



Risk e-Learning

## Modules Overview

# Risk Sensitivities

## Market Risk Foundation (Banks)

### **Learning Objectives:**

Understand delta risk sensitivity as an introduction to a broader set of risk sensitivities

Explore the principles of delta risk sensitivity in general terms for simple fixed income and non-fixed income investments and options

Explore the principles of delta, gamma, vega, and theta (DGVT) risk sensitivities

Understand the Taylor Series Expansion as an adaptation to risk measurement using DGVT

Examine option volatility skew and its importance to Vega risk sensitivity measurement

Measure delta, gamma, and vega risk sensitivities and estimate portfolio profit or loss in response to changes in market rates, prices, and implied volatility (Excel)

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### **Duration:**

1.5 hours

### **Audience:**

Functional staff and management in Risk Management, Front Office, Finance, Operations, Audit, and Risk IT, at financial organizations globally.

### **Recommended module prerequisites:**

None

# Volatility and Correlation

## Market Risk Foundation (Banks)

### **Learning Objectives:**

Understand volatility and correlation and their wider role in the measurement of risk

Explore the basic principles of volatility and correlation and how they are applied to the measurement of risk

Compare historical and implied volatility and correlation

Examine kurtosis and skew relative to the normal distribution

Explore time weighting of volatility to control its response to changes in market conditions (Excel)

Measure volatility adjusting for fat tails (kurtosis), and time-weighting for the purpose of measuring risk (Excel)

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### **Duration:**

1 hour

### **Audience:**

Functional staff and management in Risk Management, Front Office, Finance, Operations, Audit, and Risk IT, at financial organizations globally.

### **Recommended module prerequisites:**

None

# Value at Risk

## Market Risk Foundation (Banks)

### **Learning Objectives:**

Understand the basic principles of value at risk (VaR)

Three VaR calculation methods are presented, with an in-depth examination of parametric and historical simulation methods

Measure VaR using risk sensitivities, volatility and correlation

Explore ways to compensate for fat-tailed (kurtosis) volatility and time-weighting in the measurement of VaR

Measure VaR for a portfolio of 3 or more investments using portfolio risk sensitivities (DGV), volatility and correlation (Excel)

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1.5 hours

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Functional staff and management in Risk Management, Front Office, Finance, Operations, Audit, and Risk IT, at financial organizations globally.

### **Recommended module prerequisites:**

Risk Sensitivities

Volatility and Correlation

# Valuation Adjustments

## Market Risk Foundation (Banks)

### **Learning Objectives:**

Develop a general understanding of valuation reserves as a complement to risk measurement

Review FAS157 fair value accounting rules

Examine credit valuation adjustment (CVA) and how it is calculated

Explore the process of setting aside valuation reserves under fair value accounting

Estimate a bid-ask valuation reserve using portfolio position delta risk sensitivities (Excel)

Understand the process of calculating derivative counterparty risk exposure and how it ties to CVA

Explore ideas for combining CVA into VaR and other risk measures

Estimate valuation reserves for volatility skew using Vega risk sensitivities (Excel)

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### **Duration:**

1 hour

### **Audience:**

Functional staff and management in Risk Management, Front Office, Finance, Operations, Audit, and Risk IT, at financial organizations globally.

### **Recommended module prerequisites:**

Risk Sensitivities

Volatility and Correlation

# Stress Testing

## Market Risk Foundation (Banks)

### **Learning Objectives:**

Develop a general understanding of stress scenario risk measurement principles

Review current methods of measuring stress scenario risk and state of practice

Design stress scenarios based on risk factor volatility and correlation across different asset classes (Excel)

Measure stress risk exposure for a portfolio of simple investments and option positions across different asset classes using delta, gamma, and vega (DGV) risk sensitivities (Excel)

Explore ways to adjust stress scenarios for fat tails, time-weighting, and liquidity

Compare stress risk measurement using DGV versus full revaluation for options (Excel)

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### **Duration:**

45 minutes

### **Audience:**

Functional staff and management in Risk Management, Front Office, Finance, Operations, Audit, and Risk IT, at financial organizations globally.

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Risk Sensitivities

Volatility and Correlation

# Return Risk Optimization

## Strategic (Banks)

### **Learning Objectives:**

Develop a general understanding of return versus risk optimization principles across different sectors of the financial services industry, including Banks, Insurance companies, Pension funds, and Asset Management companies

Examine the concept of maximizing risk-adjusted return on capital in different financial organizations

Explore how risk measurement capabilities may be leveraged for optimization, and to help shift perceptions of risk management as a cost centre to profit-maximizing partner

Examine the impact of kurtosis and the use of EWMA in volatility measurement on optimization outcomes

Understand the interplay between leverage and fair value accounting and their impact on optimization

Simulate expected return and risk exposure for a portfolio of multiple fixed income and non-fixed income asset classes, to optimize the allocation of risk capital and maximize risk-adjusted portfolio return (Excel)

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### **Duration:**

45 minutes

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Functional staff and management in Risk Management, Front Office, Finance, Operations, Audit, and Risk IT, at financial organizations globally.

