

# STUDY SESSION

# 1

## Ethical and Professional Standards

The readings in this study session focus on the CFA Institute Code of Ethics and Standards of Professional Conduct (the Code and Standards) and the CFA Institute Research Objectivity Standards as guides to ethical conduct in the investment profession.

The principles and guidance presented in the CFA Institute *Standards of Practice Handbook (Handbook)* form the basis for the CFA Institute self-regulatory program to maintain the highest professional standards among investment practitioners. A clear understanding of the CFA Institute Code of Ethics and Standards of Professional Conduct (both found in the *Handbook*) should allow the practitioner to identify and appropriately resolve ethical conflicts. The resulting recognition for integrity should benefit both the individual and the profession. “Guidance” in the *Handbook* addresses the practical application of the Code of Ethics and Standards of Professional Conduct. The guidance reviews the purpose and scope of each Standard, presents recommended procedures for compliance, and provides examples of the Standard in practice.

The CFA Institute Research Objectivity Standards address issues that CFA Institute believes merit more specific guidance. They are consistent with and a complement to the CFA Institute Code of Ethics and Standards of Professional Conduct.

### READING ASSIGNMENTS

<b>Reading 1</b>	Code of Ethics and Standards of Professional Conduct <i>Standards of Practice Handbook</i> , Eleventh Edition
<b>Reading 2</b>	Guidance for Standards I–VII <i>Standards of Practice Handbook</i> , Eleventh Edition
<b>Reading 3</b>	CFA Institute Research Objectivity Standards

## LEARNING OUTCOMES

### READING 1. CODE OF ETHICS AND STANDARDS OF PROFESSIONAL CONDUCT

The candidate should be able to:

- a** describe the six components of the Code of Ethics and the seven Standards of Professional Conduct;
- b** explain the ethical responsibilities required of CFA Institute members and candidates in the CFA Program by the Code and Standards.

### READING 2. GUIDANCE FOR STANDARDS I–VII

The candidate should be able to:

- a** demonstrate a thorough knowledge of the Code of Ethics and Standards of Professional Conduct by applying the Code and Standards to specific situations;
- b** recommend practices and procedures designed to prevent violations of the Code of Ethics and Standards of Professional Conduct.

### READING 3. CFA INSTITUTE RESEARCH OBJECTIVITY STANDARDS

The candidate should be able to:

- a** explain the objectives of the Research Objectivity Standards;
- b** evaluate company policies and practices related to research objectivity, and distinguish between changes required and changes recommended for compliance with the Research Objectivity Standards.

# STUDY SESSION

# 2

## Ethical and Professional Standards

### Application

**T**his study session uses case studies as an aid to understanding and internalizing the values and standards presented in the CFA Institute Code of Ethics and Standards of Professional Conduct.

The first three readings present realistic but fictional situations that closely approximate how individuals practicing in the investment industry encounter ethical issues in their day-to-day activities. The discussions following each case identify key violations of the Standards of Professional Conduct, recommend corrective actions, and, when appropriate, present policy statements a firm could use in seeking to prevent the violations. The final two readings present regulatory actions taken in response to actual cases of violations and explain how the violations would be viewed from the perspective of the Code of Ethics and Standards of Professional Conduct.

#### READING ASSIGNMENTS

<b>Reading 4</b>	The Glenarm Company by Glen A. Holden, Jr., CFA
<b>Reading 5</b>	Preston Partners by Jules A. Huot, CFA
<b>Reading 6</b>	Super Selection by Zoe L. Van Schyndel, CFA
<b>Reading 7</b>	Trade Allocation: Fair Dealing and Disclosure
<b>Reading 8</b>	Changing Investment Objectives

## LEARNING OUTCOMES

### READING 4. THE GLENARM COMPANY

The candidate should be able to:

- a** evaluate the practices and policies presented;
- b** explain the appropriate action to take in response to conduct that violates the CFA Institute Code of Ethics and Standards of Professional Conduct.

### READING 5. PRESTON PARTNERS

The candidate should be able to:

- a** evaluate the practices and policies presented;
- b** explain the appropriate action to take in response to conduct that violates the CFA Institute Code of Ethics and Standards of Professional Conduct.

### READING 6. SUPER SELECTION

The candidate should be able to:

- a** evaluate the practices and policies presented;
- b** explain the appropriate action to take in response to conduct that violates the CFA Institute Code of Ethics and Standards of Professional Conduct.

### READING 7. TRADE ALLOCATION: FAIR DEALING AND DISCLOSURE

The candidate should be able to:

- a** evaluate trade allocation practices and determine whether they comply with the CFA Institute Standards of Professional Conduct addressing fair dealing and client loyalty;
- b** describe appropriate actions to take in response to trade allocation practices that do not adequately respect client interests.

### READING 8. CHANGING INVESTMENT OBJECTIVES

The candidate should be able to:

- a** evaluate the disclosure of investment objectives and basic policies and determine whether they comply with the CFA Institute Standards of Professional Conduct;
- b** describe appropriate actions needed to ensure adequate disclosure of the investment process.

# STUDY SESSION

# 3

## Quantitative Methods for Valuation

**T**he first reading in this study session discusses correlation and linear regression with one independent variable. The second reading discusses building and interpreting multiple regression models. These two readings present information about testing the significance of the estimated parameters and determining the validity of the assumed regression model.

The third reading discusses time-series analysis, which is used to describe the dynamic behavior of an economic or financial variable, to forecast its future values, and to detect the relationships between the time series of different variables.

The final reading introduces the use of simulation models in decision making and risk assessment.

### READING ASSIGNMENTS

<b>Reading 9</b>	Correlation and Regression by Richard A. DeFusco, CFA, Dennis W. McLeavey, CFA, Jerald E. Pinto, PhD, CFA, and David E. Runkle, PhD, CFA
<b>Reading 10</b>	Multiple Regression and Issues in Regression Analysis by Richard A. DeFusco, CFA, Dennis W. McLeavey, CFA, Jerald E. Pinto, PhD, CFA, and David E. Runkle, PhD, CFA
<b>Reading 11</b>	Time-Series Analysis by Richard A. DeFusco, CFA, Dennis W. McLeavey, CFA, Jerald E. Pinto, PhD, CFA, and David E. Runkle, PhD, CFA
<b>Reading 12</b>	Excerpt from “Probabilistic Approaches: Scenario Analysis, Decision Trees, and Simulations” by Aswath Damodaran

**LEARNING OUTCOMES****READING 9. CORRELATION AND REGRESSION**

The candidate should be able to:

- a** calculate and interpret a sample covariance and a sample correlation coefficient and interpret a scatter plot;
- b** describe limitations to correlation analysis;
- c** formulate a test of the hypothesis that the population correlation coefficient equals zero and determine whether the hypothesis is rejected at a given level of significance;
- d** distinguish between the dependent and independent variables in a linear regression;
- e** describe the assumptions underlying linear regression and interpret regression coefficients;
- f** calculate and interpret the standard error of estimate, the coefficient of determination, and a confidence interval for a regression coefficient;
- g** formulate a null and alternative hypothesis about a population value of a regression coefficient and determine the appropriate test statistic and whether the null hypothesis is rejected at a given level of significance;
- h** calculate the predicted value for the dependent variable, given an estimated regression model and a value for the independent variable;
- i** calculate and interpret a confidence interval for the predicted value of the dependent variable;
- j** describe the use of analysis of variance (ANOVA) in regression analysis, interpret ANOVA results, and calculate and interpret the  $F$ -statistic;
- k** describe limitations of regression analysis.

