



Announcement SoSe 2015

Advanced Seminar Selected topics in quantitative finance Prof. Dr. R. Zagst, PD Dr. A. Min

Area: / Modulnr.: Mathematical Finance/ MA6015

Content: The seminar is subdivided in three major content blocks all linked to pricing of financial assets. The first block deals with multi-curve pricing of interest rate derivatives, which becomes fundamental in practice due to the fact that interbank and overnight interest rates diverge after the bank credit crunch which hits its peak with the bankruptcy of the investment bank Lehman Brothers in September 2008. The second block handles specific aspects in Monte Carlo Simulation in the context of asset pricing. The Monte Carlo Simulation technique is common practice in risk management, when computing risk measures like Value-at-Risk by using a full valuation approach. The third block about the multi-factor approach tackles the question how to explain asset return developments by specific risk factors by using Principal Component and Regression Analysis. Each participant presents one of the selected papers and discusses subsequent developments in the respective field. This provides a broad overview to all participants on the different fields, recent aspects, and historical development. The papers which will be discussed can be found in the following literature list (note that this list might be updated based on the number and background of the participants).

Continued next Semester: No

Audience: max. 8 Master students

Prerequisite: MA3702 (Continuous Time Finance)
recommended: MA3703 (Fixed Income Markets)

Literature: Most preprints are available on the web for free.

- 1) **Bianchetti, M. (2012).** Two Curves, One Price: Pricing & Hedging Interest Rate Derivatives Decoupling Forwarding and Discounting Yield Curves. *Working Paper from arXiv.*
- 2) **Bianchetti, M, Carlicchi, M. (2012).** Interest Rates After The Credit Crunch: Multiple-Curve Vanilla Derivatives and SABR. *Working Paper.*
- 3) **Antonov, A., Bianchetti, M., Mihai, I. (2013).** Funding Value Adjustment for General Financial Instruments: Theory and Practice. *Working paper.*
- 4) **Glassermann, P., Heidelberg, P., Shahabuddin, P. (1999).** Importance Sampling in the Heath-Jarrow-Morton Framework. *The Journal of Derivatives*, pp. 32-50.
- 5) **Glassermann, P., Heidelberg, P., Shahabuddin, P. (2000).** Variance Reduction Techniques for Estimating Value-at-Risk. *Management Science*, pp. 1349-1364.
- 6) **Gallitschke, J., Müller, S., Seifried, T. (2014).** Post-Crisis Interest Rates: XIBOR Mechanics and Basic Spreads. *Working Paper.*
- 7) **Ando, T. and Bai, J. (2014).** Asset Pricing with a General Multifactor Structure. *Forthcoming: Journal of Financial Econometrics.*
- 8) **Stock, J. H. and Watson, M. W. (2002).** Forecasting using Principal Components from a Large Number of Predictors. *Journal of the American Statistical Association*, pp. 1167-1179.

Certificate: 3 CP

Seminar information: For further information on the preliminary meeting to the seminar (Seminarvorbereitung) and etc. please visit our homepage at <http://www.mathfinance.ma.tum.de/lehre/lehveranstaltungen-ss-2015/>