Evolutionary Game Theory [1]

Jörgen W. Weibull
Department of Economics
Stockholm School of Economics
P.O. Box 6501
SE 113 83 Stockholm, Sweden
e-mail: `jorgen.weibull@hhs.se`
url: `http://www2.hhs.se/personal/Weibull`

Abstract

This tutorial is focused on a selection of central concepts and results in evolutionary game theory. Point-valued and set-valued evolutionary stability concepts will be discussed and related to well-known solution concepts in non-cooperative game theory. Different versions of the replicator dynamic will be analyzed and dynamic stability properties of points and sets in these dynamics will be related to non-cooperative solution concepts. Stochastic population processes, for normal-form games recurrently played in large populations, will be analyzed. Long-run properties of these processes will be related to properties of the associated mean-field approximation, and thereby to non-cooperative solution concepts. We end by discussing desiderata for robust set-valued solution concepts in the light of population dynamics and non-cooperative game theory.

Bibliography

1. Benaim M. and J. Weibull (2003): "Deterministic approximation of stochastic evolution in games", Econometrica 71, 873-903.
2. van Damme E. (1987): Stability and Perfection of Nash Equilibria. Springer Verlag, (2nd ed. 1991).
3. Hauk E. and S. Hurkens (2002): "On forward induction and evolutionary and strategic stability", Journal of Economic Theory 106, 66-90.
4. Hofbauer J. and J. Weibull (1996): "Evolutionary selection against dominated strategies", Journal of Economic Theory 71, 558-573.
5. Kohlberg E. and J.-F. Mertens (1986): "On the strategic stability of equilibria", Econometrica 54, 1003-1037.
6. Ritzberger K. and J. Weibull (1995): "Evolutionary selection in normal-form games", Econometrica 63, 1371-1399.
7. Swinkels J. (1992): "Evolution and Strategic Stability: from Maynard Smith to Kohlberg and Mertens", Journal of Economic Theory 57, 333-342.
8. Weibull J. (1995): Evolutionary Game Theory. MIT Press.
9. Young P. (1998): Individual Strategy and Social Structure, Princeton University Press.

---

[1] Tutorial