**READING 10. MULTIPLE REGRESSION AND ISSUES IN REGRESSION ANALYSIS**

The candidate should be able to:

- a** formulate a multiple regression equation to describe the relation between a dependent variable and several independent variables and determine the statistical significance of each independent variable;
- b** interpret estimated regression coefficients and their  $p$ -values;
- c** formulate a null and an alternative hypothesis about the population value of a regression coefficient, calculate the value of the test statistic, and determine whether to reject the null hypothesis at a given level of significance;
- d** interpret the results of hypothesis tests of regression coefficients;
- e** calculate and interpret 1) a confidence interval for the population value of a regression coefficient and 2) a predicted value for the dependent variable, given an estimated regression model and assumed values for the independent variables;
- f** explain the assumptions of a multiple regression model;
- g** calculate and interpret the  $F$ -statistic, and describe how it is used in regression analysis;
- h** distinguish between and interpret the  $R^2$  and adjusted  $R^2$  in multiple regression;

- i** evaluate how well a regression model explains the dependent variable by analyzing the output of the regression equation and an ANOVA table;
- j** formulate a multiple regression equation by using dummy variables to represent qualitative factors and interpret the coefficients and regression results;
- k** explain the types of heteroskedasticity and how heteroskedasticity and serial correlation affect statistical inference;
- l** describe multicollinearity and explain its causes and effects in regression analysis;
- m** describe how model misspecification affects the results of a regression analysis and describe how to avoid common forms of misspecification;
- n** describe models with qualitative dependent variables;
- o** evaluate and interpret a multiple regression model and its results.

## READING 11. TIME-SERIES ANALYSIS

The candidate should be able to:

- a** calculate and evaluate the predicted trend value for a time series, modeled as either a linear trend or a log-linear trend, given the estimated trend coefficients;
- b** describe factors that determine whether a linear or a log-linear trend should be used with a particular time series and evaluate limitations of trend models;
- c** explain the requirement for a time series to be covariance stationary and describe the significance of a series that is not stationary;
- d** describe the structure of an autoregressive (AR) model of order  $p$  and calculate one- and two-period-ahead forecasts given the estimated coefficients;
- e** explain how autocorrelations of the residuals can be used to test whether the autoregressive model fits the time series;
- f** explain mean reversion and calculate a mean-reverting level;
- g** contrast in-sample and out-of-sample forecasts and compare the forecasting accuracy of different time-series models based on the root mean squared error criterion;
- h** explain the instability of coefficients of time-series models;
- i** describe characteristics of random walk processes and contrast them to covariance stationary processes;
- j** describe implications of unit roots for time-series analysis, explain when unit roots are likely to occur and how to test for them, and demonstrate how a time series with a unit root can be transformed so it can be analyzed with an AR model;
- k** describe the steps of the unit root test for nonstationarity and explain the relation of the test to autoregressive time-series models;
- l** explain how to test and correct for seasonality in a time-series model and calculate and interpret a forecasted value using an AR model with a seasonal lag;
- m** explain autoregressive conditional heteroskedasticity (ARCH) and describe how ARCH models can be applied to predict the variance of a time series;
- n** explain how time-series variables should be analyzed for nonstationarity and/or cointegration before use in a linear regression;
- o** determine an appropriate time-series model to analyze a given investment problem and justify that choice.

**READING 12. EXCERPT FROM “PROBABILISTIC APPROACHES: SCENARIO ANALYSIS, DECISION TREES, AND SIMULATIONS”**

The candidate should be able to:

- a** describe steps in running a simulation;
- b** explain three ways to define the probability distributions for a simulation’s variables;
- c** describe how to treat correlation across variables in a simulation;
- d** describe advantages of using simulations in decision making;
- e** describe some common constraints introduced into simulations;
- f** describe issues in using simulations in risk assessment;
- g** compare scenario analysis, decision trees, and simulations.

# STUDY SESSION

# 4

## Economics for Valuation

**T**his study session builds on the principles of economics from Level I and links them to the valuation process.

The first reading describes theories of exchange rate determination and how these can be used to forecast exchange rates. Analysts and portfolio managers need to evaluate the currency risks faced by the companies they analyze and the portfolios they manage. This reading lays a foundation for understanding management of a portfolio's currency risk.

The second reading describes factors affecting economic growth and how economic growth affects investment decisions and stock market valuation. The final reading in the study session describes regulation, its purposes, and its potential effects on a company's operating environment.

### READING ASSIGNMENTS

<b>Reading 13</b>	Currency Exchange Rates: Determination and Forecasting by Michael R. Rosenberg and William A. Barker, CFA
<b>Reading 14</b>	Economic Growth and the Investment Decision by Paul Kutasovic, PhD, CFA
<b>Reading 15</b>	Economics of Regulation by Chester S. Spatt, PhD

**LEARNING OUTCOMES****READING 13. CURRENCY EXCHANGE RATES: DETERMINATION AND FORECASTING**

The candidate should be able to:

- a** calculate and interpret the bid–ask spread on a spot or forward foreign currency quotation and describe the factors that affect the bid–offer spread;
- b** identify a triangular arbitrage opportunity and calculate its profit, given the bid–offer quotations for three currencies;
- c** distinguish between spot and forward rates and calculate the forward premium/discount for a given currency;
- d** calculate the mark-to-market value of a forward contract;
- e** explain international parity relations (covered and uncovered interest rate parity, purchasing power parity, and the international Fisher effect);
- f** describe relations among the international parity conditions;
- g** evaluate the use of the current spot rate, the forward rate, purchasing power parity, and uncovered interest parity to forecast future spot exchange rates;
- h** explain approaches to assessing the long-run fair value of an exchange rate;
- i** describe the carry trade and its relation to uncovered interest rate parity and calculate the profit from a carry trade;
- j** explain how flows in the balance of payment accounts affect currency exchange rates;
- k** describe the Mundell–Fleming model, the monetary approach, and the asset market (portfolio balance) approach to exchange rate determination;
- l** forecast the direction of the expected change in an exchange rate based on balance of payment, Mundell–Fleming, monetary, and asset market approaches to exchange rate determination;
- m** explain the potential effects of monetary and fiscal policy on exchange rates;
- n** describe objectives of central bank intervention and capital controls and describe the effectiveness of intervention and capital controls;
- o** describe warning signs of a currency crisis;
- p** describe uses of technical analysis in forecasting exchange rates.

**READING 14. ECONOMIC GROWTH AND THE INVESTMENT DECISION**

The candidate should be able to:

- a** compare factors favoring and limiting economic growth in developed and developing economies;
- b** describe the relation between the long-run rate of stock market appreciation and the sustainable growth rate of the economy;
- c** explain why potential GDP and its growth rate matter for equity and fixed income investors;
- d** distinguish between capital deepening investment and technological progress and explain how each affects economic growth and labor productivity;
- e** forecast potential GDP based on growth accounting relations;

- f** explain how natural resources affect economic growth and evaluate the argument that limited availability of natural resources constrains economic growth;
- g** explain how demographics, immigration, and labor force participation affect the rate and sustainability of economic growth;
- h** explain how investment in physical capital, human capital, and technological development affects economic growth;
- i** compare classical growth theory, neoclassical growth theory, and endogenous growth theory;
- j** explain and evaluate convergence hypotheses;
- k** describe the economic rationale for governments to provide incentives to private investment in technology and knowledge;
- l** describe the expected impact of removing trade barriers on capital investment and profits, employment and wages, and growth in the economies involved.

### READING 15. ECONOMICS OF REGULATION

The candidate should be able to:

- a** describe classifications of regulations and regulators;
- b** describe uses of self-regulation in financial markets;
- c** describe the economic rationale for regulatory intervention;
- d** describe regulatory interdependencies and their effects;
- e** describe tools of regulatory intervention in markets;
- f** explain purposes in regulating commerce and financial markets;
- g** describe anticompetitive behaviors targeted by antitrust laws globally and evaluate the antitrust risk associated with a given business strategy;
- h** describe benefits and costs of regulation;
- i** evaluate how a specific regulation affects an industry, company, or security.

