

QuantWeek 2011

Cutting edge quantitative seminars

New York October 3-7

- DAY 1** Flow products and markets with Igor Smirnov
- DAY 2** Post-crisis CVA modelling with Eric Li
- DAY 3** Advanced analytical tools for pricing and hedging in a volatile world with Marcello Minenna
- DAY 4** Portfolio analysis with David Jessop
- DAY 5** Statistical arbitrage for equities: medium-frequency strategies with Marco Avellaneda

Five separately bookable days

QuantWeek 2011

Course highlights

- Statistical arbitrage and medium frequency trading strategies
- Hedging and pricing strategies across derivative classes
- CVA modelling approaches taken at a leading CVA desk
- Advanced and practical application of techniques post Black-Scholes
- Energy risk modelling and portfolio performance assessment
- Portfolio construction and real-time analysis

About the course

QuantWeek 2011 begins an annual series in London and New York of cutting-edge quantitative seminars.

QuantWeek provides those working in the quantitative community with face-to-face interaction with leading practitioners and world renowned experts in an environment geared towards technical, need to know content.

QuantWeek seminars are tailored to a niche, sophisticated audience and offer practical applications to inform and better equip those taking quantitative approaches to business critical thinking.

Running in June for European Quants and in October for North America, QuantWeek 2011 will deliver strategies and technical insights to equip 'quants' with the refined skill-sets needed to operate across asset classes. Master class sessions will cover 2011 specific approaches to frequency trading strategies, pricing and hedging across a range of derivatives, modelling approaches and, in response to extensive research, practical CVA modelling.

By attending QuantWeek, you will deepen your technical approach to quantitative finance.

QuantWeek ensures that you are well-placed to onboard, execute and adeptly respond to the latest approaches and strategies needed to tackle the key issues facing financial institutions.



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Learning outcomes

- Execute and deliver medium frequency trading strategies
- Perform dynamic portfolio construction strategies
- Commodity pricing and portfolios in the energy sector
- Statistical arbitrage and portfolio construction assessment
- Refined hedging and pricing strategies across derivative classes
- Accurately build CVA models – including incoming charge fee variations

Course Tutors

Igor Smirnov

Head of Flow Research,
BNP PARIBAS



Igor Smirnov has worked in quantitative finance since 1998, joining BNP Paribas in

2000, where most recently as Global Head of Flow Research Group he was responsible for quantitative research and modelling of flow products (including Interest Rates, Credit and other product areas). Igor has tackled a number of research areas during his career, with a long standing focus on term structure modelling and risk dimensionality issues, as well as liquidity, funding and counterparty risks.

Marcello Minnena

Head of Quantitative Analysis,
CONSOB



Marcello Minnena is Head of Quantitative Analysis at CONSOB (the Italian Securities and Exchange

Commission) where he is in charge of analysing and developing quantitative models for surveillance. Marcello has taught extensively around the world and is known for his engaging and charismatic approach. He received his PhD and MA in mathematics for finance from the State University of Brescia and from Columbia

University. His research is widely used in developing quantitative models for surveillance. Marcello will be joined by his Teaching Assistant Paolo Verzella.

David Jessop

Managing Director, Global
Head of Equities Quantitative
Research, UBS

David Jessop is the Global Head of Equities Quantitative Research at UBS. His areas of research include portfolio analysis and construction, style analysis and risk modelling. He also helps clients understand, use and implement the quantitative tools available from UBS.

David joined UBS in 2002. Prior to this, he spent seven years at Citigroup as Head of Global Quantitative Marketing. He spent 6 years at Morgan Grenfell Asset Management, where he managed index funds, asset allocation funds and also an option overwriting fund.

Eric Li

Global Head of CVA modelling
and analytics, STANDARD
CHARTERED BANK



Before joining SCB, Eric spent more than 5 years as a senior vice president in the Derivatives Research

Group at Lehman Brothers Inc in New York from 2004 - 2009. At Lehman, he was the head of CVA modelling and the head of EM modelling.

Before then, Eric was vice president in Quantitative Research Group at the Bank of America in Chicago from 2002 to 2004; vice president and the head of Quantitative Research and Analytics at Blackbird Holding Inc from 1996 to 2001. Eric has also taught mathematics at Northern Jiaotong University (now Beijing Jiaotong University).

Marco Avellaneda

Professor of Mathematics,
Courant Institute of
Mathematical Sciences,
NEW YORK UNIVERSITY
(Risk Awards, Quant of the Year 2010)



Marco Avellaneda is Professor of Mathematics and the Director of Financial

Mathematics at New York University's Courant Institute of Mathematical Sciences. Marco invented the Uncertain Volatility model and is well known for his work on the weighted Monte Carlo algorithm and the theory of Dispersion Trading.

