Abstract

In an agent-based computational economics (ACE) model, heterogeneous autonomous software agents operate in a simulated dynamic environment; typically where the agents may or may not learn, have less than perfect information and less than perfect rationality. ACE models stress the economic process instead of equilibria, stress local interactions instead of global, stress emergent patterns in complex systems, and focuses on the out-of-equilibrium dynamics of the system. ACE modeling complements our traditional models by sharing the common goal of trying to understand economic systems. Given the large literature that has developed on the past 20 years (Tesfatsion and Judd, 2006) in a wide variety of economics and the growth of easy to use software tools, the time is appropriate for integrating the insights from ACE models into the teaching of principles. The paper discusses the advantages of integrating ACE models into the principles of microeconomics using five Net Logo models: zero-intelligence trading in a double-auction, iterated prisoner's dilemma, evolutionary prisoner's dilemma, wealth distribution, and pricing in small worlds. Each model builds from notable or seminal articles in the ACE literature. For each model, suggestions for integrating the model into the course are provided including a guide to the issues raised by the ACE model and a sample laboratory exercise. These new models allow the instructor to address new questions more deeply such as is it the structure of the market or the rationality of the individuals that lead to market efficiency, the role of alternative pricing institutions, the role of heterogeneity of market participants, the role of limited information and local interactions, and the role of network effects on pricing.