## Financial Reporting and Analysis

### Intercorporate Investments, Post-Employment and Share- Based Compensation, and Multinational Operations

Intercorporate investments receive different accounting treatment depending on the percentage ownership, amount of control, and other variables that define the relationship between the company making the investment (the investor) and the investee. An analysis of intercorporate investments is necessary to separate operating performance from investing performance and to understand the potential accounting distortions that arise as a result of accounting standards and/or earnings management.

Mergers and acquisitions are important strategic considerations that affect financial statements and ratios. The structure and scope of business combinations create comparability challenges because the financial statements of the acquiring company may be radically changed. An analyst must understand how business combinations, including full consolidation and proportionate consolidation, affect the comparability of financial statements and ratios.

IFRS and US GAAP require the reporting of net obligations (or net assets) for pensions and other post-employment benefits on the balance sheet. IFRS and US GAAP may differ in their treatment of periodic pension costs and reporting of pension expenses. Analysts must also understand how the accounting treatment of employee stock options affects financial statements.

Multinational companies often have subsidiaries in different countries that maintain their books and records in currencies different from that of the parent company. Floating exchange rates present an additional challenge. Foreign currency transactions and translations in a parent company's financial statements must be analyzed to evaluate a company's performance and financial position.

**Note:** New rulings and/or pronouncements issued after the publication of the readings in financial reporting and analysis may cause some of the information in these readings to become dated. Candidates are expected to be familiar with the overall analytical framework contained in the study session readings, as well as the implications of alternative accounting methods for financial analysis and valuation, as provided in the assigned readings. Candidates are not responsible for changes that occur after the material was written.

**READING ASSIGNMENTS**

<b>Reading 16</b>	Intercorporate Investments by Susan Perry Williams, CPA, CMA, PhD
<b>Reading 17</b>	Employee Compensation: Post-Employment and Share-Based by Elaine Henry, PhD, CFA, and Elizabeth A. Gordon, PhD, MBA
<b>Reading 18</b>	Multinational Operations by Timothy S. Douppnik, PhD, and Elaine Henry, PhD, CFA

**LEARNING OUTCOMES****READING 16. INTERCORPORATE INVESTMENTS**

The candidate should be able to:

- a** describe the classification, measurement, and disclosure under International Financial Reporting Standards (IFRS) for 1) investments in financial assets, 2) investments in associates, 3) joint ventures, 4) business combinations, and 5) special purpose and variable interest entities;
- b** distinguish between IFRS and US GAAP in the classification, measurement, and disclosure of investments in financial assets, investments in associates, joint ventures, business combinations, and special purpose and variable interest entities;
- c** analyze how different methods used to account for intercorporate investments affect financial statements and ratios.

**READING 17. EMPLOYEE COMPENSATION: POST-EMPLOYMENT AND SHARE-BASED**

The candidate should be able to:

- a** describe the types of post-employment benefit plans and implications for financial reports;
- b** explain and calculate measures of a defined benefit pension obligation (i.e., present value of the defined benefit obligation and projected benefit obligation) and net pension liability (or asset);
- c** describe the components of a company's defined benefit pension costs;
- d** explain and calculate the effect of a defined benefit plan's assumptions on the defined benefit obligation and periodic pension cost;
- e** explain and calculate how adjusting for items of pension and other post-employment benefits that are reported in the notes to the financial statements affects financial statements and ratios;
- f** interpret pension plan note disclosures including cash flow related information;
- g** explain issues associated with accounting for share-based compensation;
- h** explain how accounting for stock grants and stock options affects financial statements, and the importance of companies' assumptions in valuing these grants and options.

## READING 18. MULTINATIONAL OPERATIONS

The candidate should be able to:

- a** distinguish among presentation (reporting) currency, functional currency, and local currency;
- b** describe foreign currency transaction exposure, including accounting for and disclosures about foreign currency transaction gains and losses;
- c** analyze how changes in exchange rates affect the translated sales of the subsidiary and parent company;
- d** compare the current rate method and the temporal method, evaluate how each affects the parent company's balance sheet and income statement, and determine which method is appropriate in various scenarios;
- e** calculate the translation effects and evaluate the translation of a subsidiary's balance sheet and income statement into the parent company's presentation currency;
- f** analyze how the current rate method and the temporal method affect financial statements and ratios;
- g** analyze how alternative translation methods for subsidiaries operating in hyperinflationary economies affect financial statements and ratios;
- h** describe how multinational operations affect a company's effective tax rate;
- i** explain how changes in the components of sales affect the sustainability of sales growth;
- j** analyze how currency fluctuations potentially affect financial results, given a company's countries of operation.

# STUDY SESSION

# 6

## Financial Reporting and Analysis

### Quality of Financial Reports and Financial Statement Analysis

**T**his study session focuses on evaluating the quality of financial reports and applying financial statement analysis techniques. The first reading shows the application of a conceptual framework to assessing the quality of a company's financial reports. The second reading uses mini-cases to demonstrate the application of a framework for analyzing financial statements.

#### READING ASSIGNMENTS

<b>Reading 19</b>	Evaluating Quality of Financial Reports by Jack T. Ciesielski, Jr., CPA, CFA, Elaine Henry, PhD, CFA, and Thomas I. Selling, PhD, CPA
<b>Reading 20</b>	Integration of Financial Statement Analysis Techniques by Jack T. Ciesielski, Jr., CPA, CFA

#### LEARNING OUTCOMES

##### READING 19. EVALUATING QUALITY OF FINANCIAL REPORTS

The candidate should be able to:

- a** demonstrate the use of a conceptual framework for assessing the quality of a company's financial reports;
- b** explain potential problems that affect the quality of financial reports;
- c** describe how to evaluate the quality of a company's financial reports;
- d** evaluate the quality of a company's financial reports;
- e** describe the concept of sustainable (persistent) earnings;
- f** describe indicators of earnings quality;

**Note:** New rulings and/or pronouncements issued after the publication of the readings in financial reporting and analysis may cause some of the information in these readings to become dated. Candidates are expected to be familiar with the overall analytical framework contained in the study session readings, as well as the implications of alternative accounting methods for financial analysis and valuation, as provided in the assigned readings. Candidates are not responsible for changes that occur after the material was written.

- g** explain mean reversion in earnings and how the accruals component of earnings affects the speed of mean reversion;
- h** evaluate the earnings quality of a company;
- i** describe indicators of cash flow quality;
- j** evaluate the cash flow quality of a company;
- k** describe indicators of balance sheet quality;
- l** evaluate the balance sheet quality of a company;
- m** describe sources of information about risk.

## READING 20. INTEGRATION OF FINANCIAL STATEMENT ANALYSIS TECHNIQUES

The candidate should be able to:

- a** demonstrate the use of a framework for the analysis of financial statements, given a particular problem, question, or purpose (e.g., valuing equity based on comparables, critiquing a credit rating, obtaining a comprehensive picture of financial leverage, evaluating the perspectives given in management's discussion of financial results);
- b** identify financial reporting choices and biases that affect the quality and comparability of companies' financial statements and explain how such biases may affect financial decisions;
- c** evaluate the quality of a company's financial data and recommend appropriate adjustments to improve quality and comparability with similar companies, including adjustments for differences in accounting standards, methods, and assumptions;
- d** evaluate how a given change in accounting standards, methods, or assumptions affects financial statements and ratios;
- e** analyze and interpret how balance sheet modifications, earnings normalization, and cash flow statement related modifications affect a company's financial statements, financial ratios, and overall financial condition.

# STUDY SESSION

# 7

## Corporate Finance

**T**his study session first presents capital budgeting analysis, focusing on the application of concepts in the corporate finance decision-making process. These capital budgeting principles are critical for an analyst inside a company preparing capital budgeting recommendations as well as for an external analyst estimating the value of the company.

The remainder of the study session covers capital structure and dividend policy. The presentation of capital structure starts with the classic Modigliani–Miller irrelevance proposition. This proposition states that a company’s value is not affected by capital structure choices. The reading then considers how the optimal capital structure is affected by taxes, agency costs, and the possibility of financial distress. The reading on dividend policy discusses the company’s choice between reinvesting or distributing earnings and the choice between paying cash dividends and repurchasing shares. Analysts are interested in capital structure and dividend policies because of their effect on the risk and return characteristics of corporate equities and bonds.

