

CARISMA Newsletter

December 2006

Dear Colleague,

We are pleased to send you our season's greetings. In a world now dominated by blogs, web2 and social networking, where we are more attracted by second life and pine after avatars; we have been more mundane and slightly brave as we have left the virtual and opted for the real thing..! We are therefore sending a simple e-newsletter.

We take this opportunity to share with you some highlights of Events that we have planned and attended, the people who have joined and left us the enhanced masters course for the modelling and management of risk and the certification programme Partnerships with the industry and academia and finally our Publications.

We hope to renew contact, network and collaborate with you one way or another in 2007. In the meantime let us wish you a very prosperous 2007.

Yours sincerely
Gautam Mitra

Message from the Director



"Compliments of the season and best wishes for a happy and prosperous 2007 from all at CARISMA ."

What's on

- Events
- People
- Master Course In Risk Management
- Partnership
- Publications

Forthcoming Events

3rd Annual CARISMA Seminar – Programme Trading Techniques and Financial Models for Hedge Funds

London, 26-27 June 2007 (to be confirmed)

This two day seminar will bring together some of the leading thinkers and researchers in these growing areas of financial modelling. Programme Trading and its subset, algorithmic trading, have generated keen interest in the academic community, where much ground-breaking research has

taken place. This is being translated into practical applications which enable traders to automate sophisticated trading strategies for hedge funds.

Day Two focuses on Financial Models for Hedge Funds. The hedge fund industry has experienced significant growth in recent years, both in terms of the number of hedge funds and the assets they manage. Hedge funds are emerging as a mainstream investment, as more and more investors view them as a viable way to preserve and grow capital in difficult markets.

There is a growing need to share information among hedge fund managers, service providers and investors, especially relating to recent advances and research in financial models.

This conference is unique in combining the two trading techniques and providing a platform to discuss the applications and recent advances in the field. It will bring together practitioners, academics and PhD students working in the area of financial planning, optimisation and risk modelling. The seminar will provide an opportunity for participants at the forefront of this area to discuss problems and challenges and suggest fruitful directions for future research which focus on the emerging requirements of the industry.

Target audience

- Industry professionals responsible for strategic planning in the financial markets, law and compliance, hedge funds and alternative investments, prime brokerage, marketing, business development
- senior management executives from the broker-dealer and investment management community
- Custodians, Administrators and other Hedge Fund Providers
- Risk Managers, Actuaries, and Quantitative Analysts
- Academics involved in leading edge research into financial models





Visiting Professors

We are pleased to **welcome** the appointment of two visiting professors to CARISMA.

Dilip Madan

Prof. Dilip Madan has two PhD degrees, one in Economics and one in Mathematics. He is a distinguished and highly regarded researcher in financial modelling.

He is the recipient of Humboldt Research Award in Mathematics 2006, and is the Managing Editor of the Mathematical Finance Journal.

Please look up:

<http://www.smith.umd.edu/finance/faculty/madan.html>

We will be receiving advice and guidance from Dilip in various aspects of quantitative financial research.

Dan Di Bartolomeo

Dan is the founder and president of Northfield Information Services, Inc



Before starting Northfield, he held the position of Director of Research at

a New York investment firm, where he was responsible for investment strategy and equity, fixed-income, and derivatives research. Dan writes and lectures extensively and frequently presents papers at academic and industry meetings. He teaches a course in Advanced Quantitative Techniques for the Boston Security Analysts Society. He received his degree in applied physics from Cornell University

Please look up:

<http://www.northinfo.com/staffnew.cfm?DeptID=9&StaffID=1>

Northfield Systems is well known for its innovative and professional contributions to the finance industry. Dan will provide guidance, research directions and the benefit of his advice in respect of many areas of applied financial modeling and its industrial applications.

New PhD students

It is with great pleasure that we welcome the following students to CARISMA:

Abdulrahman Al-Guwaizani
Katerina Aristodemou
Ekaterina Kochieva
Rima Rajab
Ji Tong

We also warmly welcome Ritesh Kumar, a visiting student from IIM, Calcutta.