### **Recommended module prerequisites:**

Risk Sensitivities

Volatility and Correlation

Value-at-Risk

Stress Scenario Risk

# Credit Valuation Adjustment Basel (Banks)

## **Learning Objectives:**

Develop a general understanding of credit valuation adjustment (CVA) principles

Examine background considerations as a precursors to the emergence of CVA as a risk measurement and valuation measurement requirement

Calculate exposure based on the nomenclature of derivative counterparty credit risk for risk management and regulatory reporting (Excel)

Simulate interest rate risk factors and derivative counterparty credit risk exposure using a monte-carlo simulation method (Excel)

Measure net CVA as a function of CVA and DVA for a hypothetical portfolio of 2 interest rate swaps, taking into considerations the effects of netting and collateral agreements (Excel)

Examine the components of CVA and DVA such as probability of default (PD), loss given default (LGD), and credit spreads, and how these components may be derived from market and internal analysis

Explore the concept of wrong way risk and its impact on exposure and CVA measurement

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## **Duration:**

45 minutes

## **Audience:**

Functional staff and management in Risk Management, Front Office, Finance, Operations, Audit, and Risk IT, at financial organizations globally.

## **Recommended module prerequisites:**

None



# Stressed VaR

## Basel (Banks)

### **Learning Objectives:**

Develop a general understanding of stressed VaR principles

Review events and conditions that led to the introduction of stressed VaR as an added regulatory capital requirement

Look at the prescribed formula for measuring Basel 2.5 regulatory capital as a function of stressed VaR and its quantitative impact

Measure stressed VaR for a hypothetical portfolio of linear and non-linear positions across multiple asset classes (Excel)

Compare stressed VaR results calculated using a variance-covariance model, an historical simulation and a monte carlo simulation, based on risk sensitivities and full revaluation (Excel)

Examine the challenges that exist in the measurement of stressed VaR, in relation to market data and liquidity

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### **Duration:**

1 hour

### **Audience:**

Functional staff and management in Risk Management, Front Office, Finance, Operations, Audit, and Risk IT, at financial organizations globally.

### **Recommended module prerequisites:**

Risk Sensitivities

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# Capital Management

## Basel (Banks)

### **Learning Objectives:**

Examine the primary components of a bank balance sheet's assets, liabilities, and capital

Differentiate between economic and regulatory capital and review Basel's capital adequacy requirements

Review measurement methods for risk-weighted assets (RWA), capital, and capital ratios

Measure capital, RWA, and capital ratios for a hypothetical bank balance sheet (Excel)

Explore the concept of balance sheet leverage and its associated opportunities and risks

Examine the effects of leverage and fair value accounting on capital

Measure the effects of leverage and fair value change on capital for a hypothetical bank balance sheet (Excel)

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### **Duration:**

1 hour

### **Audience:**

Functional staff and management in Risk Management, Front Office, Finance, Operations, Audit, and Risk IT, at financial organizations globally.

### **Recommended module prerequisites:**

None

# Liquidity Risk Management Basel (Banks)

## **Learning Objectives:**

Develop a general understanding of liquidity risk measurement and management principles

Differentiate between market and funding liquidity, and review Basel's liquidity requirements for banks

Review Basel's Liquidity Coverage Ratio (LCR) and Net Stable Funding Ratio (NSFR) for measuring liquidity risk

Measure LCR, NSFR, and related components for a hypothetical bank balance sheet (Excel)

Examine the relationship between liquidity risk and bank performance

Review the manifestations of a financial crisis on liquidity risk

Simulate the effects of bank strategy, market risk, credit risk, and Asset-Liability Management (ALM) on liquidity and performance (Excel)

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## **Duration:**

45 minutes

## **Audience:**

Functional staff and management in Risk Management, Front Office, Finance, Operations, Audit, and Risk IT, at financial organizations globally.

## **Recommended module prerequisites:**

None

# Market Risk Capital | FRTB

## Basel (Banks)

### **Learning Objectives:**

Develop a general understanding of Basel's revised standards for minimum capital requirements for market risk

Examine the boundary between the trading book and banking book

Review the method of calculating the market risk capital charge under the standardised approach and the internal models approach (Excel)

Compare the capital charge results under the two revised approaches

Calculate the market risk capital charge under Basel 4 (revised standards) and compare results to Basel 2 & 2.5 (Excel)

Understand the impact of the revised standards on bank capital ratios

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45 minutes

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Functional staff and management in Risk Management, Front Office, Finance, Operations, Audit, and Risk IT, at financial organizations globally.

### **Recommended module prerequisites:**

Risk Sensitivities

Capital Management

# Expected shortfall | FRTB

## Basel (Banks)

### **Learning Objectives:**

Develop a general understanding of Expected Shortfall as a measure that is used to set the minimum capital required for trading book risk exposure, under Basel's revised standards

Examine the process of mapping trading positions to risk factors for the purpose of calculating ES

Review Basel's assignment of liquidity horizons to risk factors

Calculate the Expected Shortfall and capital charge for a hypothetical trading book (Excel)

Understand the mechanics of using an indirect approach when risk factor market data are unavailable

Review the interaction between the Internal Models Approach and the Standardized Approach, in setting minimum capital against trading book risk exposure

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### **Duration:**

45 minutes

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Functional staff and management in Risk Management, Front Office, Finance, Operations, Audit, and Risk IT, at financial organizations globally.

### **Recommended module prerequisites:**

Market Risk Capital (FRTB)