### READING ASSIGNMENTS

<b>Reading 21</b>	Capital Budgeting by John D. Stowe, PhD, CFA, and Jacques R. Gagné, FSA, CFA, CIPM
<b>Reading 22</b>	Capital Structure by Raj Aggarwal, PhD, CFA, Pamela Peterson Drake, PhD, CFA, Adam Kobor, CFA, and Gregory Noronha, PhD, CFA
<b>Reading 23</b>	Dividends and Share Repurchases: Analysis by Gregory Noronha, PhD, CFA, and George H. Troughton, PhD, CFA

**LEARNING OUTCOMES****READING 21. CAPITAL BUDGETING**

The candidate should be able to:

- a** calculate the yearly cash flows of expansion and replacement capital projects and evaluate how the choice of depreciation method affects those cash flows;
- b** explain how inflation affects capital budgeting analysis;
- c** evaluate capital projects and determine the optimal capital project in situations of 1) mutually exclusive projects with unequal lives, using either the least common multiple of lives approach or the equivalent annual annuity approach, and 2) capital rationing;
- d** explain how sensitivity analysis, scenario analysis, and Monte Carlo simulation can be used to assess the stand-alone risk of a capital project;
- e** explain and calculate the discount rate, based on market risk methods, to use in valuing a capital project;
- f** describe types of real options and evaluate a capital project using real options;
- g** describe common capital budgeting pitfalls;
- h** calculate and interpret accounting income and economic income in the context of capital budgeting;
- i** distinguish among the economic profit, residual income, and claims valuation models for capital budgeting and evaluate a capital project using each.

**READING 22. CAPITAL STRUCTURE**

The candidate should be able to:

- a** explain the Modigliani–Miller propositions regarding capital structure, including the effects of leverage, taxes, financial distress, agency costs, and asymmetric information on a company’s cost of equity, cost of capital, and optimal capital structure;
- b** describe target capital structure and explain why a company’s actual capital structure may fluctuate around its target;
- c** describe the role of debt ratings in capital structure policy;
- d** explain factors an analyst should consider in evaluating the effect of capital structure policy on valuation;
- e** describe international differences in the use of financial leverage, factors that explain these differences, and implications of these differences for investment analysis.

**READING 23. DIVIDENDS AND SHARE REPURCHASES: ANALYSIS**

The candidate should be able to:

- a** compare theories of dividend policy and explain implications of each for share value given a description of a corporate dividend action;
- b** describe types of information (signals) that dividend initiations, increases, decreases, and omissions may convey;
- c** explain how clientele effects and agency issues may affect a company’s payout policy;

- d** explain factors that affect dividend policy;
- e** calculate and interpret the effective tax rate on a given currency unit of corporate earnings under double taxation, dividend imputation, and split-rate tax systems;
- f** compare stable dividend, constant dividend payout ratio, and residual dividend payout policies, and calculate the dividend under each policy;
- g** explain the choice between paying cash dividends and repurchasing shares;
- h** describe broad trends in corporate dividend policies;
- i** calculate and interpret dividend coverage ratios based on 1) net income and 2) free cash flow;
- j** identify characteristics of companies that may not be able to sustain their cash dividend.

# STUDY SESSION

# 8

## Corporate Finance

### Financing and Control Issues

**T**his study session presents two major organizational topics of corporate finance. First, corporate governance covers the system of principles and policies used to manage conflicts of interest among various groups of stakeholders of a corporation. Second, mergers and acquisitions and corporate restructurings, which redistribute ownership and control, are analyzed.

#### READING ASSIGNMENTS

<b>Reading 24</b>	Corporate Performance, Governance, and Business Ethics by Charles W.L. Hill and Gareth R. Jones
<b>Reading 25</b>	Corporate Governance by Rebecca Todd McEnally, PhD, CFA, and Kenneth Kim, PhD
<b>Reading 26</b>	Mergers and Acquisitions by Rosita P. Chang, PhD, CFA, and Keith M. Moore, CFA

#### LEARNING OUTCOMES

#### READING 24. CORPORATE PERFORMANCE, GOVERNANCE, AND BUSINESS ETHICS

The candidate should be able to:

- a** compare interests of key stakeholder groups and explain the purpose of a stakeholder impact analysis;
- b** discuss problems that can arise in principal–agent relationships and mechanisms that may mitigate such problems;

- c discuss roots of unethical behavior and how managers might ensure that ethical issues are considered in business decision making;
- d compare the Friedman doctrine, Utilitarianism, Kantian Ethics, and Rights and Justice Theories as approaches to ethical decision making.

## READING 25. CORPORATE GOVERNANCE

The candidate should be able to:

- a describe objectives and core attributes of an effective corporate governance system and evaluate whether a company's corporate governance has those attributes;
- b compare major business forms and describe the conflicts of interest associated with each;
- c explain conflicts that arise in agency relationships, including manager–shareholder conflicts and director–shareholder conflicts;
- d describe responsibilities of the board of directors and explain qualifications and core competencies that an investment analyst should look for in the board of directors;
- e explain effective corporate governance practice as it relates to the board of directors and evaluate strengths and weaknesses of a company's corporate governance practice;
- f describe elements of a company's statement of corporate governance policies that investment analysts should assess;
- g describe environmental, social, and governance risk exposures;
- h explain the valuation implications of corporate governance.

## READING 26. MERGERS AND ACQUISITIONS

The candidate should be able to:

- a classify merger and acquisition (M&A) activities based on forms of integration and relatedness of business activities;
- b explain common motivations behind M&A activity;
- c explain bootstrapping of earnings per share (EPS) and calculate a company's post-merger EPS;
- d explain, based on industry life cycles, the relation between merger motivations and types of mergers;
- e contrast merger transaction characteristics by form of acquisition, method of payment, and attitude of target management;
- f distinguish among pre-offer and post-offer takeover defense mechanisms;
- g calculate and interpret the Herfindahl–Hirschman Index and evaluate the likelihood of an antitrust challenge for a given business combination;
- h compare the discounted cash flow, comparable company, and comparable transaction analyses for valuing a target company, including the advantages and disadvantages of each;
- i calculate free cash flows for a target company and estimate the company's intrinsic value based on discounted cash flow analysis;
- j estimate the value of a target company using comparable company and comparable transaction analyses;

- k** evaluate a takeover bid and calculate the estimated post-acquisition value of an acquirer and the gains accrued to the target shareholders versus the acquirer shareholders;
- l** explain how price and payment method affect the distribution of risks and benefits in M&A transactions;
- m** describe characteristics of M&A transactions that create value;
- n** distinguish among equity carve-outs, spin-offs, split-offs, and liquidation;
- o** explain common reasons for restructuring.

# STUDY SESSION

# 9

## Equity Valuation

### Valuation Concepts

**T**his study session lays a foundation for the study of equity valuation. The first reading provides an overview of major themes and important models in equity valuation. The final reading presents topics relating to returns and discount rates, which are essential to equity valuation.

#### READING ASSIGNMENTS

<b>Reading 27</b>	Equity Valuation: Applications and Processes by Jerald E. Pinto, PhD, CFA, Elaine Henry, PhD, CFA, Thomas R. Robinson, PhD, CFA, and John D. Stowe, PhD, CFA
<b>Reading 28</b>	Return Concepts by Jerald E. Pinto, PhD, CFA, Elaine Henry, PhD, CFA, Thomas R. Robinson, PhD, CFA, and John D. Stowe, PhD, CFA

#### LEARNING OUTCOMES

#### READING 27. EQUITY VALUATION: APPLICATIONS AND PROCESSES

The candidate should be able to:

- a** define valuation and intrinsic value and explain sources of perceived mispricing;
- b** explain the going concern assumption and contrast a going concern value to a liquidation value;
- c** describe definitions of value and justify which definition of value is most relevant to public company valuation;

- d** describe applications of equity valuation;
- e** describe questions that should be addressed in conducting an industry and competitive analysis;
- f** contrast absolute and relative valuation models and describe examples of each type of model;
- g** describe sum-of-the-parts valuation and conglomerate discounts;
- h** explain broad criteria for choosing an appropriate approach for valuing a given company.

