Trust, Network, and Wealth: From Human-Subject Experiments to Agent-Based Modeling

Abstract

Trust is part of human nature. It plays a vital role in almost all kinds of human interactions, yet it is difficult to have a formal conceptualization of it. Despite this difficulty, economists have little doubt on its significance, from individual behavior to aggregate performance. In the 1990s, macroeconomists already started to include a measure of trust or a trust index as an explanatory variable in many empirical growth models. Around the same decade, a formal measure of trust and trustworthiness has been proposed with the trust-game (investment-game) by a group of experimental economists. Both bodies of literature are aware of the relation between trust and wealth creation, although the current scale of the trust-game experiment, in the form of the two-person or three-person game, can shed little light on the fundamental relation between trust and wealth.

In this presentation, we apply agent-based modeling to scale up the dyadic or triadic trust game into a many-person game, and make it become an agent-based network-based game. We use network formation as an intermediate step between trust and wealth to connect individual relationship to aggregate phenomenon. Hence, the economy benefits from network formation, whereas trust enhances network formation. In agent-based model, both the behavioral and institutional aspects of an issue are encapsulated. In this case, on the behavioral side, the proposed agent-based model allows us to examine the effect of the trust formation mechanism, characterized by agents’ learning and decision-making behavior, on network formation and hence wealth creation. On the institutional side, it allows us to examine the possible effect of technology advancement on network formation. The dynamic process demonstrated by the agent-based model also enables us to address the questions related to economic development, such as wealth distribution.

Through using the familiar trust game as an example, the upshot of the presentation is that experimental economics and agent-based computational economics can collaborate together to advance experimental (simulation) thinking in economics and push forward economic research to a new frontier.