Berufungsvorträge für die Professur "Stochastische Methoden in den Wirtschaftswissenschaften"

Ort: Freihaus der TU Wien, Wiedner Hauptstraße 8-10, 1040 Wien

Freitag, 23.03.2012

Seminarraum 107, Freihaus, grüner Bereich, 6. OG

08:30 Uhr **Dr. Stefan Gerhold**
Portfolio Optimization under Transaction Costs

10:30 Uhr **Dr. Vicky Fasen** **!!! ABGESAGT !!!**
Limit theory for continuous-time multivariate ARMA models
with applications in econometrics

14:00 Uhr **Dr. Thorsten Rheinländer**
Self-dual stochastic processes and semi-static hedging
for realistic price processes

16:00 Uhr **Prof. Dr. Thorsten Schmidt**
Kreditrisiken und deren Modellierung

Montag, 26.03.2012

Seminarraum 101B, Freihaus, grüner Bereich, 3. OG

09:00 Uhr **Prof. Dr. Stefan Weber**
Liquidity-Adjusted Risk Measures

Seminarraum 101A, Freihaus, grüner Bereich, 3. OG

13:00 Uhr **Dr. Miklos Rasonyi**
Optimal investment: from risk-averse to behavioural agents

Fr., 23.03.2012, 08:30-9:30, Seminarraum 107, Freihaus, grüner Bereich, 6. OG

Dr. Stefan Gerhold

Portfolio Optimization under Transaction Costs

Introducing transaction costs into models of financial markets makes trading strategies more realistic, e.g., concerning the amount of trading volume. We discuss how different objectives and agent preferences affect the optimal strategy and its growth rate, and other quantities of economic interest. All these are obtained in semi-explicit form, and admit simple and accurate asymptotic expansions for small transaction costs. The main technical tool is a fictitious frictionless shadow market, which is equivalent to the transaction cost market. We conclude with a view on some of the open problems in the field. (Based on joint work with Paolo Guasoni, Johannes Muhle-Karbe, and Walter Schachermayer)

Fr., 23.03.2012, 10:30-11:30, Seminarraum 107, Freihaus, grüner Bereich, 6. OG

Dr. Vicky Fasen   !!! ABGESAGT !!!

Limit theory for continuous-time multivariate ARMA models with applications in econometrics

Time series models in continuous time play an important role in the application of stochastic models – for example in finance and insurance. In the talk we investigate continuous-time multivariate ARMA (MCARMA) models driven by Lévy processes sampled at a discrete time-grid. The sample time-grid is either equidistant or its getting finer over time as observed by high-frequency data. The driving Lévy process has either a finite second moment or an infinite second moment which is modelled by multivariate regular variation. We present both the asymptotic behaviour of the partial sum and the asymptotic behaviour of the sample autocovariance. Moreover, we embed the MCARMA model in a cointegrated model, which is important in econometrics. In this context we investigate the properties of parameter estimators.

Fr., 23.03.2012, 14:00-15:00, Seminarraum 107, Freihaus, grüner Bereich, 6. OG

Dr. Thorsten Rheinländer

Self-dual stochastic processes and semi-static hedging for realistic price processes

Semi-static hedging of path-dependent barrier options by non-vanilla European ones has caught quite some attention among both academics and practitioners. In fact, the common practice is questionable since it would only work out in case the stochastic log-returns are conditionally symmetric which is unrealistic. We show in the context of continuous stochastic volatility models how to obtain the hedging strategy via a change to an asymmetric risk measure under which all characteristics can be obtained easily. These considerations lead to a general as well as a dual general form of self-duality. In practice, the hedging strategy would involve instruments written on the cumulative variance.

In the Lévy world, the notion of quasi self-duality is linked to an exponentially decaying factor when comparing the right- and left tails of the Lévy measure density. Lifting symmetric processes to their stochastic exponentials, a certain Möbius transform is involved. Since for non-vanishing order parameter of quasi self-duality two martingale properties have to be satisfied simultaneously, there is a non-trivial relation between the order and shift parameter representing carrying costs in financial applications. This leads to an equation containing an integral term which has to be inverted in applications. We discuss several important properties of this equation and, for some well-known models, we derive a family of closed-form inversion formulae leading to parametrisations of sets of possible combinations in the corresponding parameter spaces of Lévy driven models. As for continuous stochastic volatility models, we provide a structure result for quasi self-dual processes. Moreover, we give a characterisation of continuous Ocone martingales via a strong version of self-duality of their stochastic exponentials. Finally, we

discuss an example of a non-Ocone martingale which is process, but not conditionally symmetric, and whose stochastic exponential is a strict local martingale.

The talk is based on joint works with Michael Schmutz, University of Bern, and on ongoing work with Zhanyu Chen, London School of Economics.

Fr., 23.03.2012, 16:00-17:00, Seminarraum 107, Freihaus, grüner Bereich, 6. OG

Prof. Dr. Thorsten Schmidt

Kreditrisiken und deren Modellierung

In den letzten 20 Jahren hat sie die Modellierung von Kreditrisiken als ein wichtiges Gebiet in der Finanzmathematik etabliert. Die Kreditkrise in 2008 und der Jahren danach sowie die aktuellen Diskussionen innerhalb der EU-Länder unterstreichen die Wichtigkeit eines tieferen Verständnisses von Kreditrisiken. In diesem Vortrag wird zum einen ein allgemeiner Rahmen für die Modellierung von Kreditrisiken vorgestellt, in welchem verschieden Aspekte beantwortet werden können. In diesem Vortrage sollen die arbitragefreie Modellierung, Bewertung und Absicherung von Risiken sowie Ratings behandelt werden.

Mo., 26.03.2012, 09:00-10:00, Seminarraum 101B, Freihaus, grüner Bereich, 3. OG

Prof. Dr. Stefan Weber

Liquidity-Adjusted Risk Measures

Liquidity risk is an important type of risk, especially during times of crises. As observed by Acerbi & Scandolo (2008), it requires adjustments to classical portfolio valuation and risk measurement. Main drivers are two dimensions of liquidity risk, namely price impact of trades and limited access to financing. The talk discusses a cash-invariant liquidity-adjusted risk measure that can naturally be interpreted as a capital requirement. The difference between our construction and the one of Acerbi & Scandolo (2008) is analyzed in the framework of capital requirements using the notion of eligible assets, as introduced by Artzner, Delbaen & Koch-Medina (2009). Numerical case studies illustrate how price impact and limited access to financing influence the liquidity-adjusted risk measurements.

Mo., 26.03.2012, 13:00-14:00, Seminarraum 101A, Freihaus, grüner Bereich, 3. OG

Dr. Miklos Rasonyi

Optimal investment: from risk-averse to behavioural agents

Classical investment problems assume that economic agents are risk-averse. This corresponds to using concave utility functions to describe agents' preferences. More recently, non-concave utilities were proposed and distortions of the probability measure were also considered.

We are dealing with optimal investment for an agent whose behaviour is characterized by a possibly non-concave utility function and by probability distortions. This new setting poses several mathematical challenges and exhibits a number of unexpected phenomena.

In discrete-time multiperiod models we discuss the well-posedness of this investment problem and show the existence of optimal strategies under suitable conditions. We also have a look at what happens in continuous-time, in particular, we provide a sufficient and (essentially) necessary condition for the Black-Scholes model in the case of power-like utilities and distortion functions.