## READING 28. RETURN CONCEPTS

The candidate should be able to:

- a** distinguish among realized holding period return, expected holding period return, required return, return from convergence of price to intrinsic value, discount rate, and internal rate of return;
- b** calculate and interpret an equity risk premium using historical and forward-looking estimation approaches;
- c** estimate the required return on an equity investment using the capital asset pricing model, the Fama–French model, the Pastor–Stambaugh model, macro-economic multifactor models, and the build-up method (e.g., bond yield plus risk premium);
- d** explain beta estimation for public companies, thinly traded public companies, and nonpublic companies;
- e** describe strengths and weaknesses of methods used to estimate the required return on an equity investment;
- f** explain international considerations in required return estimation;
- g** explain and calculate the weighted average cost of capital for a company;
- h** evaluate the appropriateness of using a particular rate of return as a discount rate, given a description of the cash flow to be discounted and other relevant facts.

## STUDY SESSION

# 10

## Equity Valuation

### Industry and Company Analysis and Discounted Dividend Valuation

**T**his study session provides insights on equity valuation models, including developing inputs for those models. Analyzing industries in a global context and evaluating competitive forces that will affect returns provide a foundation for security valuation decisions. Discounted dividend models are examined in detail.

#### READING ASSIGNMENTS

- |                   |  |
|-------------------|--|
| <b>Reading 29</b> | Industry and Company Analysis<br>by Matthew L. Coffina, CFA, Anthony M. Fiore, CFA, and<br>Antonius J. van Ooijen, CFA                                 |
| <b>Reading 30</b> | Discounted Dividend Valuation<br>by Jerald E. Pinto, PhD, CFA, Elaine Henry, PhD, CFA,<br>Thomas R. Robinson, PhD, CFA, and<br>John D. Stowe, PhD, CFA |

#### LEARNING OUTCOMES

##### READING 29. INDUSTRY AND COMPANY ANALYSIS

The candidate should be able to:

- a** compare top-down, bottom-up, and hybrid approaches for developing inputs to equity valuation models;
- b** compare “growth relative to GDP growth” and “market growth and market share” approaches to forecasting revenue;
- c** evaluate whether economies of scale are present in an industry by analyzing operating margins and sales levels;

- d** forecast the following costs: cost of goods sold, selling general and administrative costs, financing costs, and income taxes;
- e** describe approaches to balance sheet modeling;
- f** describe the relationship between return on invested capital and competitive advantage;
- g** explain how competitive factors affect prices and costs;
- h** judge the competitive position of a company based on a Porter's five forces analysis;
- i** explain how to forecast industry and company sales and costs when they are subject to price inflation or deflation;
- j** evaluate the effects of technological developments on demand, selling prices, costs, and margins;
- k** explain considerations in the choice of an explicit forecast horizon;
- l** explain an analyst's choices in developing projections beyond the short-term forecast horizon;
- m** demonstrate the development of a sales-based pro forma company model.

### READING 30. DISCOUNTED DIVIDEND VALUATION

The candidate should be able to:

- a** compare dividends, free cash flow, and residual income as inputs to discounted cash flow models and identify investment situations for which each measure is suitable;
- b** calculate and interpret the value of a common stock using the dividend discount model (DDM) for single and multiple holding periods;
- c** calculate the value of a common stock using the Gordon growth model and explain the model's underlying assumptions;
- d** calculate and interpret the implied growth rate of dividends using the Gordon growth model and current stock price;
- e** calculate and interpret the present value of growth opportunities (PVGO) and the component of the leading price-to-earnings ratio (P/E) related to PVGO;
- f** calculate and interpret the justified leading and trailing P/Es using the Gordon growth model;
- g** calculate the value of noncallable fixed-rate perpetual preferred stock;
- h** describe strengths and limitations of the Gordon growth model and justify its selection to value a company's common shares;
- i** explain the assumptions and justify the selection of the two-stage DDM, the H-model, the three-stage DDM, or spreadsheet modeling to value a company's common shares;
- j** explain the growth phase, transitional phase, and maturity phase of a business;
- k** describe terminal value and explain alternative approaches to determining the terminal value in a DDM;
- l** calculate and interpret the value of common shares using the two-stage DDM, the H-model, and the three-stage DDM;
- m** estimate a required return based on any DDM, including the Gordon growth model and the H-model;

- n** explain the use of spreadsheet modeling to forecast dividends and to value common shares;
- o** calculate and interpret the sustainable growth rate of a company and demonstrate the use of DuPont analysis to estimate a company's sustainable growth rate;
- p** evaluate whether a stock is overvalued, fairly valued, or undervalued by the market based on a DDM estimate of value.

# STUDY SESSION

# 11

## Equity Valuation

### Free Cash Flow and Other Valuation Models

**T**his study session presents additional valuation methods for estimating a company's intrinsic value. The first reading addresses the free cash flow approach to valuation, which is an important alternative to the dividend discount model. The second reading discusses price and enterprise multiples, which are widely used valuation measures. In the third reading, residual income models are discussed as an approach to valuation in which accounting income is adjusted to reflect a deduction for the opportunity cost of capital. The final reading is an introduction to how private companies are valued.

#### READING ASSIGNMENTS

- |                   |  |
|-------------------|--|
| <b>Reading 31</b> | Free Cash Flow Valuation<br>by Jerald E. Pinto, PhD, CFA, Elaine Henry, PhD, CFA,<br>Thomas R. Robinson, PhD, CFA, and John D.<br>Stowe, PhD, CFA  |
| <b>Reading 32</b> | Market-Based Valuation: Price and Enterprise Value<br>Multiples<br>by Jerald E. Pinto, PhD, CFA, Elaine Henry, PhD, CFA,<br>Thomas R. Robinson, PhD, CFA, and John D.<br>Stowe, PhD, CFA |
| <b>Reading 33</b> | Residual Income Valuation<br>by Jerald E. Pinto, PhD, CFA, Elaine Henry, PhD, CFA,<br>Thomas R. Robinson, PhD, CFA, and John D.<br>Stowe, PhD, CFA                                       |
| <b>Reading 34</b> | Private Company Valuation<br>by Raymond D. Rath, ASA, CFA  |

**LEARNING OUTCOMES****READING 31. FREE CASH FLOW VALUATION**

The candidate should be able to:

- a** compare the free cash flow to the firm (FCFF) and free cash flow to equity (FCFE) approaches to valuation;
- b** explain the ownership perspective implicit in the FCFE approach;
- c** explain the appropriate adjustments to net income, earnings before interest and taxes (EBIT), earnings before interest, taxes, depreciation, and amortization (EBITDA), and cash flow from operations (CFO) to calculate FCFF and FCFE;
- d** calculate FCFF and FCFE;
- e** describe approaches for forecasting FCFF and FCFE;
- f** compare the FCFE model and dividend discount models;
- g** explain how dividends, share repurchases, share issues, and changes in leverage may affect future FCFF and FCFE;
- h** evaluate the use of net income and EBITDA as proxies for cash flow in valuation;
- i** explain the single-stage (stable-growth), two-stage, and three-stage FCFF and FCFE models and select and justify the appropriate model given a company's characteristics;
- j** estimate a company's value using the appropriate free cash flow model(s);
- k** explain the use of sensitivity analysis in FCFF and FCFE valuations;
- l** describe approaches for calculating the terminal value in a multistage valuation model;
- m** evaluate whether a stock is overvalued, fairly valued, or undervalued based on a free cash flow valuation model.

