BLACKBIRD FOR TRAINING

Derivatives Valuation and Pricing Course

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Derivatives Valuation and Pricing Course

Introduction:

Derivatives valuation and pricing is the practice of setting a fair value for forwards, futures, swaps and options by replicating their cash flows, discounting expected payoffs and adjusting for credit and model risk. This 1-week course is for treasury, risk, valuation, product control, audit and finance professionals, and its final deliverable is a derivatives valuation workbook with a fair value and price verification report. It is taught at intermediate to advanced practitioner level as a modelling build, with delegates building spreadsheet pricers and classifying results under IFRS 13 Fair Value Measurement, the accounting standard that defines fair value.

Course Objectives:

- Apply the cost of carry model and discount factors to price forwards and futures and to value an existing forward contract
- Compare the bond portfolio and FRA portfolio methods for valuing interest rate and cross-currency swaps, and distinguish where each gives a clearer answer
- Distinguish binomial tree pricing from the Black-Scholes-Merton model and select the right one for European or American options
- Interpret option Greeks and the difference between historical and implied volatility to design and monitor a delta hedge
- Define CVA and DVA and interpret how counterparty and own credit risk change the fair value of a derivative
- Justify the fair value hierarchy level and the independent price verification result for each derivative position, including any model risk reserve

Target Audience:

- Treasury and dealing-room professionals who quote and execute forwards, swaps and options, deciding whether a price offered by a counterparty is fair
- Risk analysts who measure market and counterparty exposure, judging which sensitivities and credit adjustments a position needs
- Financial analysts and corporate finance staff who assess hedging instruments, choosing the derivative and valuation method that suits each exposure
- Valuation and product control staff who verify trader marks, deciding when a price difference needs escalation or a reserve
- Internal and external auditors who review derivative balances, judging whether models, inputs and fair value levels are supportable
- Finance and accounting professionals who report derivatives in financial statements, determining the fair value level and disclosures for each instrument

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Course Outline:

Day 1: Foundations: Derivative Instruments, Pricing Principles and Market Inputs

- Forwards vs Futures: Contract Terms, Margining and Settlement Differences in Practice
- No-Arbitrage Principle: Why Replication Sets the Fair Price of a Derivative
- Cost of Carry Model: Pricing Forwards on Equities, Commodities and Currencies
- Discount Curves and Day-Count Conventions: Turning Market Quotes Into Discount Factors
- Forward Pricing Spreadsheet Exercise: Valuing an Existing Forward Contract Mid-Life

Day 2: Valuation Models: Swaps, Binomial Trees and the Black-Scholes-Merton Model

- Bond Portfolio vs FRA Portfolio Method: Two Routes to Interest Rate Swap Value
- Cross-Currency Swap Valuation: Exchanging Principal and Coupons Across Two Discount Curves
- Binomial Option Pricing Model: Risk-Neutral Probabilities and Backward Induction Through the Tree
- Black-Scholes-Merton Model: Assumptions, Inputs and Closed-Form Values for European Options
- Put-Call Parity: Checking Consistency Between Call, Put and Forward Prices

Day 3: Core Skills: Greeks, Volatility and Hedging in Spreadsheets

- Delta, Gamma, Vega, Theta and Rho: Measuring Option Price Sensitivities
- Historical vs Implied Volatility: Estimating the Main Unobservable Input to Option Prices
- Volatility Smile and Surface: Reading Strike and Maturity Patterns in Market Quotes
- Black-Scholes and Greeks Spreadsheet Exercise: Building a Pricer for a Call Option
- Delta Hedging Exercise: Rebalancing a Short Option Position and Tracking Hedge Profit and Loss

Day 4: Advanced Risk: Valuation Adjustments, Fair Value Levels, Model Risk and Price Verification

- CVA vs DVA: Pricing Counterparty and Own Credit Risk Into Derivative Values
- Expected Exposure Profiles: Estimating Future Exposure for Swaps and Forwards Using Simple Simulation
- IFRS 13 Fair Value Hierarchy: Classifying Derivatives as Level 1, Level 2 or Level 3
- Model Risk Management: Model Validation, Calibration Errors and Model Reserves
- Independent Price Verification: Sourcing Consensus Data and Setting Tolerance Thresholds for Differences

Day 5: Modelling Build: Valuing and Controlling a Sample Derivatives Portfolio

- Swap Valuation Build: Pricing an Interest Rate Swap From a Bootstrapped Curve
- American vs European Option Build: Valuing Both on a Binomial Tree Workbook
- Hedging Case Exercise: Designing a Delta-Vega Hedge for an Options Book
- Fair Value and IPV Case: Classifying Positions and Explaining Price Differences
- Derivatives Valuation Workbook Completion: Presenting Prices, Greeks, Adjustments and Control Findings

Skills You Will Gain:

- Cost of Carry Pricing
- Swap Curve Discounting
- Binomial Tree Modelling
- Black-Scholes Option Pricing
- Greeks-Based Hedging
- Implied Volatility Analysis
- Credit Valuation Adjustment
- Independent Price Verification

Why Attend This Course:

- From accepting dealer quotes for forwards and swaps at face value to rebuilding each price independently from market curves
- From treating option values as system outputs to explaining each Black-Scholes input and Greek behind the number
- From valuing derivatives without regard to counterparty credit to quantifying CVA and DVA in the reported fair value
- From scattered pricing spreadsheets to a tested derivatives valuation workbook with a fair value and price verification report

Conclusion:

Derivatives valuation and pricing comes down to one discipline: replicating what a contract pays, discounting it on the right curve and then adjusting the result for volatility, credit and model uncertainty. The course makes three distinctions clear: forwards versus futures, binomial trees versus the Black-Scholes-Merton model, and CVA versus DVA. It suits treasury, risk, valuation, product control, audit and finance professionals at intermediate to advanced level who already work with derivatives and now need to build, test and defend their own prices rather than rely on system or dealer outputs.

Frequently Asked Questions FAQ:

What should a delegate know before a derivatives valuation and pricing course?

Working knowledge of time value of money, basic statistics and spreadsheet formulas is enough. Delegates should recognise forwards, swaps and options; each pricing model is rebuilt step by step before it is used in the exercises.

How does a derivatives valuation and pricing course differ from an introductory derivatives trading course?

It focuses on building and checking prices rather than on trading strategies. Introductory trading courses explain what instruments do and how markets work; this course values them, measures their sensitivities and tests marks against fair value and price verification practice.

Why does derivatives valuation and pricing need credit and valuation adjustments?

A risk-free model price ignores the chance that a counterparty, or the reporting entity itself, defaults. CVA and DVA move the model value toward the price a market participant would actually pay, which fair value measurement requires.

What does a delegate take back to work from a derivatives valuation and pricing course?

A working spreadsheet valuation workbook with forward, swap, binomial and Black-Scholes pricers, Greeks and a hedging sheet, plus a fair value hierarchy and independent price verification report that can be adapted to the delegate's own positions.