New Members

Recent members who have joined the group are:

Ms. Carol Elliott
Dr. Harris Makatsoris
Dr. Antonetta Serguieva
Dr. Simon Taylor

Students who have recently completed their PhDs

CARISMA would like to congratulate the following researchers on successfully finishing their PhDs:

Khaled Alhamad
Elman Almenzy
Konstantin Volosov
Frank Ellison
Adriani Hajiconstantini
Diana Roman

Departures

We were sorry to see the departure of Rogemar Mamon, who returned to Canada at the end of the last academic year, but Rogemar continues to be an associate professor with us.

We were also sad to lose Ann Wilkes, who has moved to Shropshire at the beginning of December.

We wish them both every success in their future ventures.

An Invitation from John Beasley
the deputy director, CARISMA

We are organising a stream on Financial Optimisation within EURO XXII Prague, July 8-11, 2007, (<http://euro2007.vse.cz/>).

We wish to arrange a number of sessions within this stream. We are writing to invite you to:

- Organise such a session of three talks (each of 30 minutes duration) and chair the session.
 - Alternatively make a presentation at one of the sessions.
- Kindly let us know if you are in a position to accept our invitation.

Please respond to john.beasley@brunel.ac.uk



MSc Modelling and Management of Risk

We have enhanced our MSc course on Modelling and Management of Risk. In this course we provide pathways to professional certification for our students. These students can now appear for FRM and PRM certificate examinations.

We have also made arrangements with Renmin University of China, to prepare their students through a pre masters course.



OR 48

The three day conference programme, from 11 - 13 September 2006, combined plenary sessions given by keynote speakers and parallel streams, covering all aspects of OR.

Dr. Chandra Poojari organised the "Uncertainty and Risk" stream; Sovan Mitra and Xiaochen Sun were presented papers there.

Quantile Regression, LMS Method and Robust Statistics in the 21st Century

The 5 day conference focused recent developments in quantile regression and LMS; robust regression, together with skewed, heavy tailed distributions. As an organizer, Dr Keming Yu and his student Xiaochen Sun presented their recent work on the conference.



Recent Events Organised by CARISMA

Optimisation Series: Business Applications of Optimisation, Stochastic Programming & Portfolio Planning, Oct 2006

This workshop series was especially designed to provide insight into the discipline of optimisation and its applications in solving business problems for a wide range of individuals such as OR professionals, quantitative analysts, consultants, DSS application developers, and academics.

The presenters were: Gautam Mitra, John Beasley, Cormac Lucas, Diana Roman, Christian Valente, Nilgun Canakgoz, Katharina Schwaiger and Xiaochen Sun together with the invited speakers Enza Messina of Milan University and Suvrajeet Sen of the University of Arizona.

The event was attended by PhD students, academics from Brasil, USA, Norway, Germany, Thailand, India as well as technical experts from the finance industry.

Basel II and Operational Risk: An Introduction and Overview, Nov 2006

This was a 2-day workshop with Dr. Gary van Vuuren as presenter.

Continuous Time Finance, Nov 2006

This 3 day workshop, presented by Dr. Paresh Date and Luka Jalen, aimed to provide a fast-track introduction to continuous time finance. Main topics in conventional continuous time methods in finance (including Wiener processes, European options and continuous time interest rate models) were covered along with hands-on implementation in the Splus. This event was attended by PhD students and technical executives from industry.

Events that we attended

Quantitative Mathematical Finance 2006

This was a 4 day conference organised by the University of Technology, Sydney.

The plenary speakers, amongst others included Mark Davis, Eckhard Platen, Rama Cont, Carl Chiarella, Mark Joshi; Taposhri Ganguly from CARISMA presented a paper.

APMOD 2006

APMOD 2006, 18-21 June, Madrid Spain provided a focal point for applied optimisation modelling at the middle of the year. CARISMA was present in strength with eight of our PhD students and researchers; Professor Gautam Mitra gave a plenary talk. We thank Antonio Alonso Ayuso, Laureano Escudero and Andres Ramos for organising this successful event; the next meeting is scheduled to take place in the summer of 2008 hosted by Georg Pflug's team in Vienna.