**READING 32. MARKET-BASED VALUATION: PRICE AND ENTERPRISE VALUE MULTIPLES**

The candidate should be able to:

- a** distinguish between the method of comparables and the method based on forecasted fundamentals as approaches to using price multiples in valuation, and explain economic rationales for each approach;
- b** calculate and interpret a justified price multiple;
- c** describe rationales for and possible drawbacks to using alternative price multiples and dividend yield in valuation;
- d** calculate and interpret alternative price multiples and dividend yield;
- e** calculate and interpret underlying earnings, explain methods of normalizing earnings per share (EPS), and calculate normalized EPS;
- f** explain and justify the use of earnings yield (E/P);
- g** describe fundamental factors that influence alternative price multiples and dividend yield;
- h** calculate and interpret the justified price-to-earnings ratio (P/E), price-to-book ratio (P/B), and price-to-sales ratio (P/S) for a stock, based on forecasted fundamentals;

- i** calculate and interpret a predicted P/E, given a cross-sectional regression on fundamentals, and explain limitations to the cross-sectional regression methodology;
- j** evaluate a stock by the method of comparables and explain the importance of fundamentals in using the method of comparables;
- k** calculate and interpret the P/E-to-growth ratio (PEG) and explain its use in relative valuation;
- l** calculate and explain the use of price multiples in determining terminal value in a multistage discounted cash flow (DCF) model;
- m** explain alternative definitions of cash flow used in price and enterprise value (EV) multiples and describe limitations of each definition;
- n** calculate and interpret EV multiples and evaluate the use of EV/EBITDA;
- o** explain sources of differences in cross-border valuation comparisons;
- p** describe momentum indicators and their use in valuation;
- q** explain the use of the arithmetic mean, the harmonic mean, the weighted harmonic mean, and the median to describe the central tendency of a group of multiples;
- r** evaluate whether a stock is overvalued, fairly valued, or undervalued based on comparisons of multiples.

### READING 33. RESIDUAL INCOME VALUATION

The candidate should be able to:

- a** calculate and interpret residual income, economic value added, and market value added;
- b** describe the uses of residual income models;
- c** calculate the intrinsic value of a common stock using the residual income model and compare value recognition in residual income and other present value models;
- d** explain fundamental determinants of residual income;
- e** explain the relation between residual income valuation and the justified price-to-book ratio based on forecasted fundamentals;
- f** calculate and interpret the intrinsic value of a common stock using single-stage (constant-growth) and multistage residual income models;
- g** calculate the implied growth rate in residual income, given the market price-to-book ratio and an estimate of the required rate of return on equity;
- h** explain continuing residual income and justify an estimate of continuing residual income at the forecast horizon, given company and industry prospects;
- i** compare residual income models to dividend discount and free cash flow models;
- j** explain strengths and weaknesses of residual income models and justify the selection of a residual income model to value a company's common stock;
- k** describe accounting issues in applying residual income models;
- l** evaluate whether a stock is overvalued, fairly valued, or undervalued based on a residual income model.

**READING 34. PRIVATE COMPANY VALUATION**

The candidate should be able to:

- a** compare public and private company valuation;
- b** describe uses of private business valuation and explain applications of greatest concern to financial analysts;
- c** explain various definitions of value and demonstrate how different definitions can lead to different estimates of value;
- d** explain the income, market, and asset-based approaches to private company valuation and factors relevant to the selection of each approach;
- e** explain cash flow estimation issues related to private companies and adjustments required to estimate normalized earnings;
- f** calculate the value of a private company using free cash flow, capitalized cash flow, and/or excess earnings methods;
- g** explain factors that require adjustment when estimating the discount rate for private companies;
- h** compare models used to estimate the required rate of return to private company equity (for example, the CAPM, the expanded CAPM, and the build-up approach);
- i** calculate the value of a private company based on market approach methods and describe advantages and disadvantages of each method;
- j** describe the asset-based approach to private company valuation;
- k** explain and evaluate the effects on private company valuations of discounts and premiums based on control and marketability;
- l** describe the role of valuation standards in valuing private companies.

## STUDY SESSION

# 12

## Fixed Income Valuation Concepts

**T**his study session covers essential knowledge and skills needed for the valuation of fixed-income investments. The first reading discusses the term structure of interest rates and interest rate dynamics. The second reading addresses arbitrage-free valuation of fixed-income securities.

### READING ASSIGNMENTS

- |                   |   |
|-------------------|---|
| <b>Reading 35</b> | The Term Structure and Interest Rate Dynamics<br>by Thomas S.Y. Ho, PhD, Sang Bin Lee, PhD, and Stephen E. Wilcox, PhD, CFA |
| <b>Reading 36</b> | The Arbitrage-Free Valuation Framework<br>by Steven V. Mann, PhD  |

### LEARNING OUTCOMES

#### READING 35. THE TERM STRUCTURE AND INTEREST RATE DYNAMICS

The candidate should be able to:

- a** describe relationships among spot rates, forward rates, yield to maturity, expected and realized returns on bonds, and the shape of the yield curve;
- b** describe the forward pricing and forward rate models and calculate forward and spot prices and rates using those models;
- c** describe how zero-coupon rates (spot rates) may be obtained from the par curve by bootstrapping;

- d** describe the assumptions concerning the evolution of spot rates in relation to forward rates implicit in active bond portfolio management;
- e** describe the strategy of riding the yield curve;
- f** explain the swap rate curve and why and how market participants use it in valuation;
- g** calculate and interpret the swap spread for a given maturity;
- h** describe the Z-spread;
- i** describe the TED and Libor–OIS spreads;
- j** explain traditional theories of the term structure of interest rates and describe the implications of each theory for forward rates and the shape of the yield curve;
- k** describe modern term structure models and how they are used;
- l** explain how a bond's exposure to each of the factors driving the yield curve can be measured and how these exposures can be used to manage yield curve risks;
- m** explain the maturity structure of yield volatilities and their effect on price volatility.

### READING 36. THE ARBITRAGE-FREE VALUATION FRAMEWORK

The candidate should be able to:

- a** explain what is meant by arbitrage-free valuation of a fixed-income instrument;
- b** calculate the arbitrage-free value of an option-free, fixed-rate coupon bond;
- c** describe a binomial interest rate tree framework;
- d** describe the backward induction valuation methodology and calculate the value of a fixed-income instrument given its cash flow at each node;
- e** describe the process of calibrating a binomial interest rate tree to match a specific term structure;
- f** compare pricing using the zero-coupon yield curve with pricing using an arbitrage-free binomial lattice;
- g** describe pathwise valuation in a binomial interest rate framework and calculate the value of a fixed-income instrument given its cash flows along each path;
- h** describe a Monte Carlo forward-rate simulation and its application.

## STUDY SESSION

# 13

## Topics in Fixed Income Analysis

**T**his study session builds on the valuation concepts introduced in the previous study session. The first reading introduces valuation techniques for valuing bonds with embedded options. The second reading discusses credit risk and how it affects the valuation of fixed-income securities, credit analysis models, and how credit spreads are affected by liquidity. The final reading discusses credit default swaps.

