Derivatives University

Dr Alex Stremme
Principal Teaching Fellow in Finance, WBS
WBS offers two one-day modules (Foundation and Masterclass) exploring the properties, uses, and mechanics of the markets on which derivatives are traded. This compact course on Derivative Securities: their nature and usage, the mechanics of the markets on which they trade, the risks associated with their use (both from the buy- and sell-side), principles of valuation, and more.

The course is delivered in two one-day modules: a Foundations module on the first day, and a Masterclass on the second. Participants are encouraged to pick-and-mix (ie enrol in either one or both of the modules), according to personal background and desired learning outcome:

If you have little or no prior training or experience in the field of derivatives, we recommend that you attend the Foundations module first. You may then choose to also take the Masterclass thereafter, if you wish to extend, deepen, and operationalise your knowledge beyond the foundations.

For those who already possess basic background in the field, you may elect to attend the masterclass only to further your knowledge and skills. But you may also consider combining both modules if you feel that a refresher of the foundations would help you make the best of the advanced contents.

The course is delivered in a blended learning framework, with a mix of lectures accompanied by practical workshops, supported by extensive course notes, Excel workbooks, and video tutorials to reinforce and illustrate some of the concepts and skills developed in the course. A short quiz concludes each training day, allowing participants to assess their progress.
Who leads the programme?

This programme is led by Dr Alex Stremme, who joined the WBS faculty in 2000. Alex is Principal Teaching Fellow in Finance, and Assistant Dean for the School’s portfolio of Finance MSc programmes. He has extensive experience teaching both at all levels of higher education (from undergraduate to MBA, MSc and PhD) as well as in executive training.

Course structure is for participants to decide relevant modules.

Fee: £995 per module

Duration: One or two modules

2015 Dates: 8 & 9 October 2015
Overview of Module 1 - Foundations

In this module, we introduce the different classes of derivative securities, their contract specifications and associated terminology (the jargon), the mechanics of the markets on which these instruments are traded, and the objectives of the different players who are using them. We develop an intuitive understanding of the factors that drive the value of derivatives, and the fundamental principles used to quantify these values. In a number of “real world” examples we discover how to build risk management solutions using derivatives, and how to construct strategies that exploit market inefficiencies (arbitrage opportunities).

Module 1  Foundations: de-mystifying derivatives

A foundation class either as a refresher course (for those with some prior exposure to derivatives), or as entry point for those with little or no prior training or experience. Upon registration, participants receive a free copy (worth £75) of John C. Hull’s textbook “Options, Futures, and Other Derivatives” (the standard text found on the desk of just about every professional working in this area).

Chapter 1 introduction
- options, futures and other derivatives: a “taxonomy” of derivatives
- derivatives markets: contract specs, mechanics of trading (...and “jargon”)

Chapter 2 forwards and futures
- forwards & futures: contract specs, terminology, usage
- forward pricing (“cost of carry” and the “carry trade”)
- hedging with futures: index futures, hedge ratio, basis risk
  → workshop

Chapter 3 options
- options: contract specs, terminology, usage
- options: strategies (bulls, bears, and the rest of the “zoo”)
- determinants of value (“delta”, “gamma”, “vega” and the other Greeks)
- hedging with options: overlays and other fancy strategies

Chapter 4 selected topics
- value-at-risk and options
  → workshop

and time permitting... (not all will be covered), examples include:
- interest rate derivatives: forwards rates, swaps,...
- credit derivatives: CDO, CDS,...
- foreign exchange markets: forward rates, carry trade,...

Keywords:  American/European exercise, arbitrage, backwardation, basis, bull/bear spread, butterfly, cheapest-to-deliver, contango, convenience yield, cost of carry, delta, forwards, futures, gamma, hedge ratio, intrinsic value, margin, mark-to-market, options, premium, put-call-parity, rho, straddle/strangle, strike price, theta, time value, value-at-risk, vega, (implied) volatility
Overview of Module 2 – Derivatives Masterclass

The aim of this module is two-fold: we deepen the qualitative understanding built in the Foundations module, and operationalise it by learning how to construct, calibrate, and use models that allow us to compute values, hedging strategies, and risk measures for various derivatives.

Secondly, we widen the scope of our knowledge by looking at specific classes of derivatives in different market segments, and discuss some of the peculiarities, complications and pitfalls that come with the use of derivatives in practice.