He is renowned for developing quant strategies in equities and volatility trading for leading hedge funds. Marco won the prestigious Risk Awards 'Quant of the Year' 2010 for his groundbreaking work on the effect of short-selling restrictions on price dynamics.

QuantWeek 2011

NEW YORK DAY 1 Monday October 3rd

Flow products and markets

with Igor Smirnov

08.00	Registration and coffee
08.30	Fundamentals to flow – building blocks of derivative markets <ul style="list-style-type: none">● Overview of flow rates and credit derivative products● Markets & curves – calibration challenges● Relationships to structured products● Curve construction and flow pricing the traditional way: identifying the shortcuts
10.30	Morning break
11.00	Flow rates – without the blinkers <ul style="list-style-type: none">● Why the shortcuts were wrong – new risk factors of familiar products● Understanding basis spreads● Relating funding and discounting:- Cost of collateral: modelling presence of bilateral collateral agreements and clearing houses Uncollateralised funding and liquidity and c redit risk
12.30	Lunch
13.30	Under the hood - tools and techniques for practical model development <ul style="list-style-type: none">● Joining the dots: overview of rates interpolation methods● Relationship to market developments, including treatment of discontinuities and liquidity squeezes● Curves and markets: understanding interdependencies of sets of term structures to be calibrated● Calibration instruments – calibration techniques: efficient treatment of multidimensional optimisation● Stability and performance enhancers
15.00	Afternoon break
15.30	Beyond flow rates – changes in credit and other markets <ul style="list-style-type: none">● Implications for structured products● General valuation & regulatory challenges● Brave new credit world● New conventions and the impact of SNAC:- CDS & funding Recovery: point or surface? Managing increasing dimensionality● Option pricing in the new paradigm: adapting our favourite models● Electronic & broker trading Communication with clients, accounting and regulators
17.00	Q&A – opportunity for further technical questions

NEW YORK DAY 2 Tuesday October 4th

Post-crisis CVA modelling

with Eric Li

08.00	Registration and coffee
08.30	CVA overview, setup and modelling <ul style="list-style-type: none">● CVA, asset charge and liability benefits● IR swaps credit exposure EPE, MPE/PFE● Risk capital & mitigation CCDS CVA for portfolios● CVA trading desks, modelling groups & IT team● CVA trading & regroup books dynamic trade CVA● Working with sales & traders for CVA charges● Individual trades netting benefits for portfolios● Traditional risk management approaches● Global models to price portfolio derivatives● Calculating future MtMs
10.30	Morning break
11.00	CVA for interest rate (IR) derivatives <ul style="list-style-type: none">● Futures HJM (FHJM) model & lattice implementation● Monte Carlo simulation forming hybrid simulations● Forward & backward processes for future MtMs● Netting engine by-products such as EPE & MPE● Applied credit curves for asset charges & liability benefits● CVA delta, gamma, CDS 01 risk hedge examples
12.30	Lunch
13.30	Stochastic credit for CCDS <ul style="list-style-type: none">● IR-Credit hybrid model rates, correlation & state variables● CVA for cross currency & FX portfolios cross currency FX-FHJM model● Lattice implementation & cross currency derivative pricing● CVA deterministic counterparty credit curves via netting engines
15.00	Afternoon break
15.30	Cross currency stochastic credit CCDS & related models <ul style="list-style-type: none">● Four-factor XCCY & credit hybrid models model rates, credit & exchange rate correlations● Lattice implementation & examples commodity regime switch & no way CVA● Commodity FHJM model for oil, natural gas & other single underline derivative portfolios● IR, credit & commodity hybrid models credit & commodity correlations● Deterministic counterparty credit curves stochastic credit for underline credit derivatives● Rates, credit correlation & state variables hybrid simulation netting engine
17.00	Q&A – opportunity for further technical questions

NEW YORK DAY 3 Wednesday October 5th

Advanced analytical tools for pricing and hedging in a volatile world with Marcello Minenna

