

A Network Economic Analysis of Friendship, Cultural Activity, and Homophily

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Abstract : In social networks, the term homophily refers to the tendency of agents with similar characteristics to link with one another and is so robustly observed across many contexts and dimensions. The starting point of my research is the observation that the “type” of agents is not a single exogenous variable. Agents, despite their differences in race, religion, and other hard to alter characteristics, may share interests and engage in activities that cut across those predetermined lines. This research aims to capture the interactions of homophily effects in a model where agents have two-dimension characteristics (i.e., race and personal hobbies such as basketball, which one either likes or dislikes) and with biases in meeting opportunities and in favor of same-type friendships. A novel feature of my model is providing a matching process with biased meeting probability on different dimensions, which could help to understand the structuring process in multidimensional networks without missing layer interdependencies. The main contribution of this study is providing a welfare based matching process for agents with multi-dimensional characteristics. In particular, this research shows that the biases in meeting opportunities on one dimension would lead to the emergence of homophily on the other dimension. The objective of this research is to determine the pattern of homophily in network formations, which will shed light on our understanding of segregation and its remedies. By constructing a two-dimension matching process, this study explores a method to describe agents’ homophilous behavior in a social network with multidimension and construct a game in which the minorities and majorities play different strategies in a society. It also shows that the optimal strategy is determined by the relative group size, where society would suffer more from social segregation if the two racial groups have a similar size. The research also has political implications—cultivating the same characteristics among agents helps diminishing social segregation, but only if the minority group is small enough. This research includes both theoretical models and empirical analysis. Providing the friendship formation model, the author first uses MATLAB to perform iteration calculations, then derives corresponding mathematical proof on previous results, and last shows that the model is consistent with empirical evidence from high school friendships. The anonymous data comes from The National Longitudinal Study of Adolescent Health (Add Health).

Keywords : homophily, multidimension, social networks, friendships

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