IFF | INTERNATIONAL FACULTY OF FINANCE

A Masterclass in Treasury Risk Management

Learn how to measure, manage and mitigate your firm's treasury risk

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What You Will Learn

A deep understanding of how to implement best practice within the Treasury function is vital to all enterprises. It is especially critical to financial institutions such as commercial banks, central banks, and those firms engaged in financing and asset management operations.

In managing risk, treasury professionals must have a keen understanding and insight into the nature of money markets and the financial environment. In addition, they must be able to utilise the full array of funding and hedging instruments available to respond to changing internal and external financial conditions, and to take effective ownership of the overall management of a balance sheet under a wide variety of market scenarios.

During the 5-days you will benefit from an interactive approach with plenty of case-studies and group exercises. You will be using analytical tools – exemplified in Excel - and real-world applications of modelling techniques. There will be abundant use of graphics and illustrative materials, as well as detail examination of statistical/quantitative techniques applied to time series analysis.

Learning Objectives

After attending this programme, participants will be able to:

- Explain wholesale money markets and repo financing
- Identify the factors which brought about the breakdown in funding markets during the 2007/8 financial crisis
- Recognise what caused the demise of Silicon Valley Bank in March 2023
- Explain balance sheet liquidity when capital markets are facing stress
- Appreciate the relationship between capital adequacy and liquidity risk Identify money market spreads and volatility as precursors of changes in liquidity conditions
- Describe market micro-structure and liquidity risks as by-products of banking regulations
- Grasp the formulation and value of stress tests

Course Leader

Clive Corcoran

Clive Corcoran has been engaged in the finance and investment management sectors, on both sides of the Atlantic, for more than 25 years. After completing his education in the UK, Canada and the US, he co-founded and became the CEO of an investment management company based in the USA during the 1980's and 90's.

The company provided wealth management and fiduciary services to a variety of international clients. His own responsibilities included personalized business management, international tax planning and providing strategic financial advice to high net worth individuals.

Since re-locating to the UK in 2000, he has continued, as an FCA registered investment adviser, to be engaged in providing strategic investment advice to private clients and pension funds.

During recent years he has written several books on international finance, focusing on asset allocation and risk management. He also has also been very actively involved in executive education on a global basis for finance professionals. He conducts workshops and in-house courses on a variety of topics including risk management, Basel III and capital adequacy, central banking, systemic risk, asset allocation techniques, credit risk, market risk and derivatives.

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On successful completion of the course, you will be awarded the IFF digital badge. Share your achievement with your colleagues and peers on your LinkedIn profile and other social profiles.

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Course Agenda

DAY 1

Overview of the Treasury Function

- Risks surrounding the treasury function
- Credit and interest rate risk
- Liquidity risk and foreign currency risk
- Cash and liquidity management
- Asset and liability management versus treasury management
- Reasons for holding cash: precautionary and speculative
- Different definitions of liquidity – accounting, economic and market driven
- The importance of the new focus on liquidity in the Basel III framework
- Short term funding requirements versus longer term stable funding
- Overview of duration gap analysis – basis for net worth (accounting equity) calculations
- Asset liability mismatches on the balance sheet
- Understanding hidden liquidity risks on the balance sheet

Interest Income Metrics

- Time value of money, zero coupon yield curves, discount factors
- Bond duration, convexity, Macaulay Duration, Modified Duration,
- Optionality and callable bonds – pre- payment risk in mortgage-backed securities.
- Calculating Basis Point Value (BPV)
- Explanation of the term structure of interest rates – the yield curve
- Historical examples of different shapes to the yield curve
- Credit spreads - over Treasuries, over LIBOR, Z – spread.
- Swap spreads – which curves to use, OIS, LIBOR
- Fundamental statistical tools for measuring and analysing risk – mean, variance.
- Holding period return calculation for fixed income securities.

EXERCISE : *Excel model which permits the calculation of key bond metrics*

Fundamentals of Asset & Liability Management

- Gap Analysis - time buckets, maturity structure
- Earnings at Risk - Net Interest Income and margins
- Credit risk and liquidity related issues – Basel III focus on high quality liquid assets (HQLA)
- Impact of duration and convexity on fixed income instruments
- Accounting value of equity and Economic value of Equity
- Value at Risk - parametric techniques, historical and random scenario generation
- Liquidity ratios and traditional metrics
- Cash flow forecasts – how reliable,
- Best practice liquidity risk measurement
- Managing interest rate risk with derivatives
- OTC derivatives and exposure management

CASE STUDY:

Sensitivity of assets and liabilities to interest rate changes

Mark to Market Risks for Income Assets and Funding Instruments

- Risk versus uncertainty – probabilistic scenarios versus "unknowns"
- Volatility, drawdowns, risk/reward ratios
- Review of probabilistic methods based on a normal distribution
- Impact of interest rate risk on balance sheet – AFS, trading book exposures, derivatives
- Feedback loops between market risk, credit risk and liquidity risk
- Value at Risk (VaR) – a single measure of enterprise risk
- Explain the differing methodological principles for calculating VaR
- Benchmark rates – distinguish types and suitability for different purposes/objectives
- Impact of central bank intervention on price discovery mechanism
- Market distortions and liquidity issues arising from orchestrated interest rate environment

