

2nd year elective Course

winter term 2008/09

Real Option (RO)

Engelbert Dockner (VGSF)

Email: engelbert.dockner@univie.ac.at

Website: <http://homepage.univie.ac.at/engelbert.dockner/>

Course Description:

This course introduces students to the techniques, tools and applications of real options. It is demonstrated that real options are a perfect tool to analyze problems in corporate finance, asset pricing and industrial organizations. The following topics will be covered in the course:

Characteristics of real options

- Introduction to mathematical foundations of real options
- Solving real option problems: Dynamic programming approach
- Solving real option problems: Contingent claims approach
- Options to wait
- Real options and asset pricing
- Strategic exercise of options

Time schedule:

Tue,	Oct 07,	18:00-19:30, S3 (H46)
Tue,	Oct 21;	14:30-17:00, MR 1 (H46)
Tue,	Nov 04,	13:30-16:30, S4
Tue,	Nov 11,	13:30-16:30, S4
Tue,	Nov 25,	09:00-12:00, MR 4
Mon,	Dec 01,	13.30-16:30, MR 1
Wed,	Dec 03	13.30-16.30, MR 1

Literature:

A.K.Dixit and R.S. Pindyck, Investment under uncertainty. Princeton 1994.

L. Trigeorgis, Real Options. MIT Press 2000.

M. Amram and N. Kulatilaka, Real Options, Harvard Business School Press, 1999.

Location:

Wirtschaftsuniversität Wien

1190, Heiligenstädter Strasse 46-18

S1, S2, ... ground floor

S3, S4, ... 2nd floor

MR 1 ... 4th floor/entrance over the 3rd floor

Entrance to the department 3rd floor

Examination:

There will be homework assignments and a final exam. The mark on the final exam will be worth 50 % of the final grade for this course.

Thu, Dec 11, 14.00-16.00 Meeting Room 1

Assignment: tba

Course Material/Detailed Reading List:

Characteristics of real options:

- A.K.Dixit and R.S. Pindyck, Investment under uncertainty. Princeton 1994. Chapter 1
L. Trigeorgis, Real Options. MIT Press 2000. Chapter 1, 2
Introduction to mathematical foundations of real options: T. Björk, Arbitrage Theory in Continuous Time. Oxford University Press, 1998.
S.N. Neftci, An Introduction to the Mathematics of Financial Derivatives. Academic Press, 1996.

Solving real option problems:

- Dynamic programming approach
E.J. Dockner, S. Jorgensen, N.V. Long, and G. Sorger, Differential games in economics and management science. Cambridge University Press, 2000.
A.K.Dixit and R.S. Pindyck, Investment under uncertainty. Princeton 1994. Chapter 2&3.
A.K. Dixit, The Art of Smooth Pasting. Harwood Academic Publishers, 1993.
A.K. Dixit, A simplified treatment of the optimal regulation of Brownian motion. Journal of Economic Dynamics and Control 15, 1991, 657-673.
B. Dumas, Super contact and related optimality conditions. Journal of Economic Dynamics and Control 15, 1991, 675-685.

Solving real option problems:

- Contingent claims approach
A.K.Dixit and R.S. Pindyck, Investment under uncertainty. Princeton 1994. Chapter 2&3.
M. Brennan and E.Schwartz, Evaluating natural resource investments. Journal of Business 58, 1985, 135-157.
M. Brennan, The pricing of contingent claims in discrete time models. Journal of Finance 34, 1979, 53-68.

Options to wait:

- R. McDonald and D. Siegel, The value of waiting to invest. Quarterly Journal of Economics 101, 1986, 707-727.
S. Titman, Urban land prices under uncertainty. American Economic Review 75, 1985, 505-514.