economic and social networks, and examining how the structure of such networks shape individual behavior or payoffs. The different contributions represent both the traditional concerns with networks modeled as finite graphs which are formed through strategic behavior of individual nodes, as well as the more recent interests in random networks described by a probability distribution over possible graphs.

Bloch and Jackson compare the relationship between the variety of different equilibrium concepts which have been proposed in the recent literature on strategic network formation. A particularly useful part of their analysis is the comparison of stability or equilibrium notions for network formation games where players can offer or demand (monetary) transfers in order to facilitate link formation with those games where no such transfers are possible.

Goyal and Joshi examine networks that are stable to pairwise deviations in the context of models where individual payoffs depend on the degree distributions of the network in various ways. For instance, Cournot firms forming cost-reducing collaboration links give rise to *playing the field games* in which an individual node's payoff depends on the number of neighbors as well as the

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aggregate number of links of the rest of the population. The paper provides existence and characterization results under a variety of payoff specifications. It shows that it is possible to have disparities in the degrees of different individuals in equilibrium networks, and identifies conditions under which it is advantageous to have a larger number of neighbors.

Tercieux and Vannetelbosch analyze the formation of networks in a dynamic setting, extending previous work of Jackson and Watts (2002). Assuming myopic behavior of agents—individuals decide on whether to form or severe links on the basis of their current payoffs, although the network evolves over time—Jackson and Watts characterized the set of *stochastically stable* networks. However, the computation of which networks are stochastically stable can often be quite demanding. The main purpose of the present paper is to provide an alternative definition of stochastic stability which is computationally easier to characterize.

López-Pintado assumes that individual nodes in a given network play a 2×2 coordination game with each one-link-away node. Individual nodes revise their play periodically and use myopic best-replies. She focuses on random graphs, so that the network where the coordination game is being played is selected randomly at each stage. Her main interest is in deriving the *contagion threshold* for the level of risk dominance of an action to spread to a significant fraction of the population. She uses mean-field analysis to derive the contagion threshold for random graphs that induce different distributions on network connectivities, and examines how this threshold varies with the variance of these degree distributions.

Ehrhardt, Marsili and Vega-Redondo also resort to random graphs to analyze the interplay between the *network diffusion* and *growth* of knowledge. They study two different dynamic processes where technology levels and social networks coevolve. In one model, individual nodes upgrade their technology level to match the best available one among their network peers. In the other model, technology upgrading reflects a concern for conformity with respect to the very same network peers. Numerical simulations supported by heuristic calculations show that the same set of initial conditions or parameter values can give rise to two very extreme steady-state configurations. In one, a dense network promotes the formation of a relatively homogeneous society which in turn permits the formation of new links. In the other configuration, a sparse network results in a heterogeneous society which in turn deters the formation of new links.