J M Keynes Fellowship Fund Lectures 2017

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"Evolution of Rules, Mutation and Equilibrium Selection"

Synopsis

Multiple equilibria is a common feature of a very large number of economic models. For example, in macroeconomics and finance, it is used to explain important phenomena such as recessions, bank runs and currency attacks. But standard economic theory often has little to say on which equilibria are more likely. One motivation for evolutionary approach to economic modelling has been precisely to address this issue. By looking at the dynamics, the evolutionary approach tries to see which outcomes are more likely in the long-run in a world in which agents follow simple and adaptive behaviour.

In this paper we take a general evolutionary set-up and demonstrate a very strong selection result. Specifically we treat mutation as a kind of experimentation and assume that economic agents are more likely to mutate/experiment when they are doing badly. Next for each equilibrium compute the payoff of the player that does least well in that equilibrium, and then rank all the equilibria according to this payoff. We show that in the long-run the equilibrium that has the highest rank is most likely to occur (a MaxMin result). Thus, the theory provides a justification for emergence of efficient and symmetric equilibrium outcomes in the long-run.