8ème SEMINAIRE PARISIEN DE VALIDATION DES MODELES FINANCIERS

15 décembre 2011

Institut Louis Bachelier, Palais Brongniart, 28 Place de la Bourse, 75002 Paris

Programme :

15h00 – 16h00. **Nizar Touzi** (Ecole Polytechnique)

  Bounds on derivatives prices given marginals: an optimal transportation problem

16h00 – 16h15. Questions
16h15 – 16h30. Pause

16h30 – 17h30. **Jean-Marc Eber** (Lexifi)

Financial Contract Descriptions: What Finance should learn from Computer Science and why it should do so

17h30 – 17h45. Questions
17h45. Cocktail

Abstracts :

Bounds on derivatives prices given marginals: an optimal transportation problem

Abstract: We formulate the problem of finding the bounds on exotic derivatives prices given Vanilla ones as a super-hedging problem. The dual formulation reduces to an original optimal transportation problem which is suitable for numerical implementation. In the context of Lookback options, standard stochastic control techniques lead to explicit solutions generalizing previous results related to the Azema-Yor solution of the Skorohod Embedding Problem. Finally, a similar approach can be developed in the context of the optimal investment problem.

Financial Contract Descriptions: What Finance should learn from Computer Science and why it should do so

While Mathematical Finance is well understood to be a rigorous discipline, we observe that the description of financial contracts – especially the complex, bespoke or structured ones – typically lacks any formalism for describing precisely their meaning. The usual "term sheets" are most often incomplete or even self-contradictory. The lack of a formal contract specification language makes it very error prone, if not impossible, to compare different valuation models on a large scale. More generally, it prevents many processes in the financial industry to be fully automated, thus inducing huge costs and high operational risks. By using well-known concepts from Computer Science, we explain why a formal contract description, independent from any particular valuation model, is desirable and we present the conceptual tools for defining such a machine-readable specification algebra that is well adapted to the finance domain. We argue that a formal definition of financial contracts is necessary to allow industrial scaling, or at least provides a competitive advantage to those who adopt such an approach. Using experience accumulated at LexiFi during the last years, we show that a formal contract specification language can be used not only to support the usual pricing and risk analysis procedures but also for other purposes. We also explain how numerical pricing can be made more efficient by symbolic analysis and transformation of the contract specification.

About the speakers :

Nizar Touzi is Professor of Applied Mathematics at Ecole Polytechnique since 2006, and is currently Vice President of his department. Prior to this, he was head of the Finance-Insurance laboratory at CREST (Center for Research in Economics and Statistics in Paris, 2001-2004), and Chair Professor at Imperial College London (2004-2006). His current research interests are in Financial Mathematics with a special focus on stochastic control and numerical methods for the risk management under market imperfections (illiquidity, transaction costs, taxes, market interactions). His publications record counts around 75 research papers in international journals, and one book (Fields Institute Monographs, AMS). He received the 'Europlace Institute of Finance Best Young Researcher Award' in 2007, the University of Toronto Dean's Distinguished Chair in 2010, and was a session invited speaker at the 2010 International Congress of Mathematicians. He is President of the Bachelier Finance Society (January 2012-), and co-Editor of various research journals applied mathematics and finance.

Prior to founding LexiFi – a company providing software for the pricing and management of complex financial contracts - in 2001 and after spending several years in the academic world, **Jean-Marc Eber** worked for ten years at Société Générale where he served most recently as Head of Quantitative Research in the Capital Markets Division. In this capacity, Mr. Eber was responsible for the design and implementation of software tools and mathematical models for trading complex and structured derivative products. Mr. Eber is a regular speaker at financial engineering conferences and has published on financial risk management and on the application of programming language theory to financial trading and risk management. He holds a Ph.D. in mathematical economics.

Le groupe de travail

Le Séminaire Parisien de Validation des Modèles financiers a pour objectif de réunir des chercheurs universitaires et des professionels du milieu financier et bancaire autour du thème de la validation des modèles financiers. Le séminaire se réunit sur une base trimestrielle autour de deux communications, l'une d'un chercheur académique et l'autre d'un praticien des marchés. Un temps d'échange entre les participants cloture chaque séance.

The Parisian Model Validation Seminar

The purpose of the Parisian Model Validation Seminar is to gather academic researchers and practitioners involved in the field of model risk and model validation. The seminar has a session every three months, organized around an academic talk followed by a practitioner one. A time of discussion/networking follows each session.

Modalités pratiques & Inscription

La participation au séminaire est gratuite et ouverte à tous sur inscription préalable, dans la mesure des places disponibles.

Pour vous inscrire, envoyez votre nom, prénom, affiliation professionnelle et vos coordonnées (e-mail, téléphone) par e-mail à ModelValidation@zeliade.com avant la date limite.

Practical matters & Registration

The Seminar can be attended free of charge. An email registration will be required to check for available seats.

To registrer, please send your name, surname, professional affiliation and contacts (e-mail, phone) by e-mail to ModelValidation@zeliade.com before the registration deadline.

Comité d'organisation

Jean-Michel Beacco, Rama Cont, Pierre Contencin, Patrick Hénaff, Claude Martini, Eric Moulines.

Contact

Stefano De Marco - ModelValidation@zeliade.com