EURO 2006

Professor Ken Darby-Dowman, Dr Cormac Lucas, Dr. Rogemar Mamon, Dr. Nenad Mladenovic and Professor Gautam Mitra attended and gave talks at EURO XXI in ICELAND, July 2-5, 2006. Professor Mitra also chaired the jury of Excellence in Practice Award. This award went to our long standing friend and collaborator Professor Stavros Zenios rector of the University of Cyprus. Dr. Mladenovic chaired the session 'Reformulation techniques in Nonlinear Optimisation' and gave two talks.

Other Events that we will be attending

Liability Driven Investment Europe 2007
26 - 27 March, 2007:

Spring Workshop - Stochastic Programming Theory and Applications
10 - 20 April, 2007:

2007 INFORMS Conference on O.R Practice - Applying Science to the Art of Business
April 29 - May 1, 2007:
Vancouver, BC, Canada

12th International Symposium - Loss Prevention and Safety Promotion in the Process Industries
May 22 - 24, 2007
Edinburgh, Scotland

EURO XXII
July 8 - 11, 2007
Prague, Czech Republic

11th Conference on Stochastic Programming (SPXI)
26 - 31 August, 2007:
Vienna, Austria

INFORMS Annual Meeting 2007
November 4, 2007 -
November 7, 2007
Seattle, WA, USA

November Meeting with IIF New Delhi

Partnerships

Academic

We continue our academic partnership with Milan University and the University of Bergamo who send research students to us as visiting scholars.

We have made progress on the EU funded Risk Plan project which is supported under the Asia Link programme. Our partners are Vienna University, Jadavpur University (India) and Bangladesh University of Engineering and Technology. We held a two day Executive Education programme in Calcutta, and expect to complete curriculum development work soon.

We are collaborating with Professor Suvrajeet Sen and Julie Hagle in Ohio State in the area of Stochastic Programming Solvers.

We continue our collaborative research with Professor Robert Fourer of North Western University. We have developed AMPL Studio, AMPL Com and Stochastic AMPL, which we call SAMPL. SAMPL operates within SPInE

Commercial

We also benefit from the support of OptiRisk systems who have sponsored a Knowledge Transfer Partnership in Scenario Generation. Diana Roman, who recently completed her PhD is the researcher leading this work under the guidance of Fabio Spagnolo at Brunel University and Gautam Mitra at OptiRisk Systems.

Kidde have continued to sponsor work on residual risk models for explosion protection systems. We shall be presenting our work at the 12th International Symposium Loss Prevention and Safety Promotion in the Process Industries, 22 - 24 May 2007, Edinburgh, Scotland, UK. The title of the paper to be presented is 'A method for computing the residual risk for safety system failure'.

BP Oil International have extended their sponsored research in credit risk modelling and market risk modelling using copulas and extreme value theory.

UBS Equity Research have expanded their research programme with us to cover (a) market impact models and (b) long short portfolios.

Insight Investment have continued with the development of Liability Determined Investment using Stochastic Programming models.



Recent Publications (2006)

G Mitra, E F D Ellison and Alan Scowcroft, (2007), Quadratic Programming for Portfolio Planning: Insights into Algorithmic and Computational Issues, to appear in Journal of Asset Management.

D. Roman, K Darby Dowman, Gautam Mitra, (2007), Mean-Risk Models Using Two Risk Measures: A Multi-Objective Approach Submitted to Quantitative Finance, under revision.

L Mitra, R Mamon, G Mitra, (2006), Pricing and evaluating a bond portfolio using a hidden Markov, CARISMA Technical Report 2006

M.R. Rodrigo & R.S. Mamon, (2007), "An application of Mellin transform techniques to a Black-Scholes equation problem", Analysis and Applications, 5(1), 1-16

A H Ahmed, C. A. Poojari, (2007) An overview of the issues in the airline industry and the role of optimization models and algorithms, to appear in Journal of OR Society.

