

# Scenario Generation & Simulation for Risk Control

7 & 8 December, 2015

Time: 17:00—20:30

London

## Objectives: Scope and Purpose

Scenario Generation typically is based on Monte Carlo techniques to generate data paths in various financial model set-ups and for different asset classes. In this workshop, Monte Carlo techniques are introduced and discretisation schemes are presented. We also highlight the importance of carefully chosen random numbers for scenarios. Generation of paths driven by a Brownian motion is explained and scenario generation based on the Heston model is introduced. Furthermore we present a taxonomy and structure of scenario generation methods. The description of asset price behaviour by discrete scenarios is considered and in particular, description of asset price dynamics using hidden Markov model is presented.



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## Learning Outcomes

After successful completion of the workshop, the participants will

- be able to:
  - ◇ understand concepts of Monte Carlo simulation and their use in scenario generation,
  - ◇ test the desirable properties of scenario generation,
  - ◇ apply Monte Carlo methods to generate scenarios in asset models,
  - ◇ understand basics of hidden Markov models in creating scenarios.
- have acquired a good knowledge of modern Monte Carlo methods as well as of Hidden Markov models to generate scenarios.

## Workshop Format

### Theory and Practice

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

### Practical sessions:

In the practical sessions, the basic concepts of the software R are introduced. The delegates will implement a Monte Carlo framework to create asset price paths using the Heston model. In the area of filtering, existing R packages are introduced and briefly applied.

### Target Audience:

Practitioners at banks, risk professionals, traders, 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.

**Dr Tilman Sayer:** Dr Sayer has joined OptiRisk in 2015 as a visiting researcher working on the topic of financial analytics in general and models and tools for daily trade signal generation in particular. Dr Sayer is sponsored under a joint project between OptiRisk Systems and its partner Fraunhofer ITWM in Kaiserslautern, Germany. He completed his Diplom (MSc equiv., 2008) and his PhD (2012) in Financial Mathematics at the University of Kaiserslautern, Germany. Prior to the current assignment Dr Sayer had presented workshops on behalf of OptiRisk at the IIM Calcutta Financial Research and Trading Laboratory in Kolkata, and also in Mumbai. On behalf of Fraunhofer ITWM, Dr Sayer has worked on a risk management project so that the clients' financial tools are UCITS IV compliant. He has also worked on a project to accelerate the hardware performance of the stochastic volatility model of Heston. Dr Sayer is fluent in German (his native language) and in English.

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<b>Time &amp; Date</b>	<b>TOPIC</b>
<b>7 Dec</b> <b>17:00—17:15</b>	<b>Registration</b>
<b>Session 1</b> <b>17:15– 18:45</b>	<b>Scenario Generation Techniques and Random Numbers</b> <ul style="list-style-type: none"><li>• Scenario techniques and desirable properties</li><li>• Random numbers and distributions</li><li>• Hands on: R environment &amp; First steps</li></ul>
<b>18:45—19:00</b>	<b>Comfort Break</b>
<b>Session 2</b> <b>19:00—20:30</b>	<b>Monte Carlo Generation</b> <ul style="list-style-type: none"><li>• Monte Carlo Theory and application</li><li>• Scenarios used in option pricing</li><li>• Hands on: Call valuation using Heston</li></ul>
<b>8 Dec</b> <b>17:00—17:15</b>	<b>Registration</b>
<b>Session 3</b> <b>17:15– 18:45</b>	<b>Scenario Generation and Risk Control</b> <ul style="list-style-type: none"><li>• Non-parametric and parametric scenario generation</li><li>• Introduction to risk measures</li><li>• Hands on: Bootstrapping and parametric modelling in R</li></ul>
<b>18:45—19:00</b>	<b>Comfort Break</b>
<b>Session 4</b> <b>19:00—20:30</b>	<b>Scenario Generation and Hidden Markov Models (HMM)</b> <ul style="list-style-type: none"><li>• Using scenarios for portfolio optimization and risk control</li><li>• Application of HMM in Scenario generation</li><li>• Hands on: HMM in R</li></ul>
	<b>End</b>

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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.....

## Registration Fees:

**£300 + VAT (attending in person)**

**£225 + 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.

## INVOICE TOTAL

I enclose a cheque made payable to UNICOM  
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Signature.....

Date .....