

OBJECTIVES

This course will cover topics including:

- Setting Investment Objectives and constructing a universe for security selection
- Developing an Investment Hypothesis and constructing a Model to reflect this concept
- Refining the Model for security selection by reviewing investment variables
- Constructing a Portfolio, by setting constraints and optimizing the portfolio
- Being able to conceptualize the entire quantitative investment process

Course Overview: The course will be a combination of lecture, group and individual exercises, and group discussion. One case study will be used throughout the course to highlight specific learning points. S&P Research and S&P Capital IQ products will be discussed when appropriate.

This course does not teach the Standard & Poor's Credit Ratings criteria or methodologies. The instructors are independent consultants sourced through our training firm partner, Global Financial Markets Institute, Inc. The instructors teach courses on behalf of Standard & Poor's and as such, their views do not necessarily reflect the views of Standard & Poor's.

CPE Credits: 15.5

CE Credits: 15

DAY 1

Course Objectives and Participant Introduction

Session 1: Introduction

In this opening session we compare and contrast quantitative and fundamental management and explain how active managers can benefit from the use of quantitative tools. By the end of the session, participants should be able to:

- Identify advantages and disadvantages of quantitative investment
- Outline the elements of a 'quantamental' approach to investment that combines quantitative and fundamental management
- Explain what active investors must do to add value
- Discuss opportunities for adding value when markets are inefficient
- Express the problems and opportunities faced by active investors in terms of the fundamental law of active management
- List the main steps in a quantitative or quantamental investment process

Break

Group Discussion

Session 2: Developing Investment Objectives

In this session, participants will review investment managers' job functions and responsibilities, and how they are judged based on their ability to generate attractive returns relative to risk. We will discuss factors that must be considered in developing appropriate investment objectives. By the end of the session, participants should be able to:

- Define and explain the purpose of a target rate of return
- Compare and contrast absolute and relative return
- Define and interpret measures of absolute and relative risk
- Define and interpret measures of risk-adjusted return
- Discuss the use of risk-altering strategies, including leverage, long/short, derivatives and currency hedging
- Recognize the diversity of the equity investment universe in terms of geography, style and sectors
- List factors other than security selection that affect net returns to investment

Group Exercise

Lunch

Session 3: Data Selection and Pitfalls

In this session, participants will learn about the quantitative and quantamental investment strategies; and how they may be based on different types of data. We will describe the different kinds of data that are available and discuss some of the problems we may encounter in making use of them through the different strategies. By the end of the session, participants should be able to:

- Recognize common problems encountered in collecting and using data
- Identify concerns specific to company fundamental data and analysts' forecasts
- Recognize common potential biases in data and outline ways in which they may be avoided
- Explain how model risk arises and outline steps that may help mitigate its impact

Group Exercise

Session 4: Selecting Investment Factors

In this session, participants will review the models that drive quantitative investment strategies and selected investment factors attributed to each strategy (quantitative signals that are believed to be correlated with forward returns). We will introduce the main types of factors that are commonly encountered in quantitative models. By the end of the session, participants should be able to:

- List and explain the relevance of common fundamental factors linked to valuation,

- historical growth, earnings quality, capital efficiency, size and analysts' expectations
- List and explain the relevance of common technical factors, including price momentum and volatility
 - List and explain the relevance of common economic factors
 - Recognize and discuss limitations inherent in data related to each of these types of factors

Break

Group Exercise

Session 5: Developing an Investment Hypothesis

In this session, participants will review the investment ideas that may arise from many different sources. We will talk about the process of developing an investment idea and begin the search for factors (quantitative signals) that might form the basis of a quantitative strategy that implements that idea. By the end of the session, participants should be able to:

- Construct a screen to select an appropriate investment universe
- Identify sources of quantitative investment ideas
- Briefly describe key investment ideas or styles, including valuation, price momentum, earnings quality, historical growth, analysts' expectations, capital efficiency, size and volatility
- Discuss the evidence supporting valuation, momentum and earnings quality
- Use existing factor libraries as the starting point in a search for factors linked to specific investment ideas or styles

Group Exercise

Session 6: Factor Selection and Backtesting

In this session, participants will cover the many potential factors linked to most quantitative investment ideas, including good factors which will be correlated with forward returns in a stable and consistent way. We will review how backtesting on historical data can help us identify suitable factors for our strategy. By the end of the session, participants should be able to:

- Choose candidate factors for a quantitative investment idea
- Implement a factor backtest
- Interpret factor backtest results

Group Exercise

Session 7: Model Construction

In this session, participants will identify and combine candidate factors to form an investment idea which will be used to create an alpha model to hopefully predict excess active return. We

DAY 2

will discuss different methods in which this can be done. By the end of the session, participants should be able to:

- Construct a simple alpha model based on sums of ranks
- Construct an alpha model based on regression methods
- Interpret and assess the performance of alpha models

Group Exercise

Break

Session 8: Portfolio Construction

In this session, participants will use combine the information from the alpha model created in the previous session with other rules and constraints, to construct a portfolio that implements our trading strategy. We will outline the key steps in the portfolio construction process and identify factors that will affect the portfolio we create. By the end of the session, participants should be able to:

- Outline the portfolio construction and management process
- Discuss the impact of trading costs on the strategy we follow
- Discuss the impact of taxation on our investment strategy
- Show how external flows affect the portfolio
- Outline the process by which the strategy will be monitored, reallocated and rebalanced

Lunch

Group Exercise

Session 9: Strategy Simulation and Optimization

In this session, participants will use their chosen factors or alpha model to devise a trading strategy which we hope will outperform the benchmark. We will backtest this strategy - showing how it would have performed in a past period. We will also review the use of optimization techniques to help us choose a more efficient portfolio. Lastly, we will discuss the use of simulation in selecting and refining an investment strategy. By the end of the session, participants should be able to:

- Simulate a rules-based trading strategy using selected factors or an alpha model
- Understand how portfolio optimizers are used in portfolio construction
- Use risk models to forecast the factor covariance matrix
- Simulate a trading strategy using optimization, an alpha model and a specified risk model
- Recognize common pitfalls in optimization and explain how to avoid them

Group Exercise

Break

Session 10: Performance Attribution and Risk Analysis

In this final session, participants will attempt to simulate their strategies to gain an idea on how it would be expected to perform relative to the benchmark. To be confident in their strategy, however, participants will need to understand how the performance it generated was related to the active investment management decisions that we took - performance attribution. We will explain why performance attribution is important and how it is conducted. By the end of the session, participants should be able to:

- Explain what performance attribution is and why we are interested in it.
- Use Brinson attribution to analyze active return as the result of asset allocation and stock selection decisions.
- Use factor-based attribution to analyze active return in terms of risk factor bets relative to the benchmark.
- Interpret and apply factor contributions to active risk.
- Evaluate and attribute performance for quantitative trading strategies.

Group Exercise

Course Conclusion

*Course agenda is subject to change without notice.

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