08.30	Registration and coffee
09.00	Stylised facts on the real world as guidelines to build robust models beyond Black Scholes <ul style="list-style-type: none"> ● The "anormality" of the returns normality assumption ● Real probability distributions for asset prices: asymmetry, Kurtosis and fat tails ● An extended framework for pricing and hedging in the real world ● Multifactorial diffusive models, jump diffusion and pure jump ● Models: an overview
10.30	Morning break
11.00	Advanced mathematical tools for the real world <ul style="list-style-type: none"> ● Multifactorial stochastic calculus ● Levy processes ● The Fourier and Laplace transforms ● The mathematics of the complex plane
12.30	Lunch
13.30	Extending the Black-Scholes framework: multifactorial models <ul style="list-style-type: none"> ● Stochastic interest rates models: a Martingale derivation ● Stochastic volatility models: PDE derivation via Fourier transform ● Solving the pricing problem via numerical algorithms in Excel and MATLAB ● Calibrating multifactorial models: procedures and solutions in Excel and MATLAB, with extensive evaluation tests ● Moving from Vanilla Derivatives to Exotics in a multifactorial setting: Monte Carlo solutions
14.30	Afternoon break
15.00	Extending the Black-Scholes framework: jump models <ul style="list-style-type: none"> ● Jump diffusion models: replicating and quasi-replicating portfolios ● Pure jump models: the stochastic time hypothesis and mixtures of probabilities densities ● Solving the pricing problem via numerical algorithms in Excel and MATLAB ● Calibrating jump models: procedures and solutions in Excel and MATLAB with extensive evaluation tests ● Moving from vanilla derivatives to exotics in jump setting: Monte Carlo solutions
17.00	Q&A – opportunity for further technical questions

NEW YORK DAY 4 Thursday October 6th

Portfolio analysis with David Jessop

09.00	Registration and coffee
09.30	Risk models and risk analysis <ul style="list-style-type: none"> ● Building an equity risk model ● Which sort of risk model is best? ● How much structure is needed? ● How to test risk models
11.00	Morning break
11.30	Optimisers and portfolio construction <ul style="list-style-type: none"> ● What are the problems of optimisation? When should you use it? ● Techniques for overcoming the problems ● Black-Litterman, Bayesian techniques and forecast auditing ● Moving away from mean - variance - other measures of risk
12.45	Lunch
13.45	Alternative weighting schemes - different places to start <ul style="list-style-type: none"> ● The fallacy of the best weighting scheme and why you can't use backtests to prove one technique is better than another ● A review of other weighting schemes ● What can we use to see which approaches are better? ● How to add factor tilts to a portfolio
15.00	Afternoon break
15.30	Putting it all together <ul style="list-style-type: none"> ● Application to current issues ● Implementation ● Discussion
17.00	Q&A - opportunity for further technical questions

QuantWeek 2011

NEW YORK DAY 5 Friday October 7th

Statistical arbitrage for equities: medium-frequency strategies

with Marco Avellaneda

08.00	Registration and coffee
08.30	US Equities and Exchange Traded Funds: a quant perspective <ul style="list-style-type: none">● PCA and factor analysis of large-scale correlation matrices● Extracting factors from market correlations● Systematic volatility, idiosyncratic volatility and their variation in time
10.00	Morning break
11.00	Exchange Traded Funds <ul style="list-style-type: none">● Exchange-traded funds (ETFs): review● ETFs as risk factors● Leveraged ETFs and Volatility ETFs
12.30	Lunch
13.30	Pairs-trading, mean-reversion, cointegration <ul style="list-style-type: none">● Pairs trading: theoretical framework● Leveraged ETFs pairs trading● VIX ETF pairs trading● Stock/sector ETF pairs trading
15.00	Afternoon break
15.20	Statistical Arbitrage <ul style="list-style-type: none">● Portfolio construction● Leverage & financing considerations● Dynamic risk-management: limiting systematic risk● Practical considerations
16.00	Historical Results via backtesting <ul style="list-style-type: none">● Late 1990s● 2002-2007: How the subprime crisis affected statistical arbitrage● 2008-2010: The future of medium-frequency statistical arbitrage
17.00	Q&A – opportunity for further technical questions

Who should attend?

QuantWeek seminars communicate best practice approaches to the leading areas of quantitative finance.

With seminars delivered by some of the world's leading practitioners, attendees will gain crucial insights into the latest thinking and practical application of techniques used across the quantitative finance community.

To improve your business critical decisions, QuantWeek is the quantitative seminar event in the calendar to mark down as a must attend.

QuantWeek is particularly appropriate to those working within the following areas in investment banking, commercial and retail banking, asset management and investment banks:

Company types:

- Investment Banks
- Commercial Banks
- Hedge Funds
- Asset Management Companies
- Insurance Companies
- Pension Funds
- Energy Companies
- Derivatives and Risk Management
- Software Vendors
- Financial Consultants

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