### READING ASSIGNMENTS

<b>Reading 37</b>	Valuation and Analysis: Bonds with Embedded Options by Leslie Abreo, MFE, Ioannis Georgiou, CFA, and Andrew Kalotay, PhD
<b>Reading 38</b>	Credit Analysis Models by Robert A. Jarrow, PhD, and Donald R. van Deventer, PhD
<b>Reading 39</b>	Credit Default Swaps by Brian Rose and Don M. Chance, PhD, CFA

### LEARNING OUTCOMES

#### READING 37. VALUATION AND ANALYSIS: BONDS WITH EMBEDDED OPTIONS

The candidate should be able to:

- a** describe fixed-income securities with embedded options;
- b** explain the relationships between the values of a callable or puttable bond, the underlying option-free (straight) bond, and the embedded option;

- c describe how the arbitrage-free framework can be used to value a bond with embedded options;
- d explain how interest rate volatility affects the value of a callable or puttable bond;
- e explain how changes in the level and shape of the yield curve affect the value of a callable or puttable bond;
- f calculate the value of a callable or puttable bond from an interest rate tree;
- g explain the calculation and use of option-adjusted spreads;
- h explain how interest rate volatility affects option-adjusted spreads;
- i calculate and interpret effective duration of a callable or puttable bond;
- j compare effective durations of callable, puttable, and straight bonds;
- k describe the use of one-sided durations and key rate durations to evaluate the interest rate sensitivity of bonds with embedded options;
- l compare effective convexities of callable, puttable, and straight bonds;
- m describe defining features of a convertible bond;
- n calculate and interpret the components of a convertible bond's value;
- o describe how a convertible bond is valued in an arbitrage-free framework;
- p compare the risk–return characteristics of a convertible bond with the risk–return characteristics of a straight bond and of the underlying common stock.

## READING 38. CREDIT ANALYSIS MODELS

The candidate should be able to:

- a explain probability of default, loss given default, expected loss, and present value of the expected loss and describe the relative importance of each across the credit spectrum;
- b explain credit scoring and credit ratings, including why they are called ordinal rankings;
- c explain strengths and weaknesses of credit ratings;
- d explain structural models of corporate credit risk, including why equity can be viewed as a call option on the company's assets;
- e explain reduced form models of corporate credit risk, including why debt can be valued as the sum of expected discounted cash flows after adjusting for risk;
- f explain assumptions, strengths, and weaknesses of both structural and reduced form models of corporate credit risk;
- g explain the determinants of the term structure of credit spreads;
- h calculate and interpret the present value of the expected loss on a bond over a given time horizon;
- i compare the credit analysis required for asset-backed securities to analysis of corporate debt.

## READING 39. CREDIT DEFAULT SWAPS

The candidate should be able to:

- a describe credit default swaps (CDS), single-name and index CDS, and the parameters that define a given CDS product;

- b** describe credit events and settlement protocols with respect to CDS;
- c** explain the principles underlying, and factors that influence, the market's pricing of CDS;
- d** describe the use of CDS to manage credit exposures and to express views regarding changes in shape and/or level of the credit curve;
- e** describe the use of CDS to take advantage of valuation disparities among separate markets, such as bonds, loans, equities, and equity-linked instruments.

## Derivative Instruments

### Valuation and Strategies

**T**his study session examines derivative investments: forwards and options. It focuses on pricing, valuation, and strategies.

#### READING ASSIGNMENTS

- |                   |   |
|-------------------|---|
| <b>Reading 40</b> | Pricing and Valuation of Forward Commitments<br>by Robert E. Brooks, PhD, CFA, and Barbara Valbuzzi, CFA    |
| <b>Reading 41</b> | Valuation of Contingent Claims<br>by Robert E. Brooks, PhD, CFA, and David Maurice Gentle,<br>MEc, BSc, CFA |
| <b>Reading 42</b> | Derivatives Strategies<br>by Robert A. Strong, PhD, CFA, and Russell A. Rhoads, CFA                         |

#### LEARNING OUTCOMES

##### READING 40. PRICING AND VALUATION OF FORWARD COMMITMENTS

The candidate should be able to:

- a** describe and compare how equity, interest rate, fixed-income, and currency forward and futures contracts are priced and valued;
- b** calculate and interpret the no-arbitrage value of equity, interest rate, fixed-income, and currency forward and futures contracts;

- c describe and compare how interest rate, currency, and equity swaps are priced and valued;
- d calculate and interpret the no-arbitrage value of interest rate, currency, and equity swaps.

## READING 41. VALUATION OF CONTINGENT CLAIMS

The candidate should be able to

- a describe and interpret the binomial option valuation model and its component terms;
- b calculate the no-arbitrage values of European and American options using a two-period binomial model;
- c identify an arbitrage opportunity involving options and describe the related arbitrage;
- d describe how interest rate options are valued using a two-period binomial model;
- e calculate and interpret the value of an interest rate option using a two-period binomial model;
- f describe how the value of a European option can be analyzed as the present value of the option's expected payoff at expiration;
- g identify assumptions of the Black–Scholes–Merton option valuation model;
- h interpret the components of the Black–Scholes–Merton model as applied to call options in terms of a leveraged position in the underlying;
- i describe how the Black–Scholes–Merton model is used to value European options on equities and currencies;
- j describe how the Black model is used to value European options on futures;
- k describe how the Black model is used to value European interest rate options and European swaptions;
- l interpret each of the option Greeks;
- m describe how a delta hedge is executed;
- n describe the role of gamma risk in options trading;
- o define implied volatility and explain how it is used in options trading.

## READING 42. DERIVATIVES STRATEGIES

The candidate should be able to:

- a describe how interest rate, currency, and equity swaps, futures, and forwards can be used to modify risk and return;
- b describe how to replicate an asset by using options and by using cash plus forwards or futures;
- c describe the investment objectives, structure, payoff, and risk(s) of a covered call position;
- d describe the investment objectives, structure, payoff, and risks(s) of a protective put position;
- e calculate and interpret the value at expiration, profit, maximum profit, maximum loss, and breakeven underlying price at expiration for covered calls and protective puts;

- f** contrast protective put and covered call positions to being long an asset and short a forward on the asset;
- g** describe the investment objective(s), structure, payoffs, and risks of the following option strategies: bull spread, bear spread, collar, and straddle;
- h** calculate and interpret the value at expiration, profit, maximum profit, maximum loss, and breakeven underlying price at expiration of the following option strategies: bull spread, bear spread, collar, and straddle;
- i** describe uses of calendar spreads;
- j** identify and evaluate appropriate derivatives strategies consistent with given investment objectives.

## STUDY SESSION

# 15

## Alternative Investments

**T**his study session discusses the following categories of alternative investments: real estate, private equity, and commodities. Real estate investments, both private investment and investment through publicly traded securities, are described, and methods for analysis and evaluation are presented. Private equity, including venture capital and leveraged buyouts, is examined from the perspectives of a private equity firm evaluating equity investments for its portfolio and an investor evaluating participation in a private equity fund. The study session concludes with a discussion of commodities and commodity derivatives.

### READING ASSIGNMENTS

- |                   |   |
|-------------------|---|
| <b>Reading 43</b> | Private Real Estate Investments<br>by Jeffery D. Fisher and Bryan D. MacGregor, PhD, MRICS,<br>MRTPI                  |
| <b>Reading 44</b> | Publicly Traded Real Estate Securities<br>by Anthony Paolone, CFA, Ian Rossa O'Reilly, CFA, and<br>David Kruth, CFA   |
| <b>Reading 45</b> | Private Equity Valuation<br>by Yves Courtois, CMT, CFA, and Tim Jenkinson, PhD  |
| <b>Reading 46</b> | Commodities and Commodity Derivatives: An Introduction<br>by David Burkart, CFA, and James Alan Finnegan, RMA,<br>CFA |

**LEARNING OUTCOMES****READING 43. PRIVATE REAL ESTATE INVESTMENTS**

The candidate should be able to:

- a** classify and describe basic forms of real estate investments;
- b** describe the characteristics, the classification, and basic segments of real estate;
- c** explain the role in a portfolio, economic value determinants, investment characteristics, and principal risks of private real estate;
- d** describe commercial property types, including their distinctive investment characteristics;
- e** compare the income, cost, and sales comparison approaches to valuing real estate properties;
- f** estimate and interpret the inputs (for example, net operating income, capitalization rate, and discount rate) to the direct capitalization and discounted cash flow valuation methods;
- g** calculate the value of a property using the direct capitalization and discounted cash flow valuation methods;
- h** compare the direct capitalization and discounted cash flow valuation methods;
- i** calculate the value of a property using the cost and sales comparison approaches;
- j** describe due diligence in private equity real estate investment;
- k** discuss private equity real estate investment indices, including their construction and potential biases;
- l** explain the role in a portfolio, the major economic value determinants, investment characteristics, principal risks, and due diligence of private real estate debt investment;
- m** calculate and interpret financial ratios used to analyze and evaluate private real estate investments.

