Albert-Ludwigs-Universität Freiburg
**Institut zur Erforschung der Wirtschaftlichen Entwicklung**

# Seminar on Derivative Pricing

**Outline:**

In the summer term 2013 we provide a seminar on *Derivative Pricing*. The course aims to provide students with an understanding of pricing and hedging methods for various types of actively traded derivatives. We will investigate appropriate valuation methods, the influence of various contract parameters on the performance of the products, and ways to hedge the risks inherent in these products. The seminar will be very practically oriented and students will be required to perform numerical simulations in the software package R or Matlab whenever analytical valuation methods are missing.

**Instructor:**

JProf. Dr. Eva Lütkebohmert-Holtz and Dr. Ernst August von Hammerstein, Research Group Financial Mathematics, Institute for Research in Economic Evolution

**Participants:**

This course is primarily intended for students in the second year of the master program, and can be regarded as preparation for their work on the master thesis.

Pre registration is required. Applications for the seminar including transcript can be send to Thomas Lais until February 24th, 2013 (thomas.lais@vwl.uni-freiburg.de). Students in their last year of study will have priority.

**Prerequisites:**

*Principles of Finance, Futures and Options.*

**Course Schedule:**

The first meeting will take place on Thursday, February 28th, 2013, from 2-4 pm in room 2330. The seminar will take place on a weekly basis starting in the second week of the term. The seminar takes place *Wednesdays from 10-12 am in lecture hall HS 2 (Alte Uni).*

**ECTS (credit points)**:

4 ECTS points based on

- a well documented implementation of the performed numerical simulations in the software R or Matlab such that all students in the course can apply these programs
- a presentation of the particular financial product including the contract details, the functioning of the product, a calculation of its historical performance, description of the basic methodological steps for the valuation of the derivative, a discussion of the risks inherent in the product and a presentation of the simulation results for valuation and hedging
- a seminar paper of up to 10 pages
- an active seminar participation

Students will be allowed to work in groups (2-3 students). The course can be dropped without penalty until April 10th. Thereafter, withdrawal will count as a failed examination attempt!

**Main References:**

Brigo, D. and F. Mercurio (2006): *Interest Rate Models – Theory and Practice*, Springer Verlag: Heidelberg.

Hull, J. (2011). *Options, Futures and other Derivatives*, Prentice Hall.

Neftci, S. N. (1999), *An Introduction to the Mathematics of Financial Derivatives*, Academic Press: San Diego.

Nelken, I. (1996), *The Handbook of Exotic Options*, IRWIN Professional Publishing: Chicago.

Rebonato R. (2002): *Modern Pricing of Interest-Rate Derivatives*, Princeton University Press.

Rubinstein, M. (1987): *Derivative Assets Analysis*, Economic Perspectives 1(2), 73-93.

Sandmann, K. (2000): *Einführung in die Stochastik der Finanzmärkte*, Springer: Heidelberg.

Shreve, S. (2005): *Stochastic Calculus for Finance I: The Binomial Asset Pricing Model*, Springer Finance.

Shreve, S. (2004): *Stochastic Calculus for Finance II: Continuous-Time Models*, Springer Finance.

**Additional Information:**

http://www.prim.uni-freiburg.de/lehre