T Ganguly, P Date, R Lade, P Moore, G Mitra, A method for computing the residual risk for safety system failure.

Yu, K. Mateu, J., Porch, E. (2006), A Kernel-based method for nonparametric estimation of variograms, Statistica Neerlandica, 60, 1-25.

Yu, K. and Stander, J. (2006), Bayesian analysis of a Tobit quantile regression model, Journal of Econometrics In press.

Wang, Q. and Yu, K. (2006), Likelihood-based kernel estimation in semiparametric errors-in-covariables models with validation data, Journal of Multivariate Analysis, in press.

Yu, K. and Mamon, R. (2006) Contribution to the discussion of the paper "Double hierarchical generalized linear models" by Lee and Nelder, Appl. Statist., 55, 139—185.

Mamon, R. and Yu, K. (2006) Contribution to the discussion of the paper "Exact and computationally efficient likelihood-based estimation for discretely observed diffusion processes"

P. Date, R.S. Mamon & I. Wang, (2006), "Valuation of cashflows under random rates of interest: A linear algebraic approach", Insurance: Mathematics and Economics, in press, available at Science Direct Online, 14 November 2006

B. Gashi, P. Date. (2007), "Optimal tracking portfolios with trading strategies of finite variation", submit to SIAM Journal on Control and Optimisation.

P. Hansen, N. Mladenovic and D Urosevic (2006) "Variable neighbourhood search and local branching" Computers & Operations Research 33 (10): 3034-3045

P. Hansen and N. Mladenovic (2006) "First improvement may be better than best improvement: An empirical study" Discrete Applied Mathematics 154, 802-817

N. Jobst, G. Mitra, and S. Zenios. (2006), "Dynamic Asset (and Liability) Management of Assets with Market and Credit Risk", Journal of Banking and Finance, 30, pp 717-742 28.

C.A. Poojari, C. Lucas, and G. Mitra. (2006), "Robust Solutions and Risk Measures for a Supply Chain Planning Problem under Uncertainty", submitted to Special issue of JORS on the topic of Risk in Supply Chain Management

D. Roman, K.H. Darby-Dowman, G. Mitra (2006), "Portfolio Construction Based on Stochastic Dominance and Target Return Distribution" Math. Program Series B, 108, 541-569

F. Spagnolo, M. Sola and N. Spagnolo (2006) "Predicting Markov Volatility Switches Using Monetary Policy Variables", Economics Letters, Forthcoming.

F. Spagnolo, Z. Psaradakis and M. Sola, (2006) "Estimating Fama-Campbell-Shiller Term Structure Equations in the Presence of Risk Premia and Markov Regime Shifts", Studies of Nonlinear Dynamics and Econometrics, Forthcoming.

F. Spagnolo, Z. Psaradakis and M. Sola, (2005) "Testing the Unbiased Forward Exchange Rate Hypothesis Using a Markov Switching Model and Instrumental Variables", Journal of Applied Econometrics 20, 423-437.

P. Valente, G. Mitra, (2007) "The Evolution of web-based optimisation: from ASP to e-services", to appear in Decision Support Systems

C Valente, G Mitra, M Sadki, R Fourer. (2007), "Extending Algebraic Modelling Languages for Stochastic Programming", submitted to INFORMS Journal on Computing (currently under revision)

Brimberg J, Hansen P and Mladenovic N. (2006) Decomposition strategies for large scale continuous location-allocation problems, IMA Journal of Management Mathematics 17 307-316.

Mladenovic N, Brimberg J and Hansen P, (2006), A note on duality gap in the simple plant location problem. Europ. J. Oper. Res. 174 11-22.



We are also preparing the following special journal issues:

(IMA) The Journal of Management Mathematics: special issue on Models & Tools for Stochastic Programming

Quantitative Finance - special issue on Financial Planning in a Dynamical Setting

(JORS) Journal of Operational Research Society - Risk Models in Supply Chain