CASE STUDY:

"Securitized Banking and the Run on Repo" (Paper by Gorton and Metrick, 2010) Contrasts the traditional notion of a run on banks via depositor withdrawals with the experience in the 2007/8 crisis characterized as a run on repos

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DAY 2

Interface of Money Markets and Foreign Exchange

- Size of the markets – size of outstanding derivatives, FX daily volumes
- Participants – commercial banks, central banks, corporates, government agencies
- Treasury bill issuance in different jurisdictions – calculating yields etc.
- Detailed analysis of the mechanics of repo markets, commercial paper
- LIBOR and EURIBOR rates – currencies and maturities,
- Forward Rate Agreements for interest rate and FX
- Arbitrage and interest rate parity
- Current market conditions – policy rates, macro-economic background
- Risk premia, key money markets spreads and currency outlook
- Term structure of interest rates – yield curve forecasting

CASE STUDY:

Examination of the 2022 BIS Triennial Survey of the FX market

Central Banks and Monetary Policy

- Overview of FOMC, MPC of BOE, ECB Governing Council, BOJ and PBOC
- Structure of a central bank balance sheet – relationship to commercial bank balance sheets
- Summary of Open Market Operations – NY Fed, BOE and ECB practice
- Unorthodox monetary policy including QE – origins, recent history, mechanics
- Forward guidance and transparency of decision making
- Examination of impact of CB asset purchases on yield curve and short term rates
- Impact of QE on CB balance sheets – Fed, BOE, BOJ, ECB
- Overnight market – OIS rates – Fed funds, EONIA, SONIA, SOFR
- Overview of money supply - monetary base (M0), M1, M2 – how measured
- Monetary tools and how they impact money supply
- How is money created in a modern economy – role of commercial banks in creating deposits
- Review of the discredited Phillips Curve hypothesis
- Central bank reserves – influence on policy rates and constraints on commercial banks
- Inflation targeting and discretionary policy versus rule based

CASE STUDY:

The Taylor rule as an alternative to judgement based monetary policy

Securities Pricing in the Presence of Illiquidity

- Random walks and the assumption of continuous trading
- The effect of jumps and gaps on the pricing framework
- Risk premiums and risk neutrality
- Impact on derivatives pricing and mark to market
- Computer based exercises modelling impact of liquidity risk on securities / derivatives prices
- Back testing using historical returns
- Stress testing using hypothetical returns
- Explanation of Principal Components Analysis

Changes in Liquidity and Volatility

- Risk capital/regulatory capital and illiquidity
- Close relationship between correlation, liquidity and volatility
- Predicting volatility changes: GARCH models
- The perspective from implied volatility
- Implied probability distribution and tail risk
- Attempts to create a meaningful value for VaR adjusted for liquidity

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Liquidity Risk – Stress Testing/Scenario Analysis

- Why do we need stress and scenario testing in addition to VaR?
- Shortcomings of many legacy asset allocation and risk management techniques
- How should stress and adverse scenario testing be conducted?
- Why do the regulators want to see it done?
- Is there a robust division between market risk and liquidity risk?
- The trading vs. banking book business model – shortcomings
- Abuses of Basel II in the lead up to the financial crisis
- Impact of liquidity conditions on short term funding

CASE STUDY:

Practical illustration of Monte Carlo techniques for stress testing

DAY 3

Balance Sheet Management and Funds Transfer Pricing (FTP)

- ALCO as clearing house for providers and users of funds
- Overview of strategic balance sheet management
- Different FTP Approaches – average cost of funds, pool approaches, matched maturity
- marginal cost of funds
- Liquidity Term Premium (LTP) – how to separate from term premium and credit risk
- Cost of Funds and relationship to the LTP – dealing with outflows under stressed conditions
- Liquidity cushions (buffers) – best practice, charging business units on basis of expected use of contingent liquidity
- Liquidity Transfer Pricing for trading book, banking book, derivatives – funding of haircuts
- Trading/Available for Sale (AFS) Portfolio Liquidity Premium
- Held to Maturity versus Available for Sale issues

CASE STUDY:

The circumstances surrounding the demise of Silicon Valley Bank (SVB)

Using IR and FX Swaps for Treasury Risk Management

- Basic structures and terminology of swaps
- Contrast money market rates and IR swap rates
- Mechanics of FX swaps, forwards, and structured FX products
- Basis swaps – segmented forward markets
- Pricing the fixed leg and interpreting the swap markets
- Counter party risk – default, deterioration of creditworthiness, CVA
- Recognition that CVA is integral part of trading practices and pricing of derivatives and not just a regulatory (Basel) issue
- Collateralized OTC trades versus margin based CCP platforms
- Netting arrangements – explanation of mechanism, close out risks
- Cross currency basis swaps

CASE STUDY:

Excel example illustrating how to model the cash flows of a fixed/floating interest rate swap

