

Presentation titles and abstracts

<i>Name:</i> Neil Bathia	<i>Title:</i> Dimension reduction for functional time series
<i>Abstract:</i> <p>The problem considered is that of estimating the linear space spanned by the eigenfunctions in the Karhunen-Loève expansion for dependant Hilbert valued curves under observational noise. We make use of the dependence between the random curves to identify their finite dimensional structure from which subsequent analysis can be reduced to conventional multivariate techniques. A computational shortcut based on the duality relation between row and column subspaces of a data matrix is proposed for the estimation of the functional principle components and asymptotic properties of the estimation are investigated. The proposed methodology is illustrated with both real and simulated data sets.</p>	

<i>Name:</i> Xiaonan Che	<i>Title:</i> Markov-type model for the real time gross settlement payment system
<i>Abstract:</i> <p>In recent years, there is a dramatic increase in the interest in modelling the large-valued inter-bank payment system. In the response to the liquidity management with the RTGS payment system, more recent RTGS payment systems introduce the queuing facility. Since stochastic process models have been widely used in social networks, and some aspects of social network have similar statistic properties with the inter-bank payment system, therefore, based on the empirical research on the inter-bank payment system, we develop a Markov-type model of Real Time Gross Settlement payment system with queuing and collateralised borrowing facilities, and carry out a Monte Carlo simulation to investigate its statistic properties. More precisely, we analyse the effect on the performance of the inter-bank payment system of the parameters, such as the probability of payment delay, the initial cash position of participating banks and the probability of cross bank payments. We have found that the performance of the payment depends on these parameters. In particular, both the average number of debts per bank by the end of a business day and the average lifetime of a single debt depend on the parameters, the number of bank groups n, the probability for a payment order to be queued q, the probability of owning one unit initial cash p and the probability of cross bank transactions P_{ij}. To conclude, with queuing and collateralised borrowing facilities, the liquidity of the RTGS payment system enhanced. A modest amount of total initial liquidity required by banks would achieve a desired performance, where minimising the number of unsettled payments by the end of a business day and a negligible average lifetime of the debts.</p>	

<i>Name:</i> Yehuda Dayan	<i>Title:</i> Finite population inference from online access panels – a model assisted framework
<i>Abstract:</i> <p>In the market and social research industry the use of online access panels have gained considerable popularity in recent years and pose new commercial and methodological opportunities but also challenges. The commercial and scientific viability of traditional random probability samples collected through modes such as telephone and field has been strained by spiralling logistical costs and flagging response rates, and so research companies have initiated a strong drive in assembling large online access panels from which to draw inference of the target population. The common view is that inference from the (cheaper and so) larger non-random panel samples offers a trade-off between lower variance and higher bias, but this might be a misguided perception. In the presentation I will describe initial thoughts of a three phase design based model that may offer a framework to assess the quality and efficiency of panel based inference.</p>	

<i>Name:</i> Hailiang Du	<i>Title:</i> The roles of ensembles in climate modelling
<i>Abstract:</i> <p>Ensemble simulations play a central role in climate modelling, both in terms of model improvement and decision support. Their effectiveness in this role is shown to vary with how various uncertainties are sampled and with what the ensemble itself is interpreted to represent. Experimental design will vary with the goal of the experiment, indeed the division of resources between sampling distributions of initial conditions, parameterizations, model structures and forcing scenarios will vary with the questions to be addressed. The impact of each type of uncertainty and the importance of ensembles in each case will be shown with examples from the archives of the IPCC and climateprediction.net, as well as illustrative statistical models. These issues and options for designing ensemble experiments are addressed in several settings, one being the statisticians. Traditional vehicle for sampling experiments: the selection of balls from a collection of urns. Current experimental designs place restriction on the use of ensembles of simulations for either decision support or model improvement. The aim is to illustrate approaches which exploit ensemble based experiments to gain maximum value from climate simulations, given finite resources and imperfect models</p>	

<i>Name:</i> Flavia Giammarino	<i>Title:</i> Econometric modelling of credit risk
<i>Abstract:</i> My current research aims to model the relationship between credit default swaps (CDS) indices and other asset classes such as the stock market, the stock market's volatility, the spot interest rate and the foreign exchange market. Currently, only a few analyses have been carried out on CDS indices and most of the existing literature is focused on linear models for the conditional mean of single-name CDS spreads. In my research I focus on modelling both the conditional mean and the conditional variance of iTraxx Europe. This might be relevant for the purpose of portfolio and risk management and for trading and pricing iTraxx options.	

