Lisbon Financial Mathematics 2017

4rd Edition - Winter Meeting - February 16 -17

Evolutionary PDE and Mathematical Finance - theory, methods and applications

ISEG, CEMAPRE - Financial Mathematics Group

***Location*: ISEG, Universidade de Lisboa** (Building Quelhas-6, floor 4, Amphitheatre 4)

Organizers: **João Janela** and **Manuel Guerra**

Mini course (4,5 h)

- **Daniel Sevcovic,** ***Comenius University, Slovakia***

  Title: *Evolutionary partial differential equations: theory, methods and applications*

Lectures:

- **José Augusto Ferreira,**
  University of Coimbra, Faculty of Sciences and Technology

  Title: *To be announced*

- **Helder Sebastião**
  University of Coimbra, Faculty of Economics

  Title: *Portfolio Choice with High Frequency Data: CRRA Preferences and the Liquidity Effect.*

Lisbon Financial Mathematics 2017- Abstracts

Mini course (4,5 h)

Daniel Sevcovic: *Evolutionary partial differential equations, theory, methods and applications*

1 Linear evolutionary equations
Motivation and examples of linear and nonlinear parabolic evolutionary equations. Heat equation and other evolutionary PDEs. Properties of the Green function and the heat kernel.
2 Analytic semigroup theory.
Sectorial operators, fractional power spaces and semigroup decay estimates. Smoothing principle. Non-homogeneous equations and abstract variation of constants formula.
3 Numerical methods for evolutionary equations in applications in mathematical finance.
Finite difference and finite volume methods for solving linear and nonlinear evolutionary equations.
Linear and nonlinear parabolic equations arising in mathematical finance.
Hamilton-Jacobi-Bellman equation arising in stochastic dynamic optimal control problems.

Bibliography: D. Henry: Geometric theory of semilinear parabolic equations. Springer-Verlag, 1981.

Lectures

José Augusto Ferreira: *To be announced*

Helder Sebastião: *Portfolio Choice with High Frequency Data: CRRA Preferences and the Liquidity Effect.*

This paper suggests a new approach for Portfolio Choice. In this framework, the investor, with CRRA preferences, has two objectives: the maximization of the expected utility and the minimization of the portfolio expected illiquidity. The CRRA utility is measured using the portfolio realized volatility, realized skewness and realized kurtosis, while the portfolio illiquidity is measured using the well-known Amihud illiquidity ratio. Therefore, the investor is able to make her choices directly in the expected utility/liquidity (EU/L) bi-dimensional space. We conduct an empirical analysis in a set of fourteen stocks of the CAC 40 stock market index, using high frequency data for the time span from January 1999 to December 2005 (seven years). The robustness of the proposed model is checked according to the out-of-sample performance of different EU/L portfolios relative to the minimum variance and equally weighted portfolios. For different risk aversion levels, the EU/L portfolios are quite competitive and in several cases consistently outperform those benchmarks, in terms of utility, liquidity and certainty equivalent.

Lisbon Financial Mathematics 2017 - Schedule

Building Quelhas-6, floor 4, Amphitheatre 4

	Thursday, 16	Friday, 17
10.00 - 11.30		Daniel Sevcović
11.30 - 12.00		Coffee
12.00 - 13.00		José Augusto Ferreira
13.00 - 14.30		Lunch
14.30 - 16.00	Daniel Sevcović	Daniel Sevcović
16.00 - 16.30	Coffee	Port wine
16.30 - 17.30	Helder Sebastião	

Sponsors

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