Duration Targeting and Duration Gap Analysis

- Explanation of sensitivity of bond price to changes in interest rates
- Brief overview of term structure of interest rates – yield curve
- Modified duration and portfolio risk management.
- Calculating Basis Point Value (BPV) or DV01 from Modified Duration
- Duration Gap - not confined to a branch of Asset/Liability Management (ALM)
- Useful for determining the net worth of a sophisticated fixed income portfolio
- Difficulties of determining duration for certain financial instruments
- Duration modelling needs continual updating and re-balancing

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- Procedures for calculating the duration and the deltas of such duration.
- Framework to stress test/model the impact on balance sheet equity from changes to asset and liability valuations resulting from variations in yield curve
- Contrast an approach which seeks to immunize a portfolio from shifting duration to a more pro-active stance in accordance with a view/forecast on future course of interest rates

Case Study/Interactive Exercise

Shared use of Excel spreadsheet for modelling duration gap analysis and determining whether interest rate changes will be beneficial to positive/negative duration gap

CASE STUDY:

An examination of the underlying causes of the breakdown in inter- bank liquidity in 2007/2008. Collapse of Lehman Brothers in September 2008 and the US Treasury rescue of AIG, Fannie Mae.

Interpreting Money Market Data

- Monitoring government bond yields and changes to the term structure of interest rates for US dollar, euro, sterling, and yen
- Credit spreads for investment grade and high yield instruments relative to government issue and inter-bank rates
  - Spreads over Treasuries, over bunds, over gilts
  - Swap spreads - LIBOR, OIS, EONIA
- Debt dynamics – impact of public debt and private debt on country risk
- Credit Default Swap (CDS) rates – estimation of probabilities of default
- Measuring market sentiment – investor confidence indices, contrarian indicators

Models for Interest Rate Forecasting

- Drift, stochastic factors, and mean reversion tendencies
- Vasicek and CIR models for modelling evolution of short-term rates
- Market volatility as primary risk factor – variance forecasting
- Parallel and non-parallel shifts in the yield curve
- Principal Components Analysis for modelling changing shape of term structure
- Volatility modelling – EWMA and GARCH techniques
- Market volatility as primary risk factor – variance forecasting
- Parallel and non-parallel shifts in the yield curve

DAY 4

Hedging of Funding Instruments

- Hedging challenges with non-dated liabilities
- BPV of money market instruments
- IR Forwards versus futures, convexity adjustments
- Relative value trades and spreads
- Basis swaps – segmented forward markets
- Cross currency basis swaps
- Exchange traded and OTC interest rate options
- Using STIR futures for caps and collars
- Dynamic delta hedging

Case Study/Exercise:

Excel model to illustrate how Fed Funds futures can be used to estimate probabilities of decision by the Federal Open Market Committee (FOMC)

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DAY 5

Stress Testing Methods for Treasury

- Sensitivity to interest rate deltas – quantification and modelling
- Stress Testing bond or loan portfolio
- How to generate and calibrate shocks and adverse scenarios
- Worst case approach; threshold approach; base case
- Identification of key risk factors
- Associating probabilities to risk factors – quantitative and qualitative approaches
- Mapping qualitative and descriptive data to numerical values
- Model based simulations of adverse case scenarios.
- Stress testing volatility episodes – using weighted approaches to volatility
- Impact of interest rate risk on balance sheet – AFS, trading book exposures, derivatives
- Feedback loops between market risk, credit risk and liquidity risk
- Benchmark rates – distinguish types and suitability for different purposes/objectives.
- Scenario Based Analysis (SBA) and Risk Control Self-Assessment (RCSA)

Exercise:

Application of actual stress testing techniques applied to duration characteristics of a balance sheet

Interest Rate Risk in The Banking Book (IRRBB)

- Distinction between banking and trading books
- Economic Value of Equity (EvE) and Net Interest Income (NII) metrics
- Regulatory arbitrage treatment under Basel III
- IRRBB link to Basel III capital adequacy requirements
- Implementing Basel's six scenarios specifications and recommended implementation
- ICCAP and the Enhanced Pillar 2 approach
- Defining IRRBB risk appetite
- IRRBB and enterprise-wide stress testing

Concluding Discussion

Collation of themes Intuitions regarding the trade-off between maintaining consistent capital base and the matching of variations in operating inflows and outflows.

About IFF

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Providing Elite Academic Education and Training for Banking and Finance Professionals

IFF is a specialist financial training organisation, part of Informa plc, that provides professional learners with expert-led technical training. Established in 1991, we design transformative learning across a range of formats and topics that allow learners to stay innovative, make informed investment decisions, manage risks effectively, comply with regulations, and develop careers in the finance industry.

In-Company Training

IFF's bespoke training solutions will help you address your specific key business challenges. The programme is designed for you, with content focusing on the issues you and your teams are facingThe course can then be delivered at your choice of location face-to-face, digitally or a combination of the two.

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- No travel or time out of the office – we will come to you
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- Risk free – we've been doing this for over 30 years

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