Investment Performance Measurement, Attribution & Analysis

Program Description: In this intensive and highly practical 3-day training course, participants will learn the best practice techniques to…

- Calculate time-weighted and money-weighted returns
- Perform security-level calculations
- Handle tricky asset like derivatives, private equity and short positions
- Learn about performance measurement industry standards
- Conduct performance appraisals with benchmark and peer groups
- Understand the role of a performance measurement function in the investment process
- Get an introduction to risk measurement and risk-adjusted performance
- Analyse traditional and alternative investment portfolios with Brinson-style attribution methodologies
- Understand the peculiarities of fixed income attribution models
- Attribute currency effects for international portfolios, portfolios with currency overlay managers and strategic currency hedging
- Turn your attribution models into hybrid models by integrating results from factor models
- Use style analysis to attribute performance when no constituent data is available
- Learn about the latest risk indicators capturing tail risk, non-normal risks, tail risk and non-linear dependence
- Calculate risk attribution consistent with your performance attribution
- Build and operate an internal performance measurement and control function

Target Audience: Investment analysts, asset managers and traders, mid-office personnel, system developers, risk managers, reporting specialists, institutional investors

Materials: Participants will receive a binder with the slides presented and access to spreadsheets containing example calculations for all models and concepts discussed.

The content of this program can be combined with content from other programs for customized **inhouse training** purposes. Please contact email@andreassteiner.net for details.

Information relating to **scheduling, course venues and pricing** for the public courses is available on www.andreassteiner.net/consulting

Day One

Welcome and Introduction

Simple Returns

- Why percentage returns?
- Calculation of simple returns
- Aggregating returns overt time
- Aggregating returns across portfolios with weighting schemes
- Single-period and multi-period returns (chain-linking)
- Average returns: arithmetic and geometric averages

Returns with Contributions

- The impact of contributions and withdrawals to capital invested
- Money-Weighted Return
    o International Rate of Return (IRR)
    o Approximations
- Time-Weighted Return
    o True TWR
    o Dietz and Modified Dietz approximations
- The relationship between MWR and TWR
- Industry trend: Going in Circles - from TWR to MWR and (maybe) back

Portfolio Accounting Basics

- Basic relationships between ending and beginning market values
- Selected issues: treatment of transaction costs, the net-of-fee and gross-of-fee perspectives and trade date versus value date
- Currency aspects: exchange rates, position and portfolio currencies

Selected Topics in Applied Return Measurement

- Position-level return calculations
- Aggregating portfolio returns
- Derivatives: Future and options, swaps, currency forwards
- Leverage and investment risk and return
- Risk and return with short positions

Investment Return Reporting and Presentation

- Reporting investment performance
    - Internal clients versus external clients
- Behavioral finance aspects
- Regulations: MiFiD and more
- Industry standards:
    - Some history
    - GIPS
    - Other standards

Exercises: Group exercises will be solved during the first day

Day Two

Performance Attribution Basics

- Return contributions: calculation, the impact of transactions, chain-linking contributions
- Active return: arithmetic and geometric
- The difference between contribution to attribution analysis
- Active investment management decisions
- Attributing time-weighted and money-weighted returns

Basic Brinson Attribution

- Deriving the Brinson decomposition
- Understanding of the Interaction effect
- Allocation with a hurdle rate (Brinson/Fachler)
- Multi-period attribution: Available alternatives, cumulative attribution effects
- Handling portfolio and benchmark investment universe mismatches
- Evaluating hierarchical investment decisions
- Evaluating non-hierarchical investment decisions
- Is there really a selection effect? Reconciling Brinson with Markowitz and making sense of the debate about the relative importance of allocation and selection
- Evaluating pure selection decisions
- Conditional attribution effects

Advanced Brinson Attribution

- Long/short attribution
- Multi-Manager attribution
- International portfolios
    - Spot currency effects
    - Expected and unexpected currency return components
    - Currency hedging
    - Karnosky/Singer attribution

Factor Attribution and Style Analysis

- Introduction to factor models
- Multi-factor attribution
- Style attribution
- Hybrid models
- Industry trend: factor-based investment strategies, smart beta

Exercises: Group exercises will be solved during the second day

Day Three

Fixed Income Attribution

- Bond valuation basics
- Introduction to the yield curve
- Fixed income return components
- Modeling duration
- Brinson-style fixed income attribution (van Breukkelen)
- Commercial fixed income attribution models

Risk Measurement and Attribution

- Introduction to measuring investment risk
  - Dispersion-based risk: Volatility and Tracking Error
  - Loss-based risk: VaR, CVaR, LPM/UPM
  - Interim risk: Drawdown, Drawdown-At-Risk, Conditional Drawdown-At-Risk
- Volatility and tracking error decomposition
- Stylized empirical facts about non-normal return distributions and non-linear dependency in financial market data
- Tail risk attribution
  - Contributions from non-normality
  - Contributions from excess kurtosis and skewness
- Risk analysis before the trade: trade-risk profiles

Risk-adjusted Performance and its Attribution

- The link between risk and return
- Industry trend: risk-based investment strategies (risk parity, Smart Beta)
- Traditional risk-adjusted measures
  - Sharpe and Information ratio, M2
  - Treynor ratio, Alpha
- Alternative risk-adjusted measures
  - Sortino Ratio, Modified Sharpe Ratio
  - Omega, Ulcer Index, Farinelli/Tibiletti Ratio, Generalized Rachev Ratio
  - Sterling Ratio, Calmar Ratio, Burke Ratio

- Risk-adjusted performance attribution: the Ankrim decomposition
- Introduction to decompositions of Information and Sharpe ratios

Performance Appraisal

- The importance of appraisal
  - For investors
  - For investment managers
  - Other stakeholders
- Quantitative methods for fraud: the Madoff case
- Benchmarking: Characteristics of good benchmarks
- Peer group analysis and potential biases
- Behavioral Finance aspects
- Performance measurement in an investment management organization

Exercises: Group exercises will be solved during the third day