High Dimensional Nonstationary Time Series

IRTG 1792 Short Course

Prof. Dr. Jan Vecer

Financial Model Selection Based on the Realized Profit

This lecture considers multiple market agents who have distinct distributional opinions about the state price density. We first determine the optimal trading positions of a utility maximizing market taker who trades Arrow-Debreu securities for prices set by the market maker. We use calculus of variations to determine the solution of this problem for a general utility function. We also illustrate new results on testing the efficient market hypothesis on SP500 index data and on Betfair football betting data. In a market without the market maker, the distributional opinions of market takers reach an equilibrium in the form of the linear mixture of the distributions. We show that when the the result of the outcome is observed, the profit and loss from trading updates agents' bankrolls in a Bayesian fashion, which provides one to one correspondence for the logarithmic utility maximazers' profits and Bayesian statistics.

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Prof. Jan Vecer is a Professor of Finance at the Charles University in Prague since 2015 . From 2010 to 2015 he was a Professor at the Frankfurt School of Finance and Management. He received his PhD in Mathematical Finance from Carnegie Mellon University and held academic jobs at the University of Michigan and Kyoto University and at Columbia University where he was promoted to the rank of the Associate Professor in 2006. His research interests include Option Pricing, Optimal Trading Strategies, Stochastic Optimal Control, and Stochastic Processes.