<i>Name:</i> Daniel Hawellek	<i>Title:</i> The shadowing concept
<i>Abstract:</i> Imperfect models of chaotic systems cannot adequately be compared using the root means square error criterion. The ability of a model to produce trajectories which remain 'close' to the system is desirable. We introduce the shadowing time as a more meaningful criterion, as the maximum number of time steps, for which a model is consistent with the system and the observational noise. We demonstrate the concept using the famous Lorenz 63 system and a slightly modified version. The modified version represents a dynamical system, for which the original can be taken as an imperfect model. We show how the divergence of model and system depends on the region in state space times. Furthermore, we investigate the behaviour of the model bias. This is not constant for changing parameter values, which can lead to poor forecasts if assumed otherwise.	

<i>Name:</i> Sarah Higgins	<i>Title:</i> Blending ensembles from multi models
<i>Abstract:</i> The Demeter project used seven models to generate seasonal forecasts for over 20 years. Each seasonal forecast was for six months and contained nine ensembles. Given such a small forecast-verification archive can the models be weighted according to each model's skill?	

<i>Name:</i> Young Lee	<i>Title:</i> The minimal entropy martingale measure for multivariate and marked point processes
<i>Abstract:</i> Three prominent 'schools' of hypothesis testing exist, propelled by Fisher, Jeffreys and Neyman. Fisher extolled the virtue of the p-value, whose magnitude signals the strength of evidence in the null hypothesis. In contrast, Jeffreys' approach favours the use of objective posterior probabilities using a Bayesian framework, whilst Neyman resorted to fixed error probabilities, namely the computation of Type I and Type II errors. Here a unified framework of the competing doctrines is offered, using a new conditioning statistic which accommodates the p-value density under the alternative hypothesis for both simple and composite tests. Critical p-value curves and surfaces can be derived to quickly allow conclusions to be drawn.	

<i>Name:</i> Sandrine Tobelem	<i>Title:</i> Portfolio allocation under ambiguity
<i>Abstract:</i> In the present paper, we propose a robust portfolio optimization methodology, when there is some ambiguity concerning the dynamics leading asset prices. The decision maker considers several prior models for the asset price dynamics and displays an ambiguity aversion against those priors. We have developed a two-step ambiguity robust methodology to compute the portfolio optimal weights, that offers the advantage to be more tractable and easier to implement than the various approaches proposed in the literature. This methodology decomposes the ambiguity aversion into a model specific absolute ambiguity aversion as well as relative ambiguity aversion across the set of different priors. The optimal weights inferred by each prior are transformed through a generic absolute ambiguity function ψ . Then, the optimal transformed weights are mixed through a measure π that reflects the relative ambiguity aversion of the investor for the different priors considered.	

<i>Name:</i> Edward Tredger	<i>Title:</i> Can global mean temperatures inform science-based policy?
<i>Abstract:</i> <p>Operational use of climate science is often founded upon model simulations of the future, which, due to the various uncertainties involved, are often presented as global mean values. It is argued that, in its forward looking role, users of climate science would profit from a more transparent presentation of systematic error and clearer communication of the range of model variability, even in such quantities as the Global Mean Temperature (GMT). In particular, the evidence presented for the reliability of climate models in the recent IPCC Fourth Assessment Report on Climate Change is shown to be highly misleading. Furthermore, model based estimates of the seasonal GMT places only loose constraints on regional temperatures, placing limits on the ability of models to inform regional impact assessment and adaptation strategies. Failure to make these uncertainties explicit places the underlying conclusions at risk, while these behaviours in no way cast doubt on the consensus of global warming. The fact that these results are sometimes considered surprising suggests the need for more transparent communication of the current levels of model inadequacy and variability.</p>	

<i>Name:</i> Takeshi Yamada	<i>Title:</i> Pricing derivatives contracts in carbon emissions markets and approximation methods of interest rate derivatives
<i>Abstract:</i> <p>The first problem considered is the spot and forward price relationship in carbon emissions markets. Unlike other commodity contracts, spot and forward relationship in this market cannot be determined because of complicated trading mechanism. The main difference from other commodity markets is that these contracts depend on the total amount of carbon emission and other factors. In my research, I will formulate this problem to include this complicated mechanism. This relationship is considered a kind of pricing problem in incomplete markets.</p> <p>The next problem considered is to approximate interest rate derivatives. Popular frameworks for analyzing term structure and pricing interest rate derivatives are spot and forward rate models but in these frameworks swaptions and other swap related derivatives prices cannot be obtained in closed form. I propose an approximation method, Gram-Charlier expansion, to price swaptions and swap related derivatives under spot and forward rate models. I try to expand previous papers to include jump-diffusion models.</p>	