Predictive Analytics & Filtering for Finance

25—28 January, 2016

Time: 17:00—20:30

London

Objectives: Scope and Purpose

The application of regime-switching models and filtering techniques gain in importance in financial modelling. Financial variables, like e.g. asset price dynamics, interest rates or asset volatilities can be modelled within a regime-switching framework to allow for switching market conditions. These conditions are typically unobservable, therefore filtering techniques are applied for a predictive analysis of financial variables. The aim of this workshop is to introduce the regime-switching framework and filtering techniques like e.g., Kalman Filters and the EM-algorithm. In addition Particle Filters are shortly presented. The use of these methods in the calibration of dynamic state space models as well as in the prediction of unobservable variables is discussed. States of the market are filtered and utilized to estimate parameters and calibrate financial models to market data. The predictions of future volatility and asset price distributions are explained with examples. Switching ARCH/ GARCH models for volatility modelling are introduced.

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Learning Outcomes

After successful completion of the workshop, the participants will

- be able to:
  - ◊ apply standard filtering techniques to financial data sets,
  - ◊ apply concepts from time series modelling with regime shifts
  - ◊ utilize regime-switching models for a predictive analysis of asset prices and volatilities.
- have acquired a good knowledge of regime-switching models and their applications

Workshop Format

Theory and Practice

The workshop is well balanced between Theory and Practical Sessions. Attendee numbers are limited to ensure that personalised action can take place. The workshop includes eight sessions which are spread over four evenings.

Practical sessions

In the practical sessions, the statistical software R is briefly introduced. It is utilized to demonstrate the filtering techniques and models with regime shifts in some examples. Practical application of basic filter techniques are demonstrated.

Target Audience

The workshop is designed to provide insight for a wide range of individuals such as financial quantitative analysts, risk analysts, consultants, and academics.

Presenters:

Dr Christina Erlwein-Sayer: Dr Erlwein-Sayer had worked for OptiRisk as an intern during 2008; recently she has re-joined OptiRisk in 2015 as a visiting researcher working on the topic of financial analytics in general and models and tools for portfolio construction and Asset and Liability Management in particular. Dr Erlwein-Sayer is sponsored under a joint project between OptiRisk Systems and its partner Fraunhofer ITWM in Kaiserslautern, Germany. She completed her PhD in Mathematics at Brunel University, London in 2008. Prior to the current assignment Dr Erlwein-Sayer had presented workshops on behalf of OptiRisk at the IIM Calcutta Financial Research and Trading Laboratory in Kolkata, and also in Mumbai. Dr Erlwein-Sayer was also the lead member of the training partnership between OptiRisk Systems and Fraunhofer ITWM and presented at many of the workshops; notable of these was the training delivered to the World Bank in Washington. Dr Erlwein-Sayer is fluent in German (her native language) and in English.

Enza Messina, Professor, Department of Informatics Systems & Communication (DISCo) – University of Milano-Bicocca, Italy

Enza Messina is a Professor in Operations Research at the Department of Informatics Systems and Communications, University of Milano-Bicocca, where she leads the research Laboratory MIND (Models in decision making and data analysis). She holds a PhD in Computational Mathematics and Operations Research from the University of Milano. Her research activity is mainly focused on decision models under uncertainty and more recently on statistical relational models for data analysis and knowledge extraction. In particular, she developed relational classification and clustering models that finds applications in different domains such as systems biology, e-justice, text mining and social network analysis. She is a co-founder of Sharper Analytics a spin-off of the University of Milano Bicocca.

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Date & Time	TOPIC
25 Jan 17:00—17:15	Registration
Session 1 17:15—18:45	Linear and Nonlinear Filtering in Mathematical Finance • review time series filtering and its applications in mathematical finance
18:45—19:00	Comfort Break
Session 2 19:00—20:30	Linear and Nonlinear Filtering in Mathematical Finance • empirical applications of linear filtering with real market data
26 Jan 17:00—17:15	Registration
Session 3 17:15—18:45	Hidden Markov Models • introduce regime switching models and their applications in Finance • general model in discrete and continuous time observation processes
18:45—19:00	Comfort Break
Session 4 19:00—20:30	Hidden Markov Models • filtering and parameter estimation in regime-switching models
	End

