

Hannu Vartiainen
Professor, director of Helsinki Center of Economic Research (HECER) and
Finnish Doctoral Programme in Economics (FDPE)
University of Helsinki

A mini-course on bargaining theory

Aim of the course:

Bargaining is about conflict – there is a common pool of resources and individuals with, at least to some degree, diverging interest of how the resources should be used. Bargaining theory aims to understand how rational negotiation takes place and what is the predicted outcome of such negotiation process.

The axiomatic approach to bargaining takes as the starting point the outcome of the process, and asks what properties any such outcome should satisfy, if bargaining is characterized by rational, consistent behavior. The conditions – axioms - are then taken as constraints of the possible solution of the process. The aim is to identify enough conditions that leave us with a unique feasible bargaining solution. The non-cooperative approach, on the other hand, takes as the starting point the actual bargaining protocol, the game the bargainers play. Such game is characterized by the description of the order of moves and possible strategies. The solution is obtained by applying non-cooperative equilibrium concepts to the strategies. The Nash program seeks to combine the two approaches. The idea is to start with the axiomatic approach, to identify a normatively appealing outcome of the process. Then a non-cooperative game is developed that explains, in the sense of positive economics, why this particular outcome indeed becomes implemented. Implementation theory, in turn asks precisely the question of what outcomes can even in principle be implemented if the players are rational. Thus implementation theory can be used to derive bounds on axiomatic solutions that meet the Nash program.

The aim of the course is to provide an overview of the classic results on as well as some recent developments in bargaining theory. An attempt is made to provide an integrated view of the key insights.

Time line:

1. Axiomatic models of bargaining
2. Noncooperative models of bargaining
3. The Nash programme
4. Implementation of bargaining solutions

Readings:

Binmore K., A. Rubinstein and A. Wolinsky 1986, The Nash bargaining solution in economic modelling, *Rand Journal of Economics* 17, 176-188.

- Herings, P.J.J., and A. Predtetchinski 2010, One-dimensional Bargaining with Markov Recognition Probabilities, *Journal of Economic Theory* 145, 189-215.
- Rubinstein A., Safra, Z. and Thomson, W. 1992, On the Interpretation of the Nash Bargaining Solution and its Extension to Non-Expected Utility Preferences, *Econometrica* 60, 1171-1186.
- Krishna V. and R. Serrano 1996, Multilateral bargaining, *Review of Economic Studies* 63, 61-80.
- Kultti. K and H. Vartiainen 2010, Multilateral non-cooperative bargaining in a general utility space, *International Journal of Game Theory* 39, 677-90
- Kultti. K and H. Vartiainen 2007, Von Neumann-Morgenstern stable set, discounting, and Nash bargaining, *Journal of Economic Theory* 137, 721-28
- Maskin, E. and T. Sjostrom 2002, Implementation Theory, in K. J. Arrow, A. Sen and K. Suzumura (eds.) *Handbook of Social Choice and Welfare* (vol. I), New York, Elsevier Science B.V.
- Nash J. 1950, The bargaining problem, *Econometrica* 18, 155-162.
- Roberto, S. 1980, Nash program, in S. Durlauf and L. Blume (eds.): *The New Palgrave Dictionary of Economics*, Second Edition
- Rubinstein A. 1982, Perfect equilibrium in a bargaining model, *Econometrica* 50, 97-109.
- Thomson W. and T. Lensberg 1989, *Axiomatic theory of bargaining with a variable number of agents*. Cambridge University Press, Cambridge.