Module 2 Derivatives Masterclass

For participants who have experience of derivatives or have taken Module 1. This module will help you to develop the tools to master the effective use of derivatives, models for pricing; measuring and managing risks and special classes of derivatives.

→ designed for those who want to go beyond the foundations, the emphasis is on operationalising and extending the concepts studied in Module 1.

• pricing by arbitrage: the basic principles
• binomial models: dynamic hedging (why do we care what “martingales” are?)
  → workshop
• from binomial to continuous time: Black-Scholes (and beyond …)
  → workshop
• applications and extensions

....and time permitting (not all will be covered), examples include:

  o calibration (make your model match the “real world”)*
  o delta hedging in practice (“buy high, sell low?”)*
  o beyond BS (capturing the “smile”: stochastic volatility and such)
  o interest rate models (short rate and HJM “LIBOR market model”)
  o structured products (do you know who “SAM” is?)*
  o credit derivatives (CDS, CDO, what went wrong in 2008?)
  o other derivatives (e.g. weather, energy …)

* topics marked with an asterisk (*) are likely to be accompanied by a workshop.
Alex Stremme is Principal Teaching Fellow in Finance and Assistant Dean for Finance MSc programmes at WBS. His research interests include asset pricing (time-varying risk premia); return predictability (dynamic asset allocation); hedge funds (performance evaluation/replication) and executive compensation (bonus schemes/stock options). Alex holds a PhD in Financial Economics from the London School of Economics (with a thesis on the “Pricing and Hedging of Derivative Securities”), and a “Diplom” (somewhere between MSc and PhD) in Mathematics (with a dissertation on “Stochastic Differential Geometry”) from the University of Bonn in Germany. His primary research interests include Asset Pricing and Asset Management, Derivative Securities and Risk Management, and Optimal Managerial Incentive Contracts. Alex has published research papers in top academic journals (including the “Journal of Financial and Quantitative Analysis”, “Mathematical Finance”, and the “Journal of Banking and Finance”).

After his PhD, Alex spent two years as Assistant Professor at New York University’s Stern School of Business, and then joined the faculty at the Warwick Business School (WBS) in October 2000. His teaching expertise covers a wide range of topics, including Derivative Securities, Corporate Finance, Risk Management, Asset Pricing and Investment Management, taught at all levels from undergraduate to MBA, MSc and PhD.

Alex has received the Warwick Award for Outstanding MBA Teaching in each of the five years he taught on the MBA programme, and the Award for Outstanding Contributions to the Undergraduate Programme in each of the past eight academic years.

He acted as the Academic Director for the WBS Full-Time MBA programme (from Oct 2006 until Sept 2010), the MSc programme in Financial Mathematics (2010/11), and the undergraduate BSc programme in International Management (2011/12).

Since September 2012, Alex has taken on the role of Assistant Dean for the Finance MSc programmes1 run by WBS (in part jointly with the departments of Economics, Statistics, and Mathematics). In this role, he has recently overseen the introduction of a part-time version of the MSc in Finance (aimed at City professionals) that will be delivered at the WBS teaching venue on the 17th floor of The Shard in London.

During his PhD, Alex worked as part-time consultant for the Structured Fixed Income Products desk at HSBC, where he developed and implemented pricing and risk-management systems for fixed-income derivatives. For many years until recently, Alex has been active as a freelance consultant, providing executive training in all areas of Finance for a variety of major investment banks, including Goldman Sachs, Barclays Capital, Morgan Stanley, Deutsche Bank, Lehman Brothers (before their untimely demise), and many others.

Alex currently teaches the final-year elective module Derivatives and Risk Management for the WBS Undergraduate Programme, and a module on Asset Pricing on the MSc programme (both for the full-time Finance MSc, as well as the new part-time version of the programme running in the Shard in London). He has also developed a Finance Booster online course for pre-arrival preparation of WBS MSc students, and a Maths Booster course (delivered both in face-to-face mode pre-term to the new MSc cohort as well as in blended learning online format).

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1 These are: the MSc in Finance (MSF), Finance and Economics (MSFE, run jointly with the University’s Economics department), Accounting and Finance (MSAF), Financial Mathematics (MSFM, joint with the departments of Mathematics and Statistics), and Behavioral Finance (MSBF); altogether enrolling about 300 students each year.