

Real Options

Prof. dr. P. Kort

Total credits:

3 credits (as of 2016-2017)

Objectives:

This course is meant for students in the doctoral program (economics, finance, operations research), and for final year undergraduate students with a sufficient quantitative background.

Literature:

compulsory:

A.K. Dixit, R.S. Pindyck, "Investment under Uncertainty", Princeton University Press, Princeton, 1994 (or 1996, second printing).

recommended:

Grenadier, S.R., Game Choices: "The Intersection of Real Options and Game Theory", Risk Books, London, 2000.

Huisman, K.J.M., "Technological Investment: A Game Theoretic Real Options Approach", Kluwer, Dordrecht, 2001.

Organization:

In the first part the theory of real options is explained by P.M. Kort.

In the second part each student gives a presentation based on a part of the book mentioned above or on a recent paper.

Contents:

This course deals with capital investment decisions of firms, stressing the irreversibility of most investment decisions, and the ongoing uncertainty of the economic environment in which these decisions are made. This new approach to investment recognizes the option value of waiting for better (but never complete) information. It exploits an analogy with the theory of options in financial markets, which permits a much richer dynamic framework than was possible with the traditional theory of investment. To support this kind of decision making several mathematical tools are introduced such as dynamic programming and stochastic processes like Brownian motion and Poisson processes.

The Dixit-Pindyck book mainly considers single decision maker problems of firms operating in monopoly or perfect competition markets. In the course we will also deal with the problem of investment timing in an oligopoly framework. This brand new topic requires a merge between game theory and real options.

Evaluation:

Examination will be based on

- writing of a short paper (0.5),
- lecture presentation (0.4),
- class participation (0.1).