

# Games of Dynamic Network Formation

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**Abstract.** We combine a network game introduced in Ballester et al. (2006), where the Nash equilibrium action of each agent is proportional to her Bonacich centrality, with an endogenous network formation process. Links are formed on the basis of centrality while the network is exposed to a volatile environment introducing interruptions in the connections between agents. Taking into account bounded rational decision making, new links are formed to the neighbors' neighbors with the highest centrality. The volatile environment causes existing links to decay with the neighbor with the lowest centrality. We show analytically that there exist stationary networks and that their topological properties completely match features exhibited by social and economic networks. Moreover, we find that there exists a sharp transition in efficiency and network density from highly centralized to decentralized networks.

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Keywords: Bonacich centrality, network formation, adaptation, hierarchy.