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Date & Time	TOPIC
27 January 17:00—17:15	Registration
Session 5 17:15– 18:45	Regime-Switching Models for Financial Time Series • model financial time series like asset and index returns within a re-gime-switching approach
18:45—19:00	Comfort Break
Session 6 19:00—20:30	Regime-Switching Models for Financial Time Series • investigate stylized facts of these time series and find a suitable model for them
28 January 17:00—17:15	Registration
Session 7 17:15– 18:45	Financial Modelling with Regime Shifts • Optimisation under uncertainty with HMM scenarios
18:45—19:00	Comfort Break
Session 8 19:00—20:30	Financial Modelling with Regime Shifts • Robustification of filtering techniques within an HMM
	End

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1st Delegate

Dr/Mr/Ms/Mrs……First Name……...
Surname……
Position……
Email……
Phone/Mobile……
Head of Department ……

2nd Delegate

Dr/Mr/Ms/Mrs……First Name……...
Surname……
Position……
Email……
Phone/Mobile……
Head of Department ……..

Contact Details

Organisation……
Address……
……
Post Code……
Tel……
Fax……

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Registration Fees:
£500 + VAT (attending in person)
£300 + VAT (online attendance)
This workshop will be streamed live online to delegates all around the world. Discounted rates for group bookings can be also arranged on request.

WHAT THE REGISTRATON FEE INCLUDES:
The registration fee for the training course or the event covers the following: attendance, copy of the documentation and materials, examinations where applicable and light refreshments. Accommodation is not included unless otherwise specified.
Joining instructions will be sent to you approximately one week before the event (if for any reason these are not received, please contact UNICOM).

PAYMENT TERMS:
Payment is required in advance of the event or at the latest, paid at the event.
All invoices carry a 10% surcharge, which is payable if the fee remains unpaid on the day of the event and 30 days thereafter; should the invoice remain unpaid beyond 30 days and up to 45 days the surcharge increases to 15% and if unpaid after 45 days the surcharge increases to 20%. For credit card payments a 2.5% fee amount is charged or for American Express cards the fee is 3% of the total amount.

CANCELLATION AND SUBSTITUTION TERMS:
What happens if I have to cancel? If you confirm your **CANCELLATION** in writing up to fifteen (15) working days before the event or training start date and if the invoice has already been paid you will receive a refund less a 10% + VAT service charge; if the invoice has not been paid at that point a credit note for the existing invoice will be raised and a new invoice raised for the 10% +VAT service charge – the service charge invoice is due for payment by the original event / training start date. Regrettably, no refunds can be made for cancellations received less than 15 working days prior to the event and the invoice will remain due. **SUBSTITUTIONS** are welcome at any time – there is no fee for sending a substitute delegate on any event or training. If it is more than 15 working days but less than 5 working days before the course or training start date, you may TRANSFER your registration to a future date within a 6 month period. If it is less than 15 working days to the event /training start date you can still TRANSFER your booking to a future event date within 6 months but an additional transfer fee of £125+VAT per person per event day will be charged (e.g. the transfer fee for a 2 day training is £250+VAT), invoices for transfer fees are due for payment within 7 days of the invoice date.
As we cannot guarantee that exactly the same event or training will be available, the transfer will be open to any other UNICOM event taking place within six months from the date of the original event. **TRANSFERS** are not accepted less than five (5) working days before the event or training unless there are exceptional circumstances and the acceptance of the transfer is at the discretion of UNICOM.
Where a transfer has been made and a future date selected, the standard cancellation terms and conditions apply to the transferred booking just as if it were a new booking.
UNICOM reserves the right to amend the event / training content programme if necessary and cannot guarantee repeats of the same event or training. All transfers and cancellations must be made in writing either by email or letter and are only valid when confirmed by email or in writing by UNICOM. Transfers and cancellations are not accepted by telephone.

INDEMNITY:
Should for any reason outside the control of UNICOM Seminars Ltd, the venue or the presenters change, or the event be cancelled due to but not exclusively to industrial action, adverse weather conditions, an act of terrorism, presenter illness or other reasons beyond its control UNICOM Seminars Ltd will make reasonable endeavour to reschedule, but the client hereby indemnifies and holds UNICOM Seminars Ltd harmless from and against any and all costs, damages and expenses, including attorneys fees, which are incurred by the client as a consequence beyond the attendance fee due to UNICOM. The construction validity and performance of this Agreement shall be governed by all aspects by the laws of England to the exclusive jurisdiction of whose court the Parties hereby agree to submit.