**READING 44. PUBLICLY TRADED REAL ESTATE SECURITIES**

The candidate should be able to:

- a** describe types of publicly traded real estate securities;
- b** explain advantages and disadvantages of investing in real estate through publicly traded securities;
- c** explain economic value determinants, investment characteristics, principal risks, and due diligence considerations for real estate investment trust (REIT) shares;
- d** describe types of REITs;
- e** justify the use of net asset value per share (NAVPS) in REIT valuation and estimate NAVPS based on forecasted cash net operating income;
- f** describe the use of funds from operations (FFO) and adjusted funds from operations (AFFO) in REIT valuation;
- g** compare the net asset value, relative value (price-to-FFO and price-to-AFFO), and discounted cash flow approaches to REIT valuation;
- h** calculate the value of a REIT share using net asset value, price-to-FFO and price-to-AFFO, and discounted cash flow approaches.

## READING 45. PRIVATE EQUITY VALUATION

The candidate should be able to:

- a explain sources of value creation in private equity;
- b explain how private equity firms align their interests with those of the managers of portfolio companies;
- c distinguish between the characteristics of buyout and venture capital investments;
- d describe valuation issues in buyout and venture capital transactions;
- e explain alternative exit routes in private equity and their impact on value;
- f explain private equity fund structures, terms, valuation, and due diligence in the context of an analysis of private equity fund returns;
- g explain risks and costs of investing in private equity;
- h interpret and compare financial performance of private equity funds from the perspective of an investor;
- i calculate management fees, carried interest, net asset value, distributed to paid in (DPI), residual value to paid in (RVPI), and total value to paid in (TVPI) of a private equity fund;

### A Note on Valuation of Venture Capital Deals: (Appendix 45)

- j calculate pre-money valuation, post-money valuation, ownership fraction, and price per share applying the venture capital method 1) with single and multiple financing rounds and 2) in terms of IRR;
- k demonstrate alternative methods to account for risk in venture capital.

## READING 46. COMMODITIES AND COMMODITY DERIVATIVES: AN INTRODUCTION

The candidate should be able to

- a compare characteristics of commodity sectors;
- b compare the life cycle of commodity sectors from production through trading or consumption;
- c contrast the valuation of commodities with the valuation of equities and bonds;
- d describe types of participants in commodity futures markets;
- e analyze the relationship between spot prices and expected future prices in markets in contango and markets in backwardation;
- f compare theories of commodity futures returns;
- g describe, calculate, and interpret the components of total return for a fully collateralized commodity futures contract;
- h contrast roll return in markets in contango and markets in backwardation;
- i describe how commodity swaps are used to obtain or modify exposure to commodities;
- j describe how the construction of commodity indexes affects index returns.

## STUDY SESSION

# 16

## Portfolio Management

### Process, Asset Allocation, and Risk Management

**T**he first reading in this study session explains the portfolio management process. The second reading describes multifactor models of asset returns and selected applications of such models. The final reading introduces investment risk measurement and management.

#### READING ASSIGNMENTS

<b>Reading 47</b>	The Portfolio Management Process and the Investment Policy Statement by John L. Maginn, CFA, Donald L. Tuttle, PhD, CFA, Dennis W. McLeavey, CFA, and Jerald E. Pinto, PhD, CFA
<b>Reading 48</b>	An Introduction to Multifactor Models by Jerald E. Pinto, PhD, CFA, and Eugene L. Podkaminer, CFA
<b>Reading 49</b>	Measuring and Managing Market Risk by Don M. Chance, PhD, CFA, and Michelle McCarthy

#### LEARNING OUTCOMES

##### READING 47. THE PORTFOLIO MANAGEMENT PROCESS AND THE INVESTMENT POLICY STATEMENT

The candidate should be able to:

- a** explain the importance of the portfolio perspective;
- b** describe the steps of the portfolio management process and the components of those steps;

- c** explain the role of the investment policy statement in the portfolio management process and describe the elements of an investment policy statement;
- d** explain how capital market expectations and the investment policy statement help influence the strategic asset allocation decision and how an investor's investment time horizon may influence the investor's strategic asset allocation;
- e** define investment objectives and constraints and explain and distinguish among the types of investment objectives and constraints;
- f** contrast the types of investment time horizons, determine the time horizon for a particular investor, and evaluate the effects of this time horizon on portfolio choice;
- g** justify ethical conduct as a requirement for managing investment portfolios.

### READING 48. AN INTRODUCTION TO MULTIFACTOR MODELS

The candidate should be able to:

- a** describe arbitrage pricing theory (APT), including its underlying assumptions and its relation to multifactor models;
- b** define arbitrage opportunity and determine whether an arbitrage opportunity exists;
- c** calculate the expected return on an asset given an asset's factor sensitivities and the factor risk premiums;
- d** describe and compare macroeconomic factor models, fundamental factor models, and statistical factor models;
- e** explain sources of active risk and interpret tracking risk and the information ratio;
- f** describe uses of multifactor models and interpret the output of analyses based on multifactor models;
- g** describe the potential benefits for investors in considering multiple risk dimensions when modeling asset returns.

### READING 49. MEASURING AND MANAGING MARKET RISK

The candidate should be able to:

- a** explain the use of value at risk (VaR) in measuring portfolio risk;
- b** compare the parametric (variance–covariance), historical simulation, and Monte Carlo simulation methods for estimating VaR;
- c** estimate and interpret VaR under the parametric, historical simulation, and Monte Carlo simulation methods;
- d** describe advantages and limitations of VaR;
- e** describe extensions of VaR;
- f** describe sensitivity risk measures and scenario risk measures and compare these measures to VaR;
- g** demonstrate how equity, fixed-income, and options exposure measures may be used in measuring and managing market risk and volatility risk;
- h** describe the use of sensitivity risk measures and scenario risk measures;
- i** describe advantages and limitations of sensitivity risk measures and scenario risk measures;

- j** describe risk measures used by banks, asset managers, pension funds, and insurers;
- k** explain constraints used in managing market risks, including risk budgeting, position limits, scenario limits, and stop-loss limits;
- l** explain how risk measures may be used in capital allocation decisions.

# STUDY SESSION

# 17

## Portfolio Management

### Economic Analysis, Active Management, and Trading

The first reading in the study session discusses fundamental relationships between economics and investment markets and how the economy affects asset values. The second reading introduces quantitative analysis of active portfolio management and its relevance to portfolio construction and evaluation. The final reading describes developments in equity trading.

#### READING ASSIGNMENTS

<b>Reading 50</b>	Economics and Investment Markets by Andrew Clare, PhD, and Thomas F. Cosimano, PhD
<b>Reading 51</b>	Analysis of Active Portfolio Management by Roger G. Clarke, PhD, Harindra de Silva, PhD, CFA, and Steven Thorley, PhD, CFA
<b>Reading 52</b>	Algorithmic Trading and High-Frequency Trading by John Bates, PhD

#### LEARNING OUTCOMES

##### READING 50. ECONOMICS AND INVESTMENT MARKETS

The candidate should be able to:

- a** explain the notion that to affect market values, economic factors must affect one or more of the following: (1) default-free interest rates across maturities, (2) the timing and/or magnitude of expected cash flows, and (3) risk premiums;
- b** explain the role of expectations and changes in expectations in market valuation;

- c** explain the relationship between the long-term growth rate of the economy, the volatility of the growth rate, and the average level of real short-term interest rates;
- d** explain how the phase of the business cycle affects policy and short-term interest rates, the slope of the term structure of interest rates, and the relative performance of bonds of differing maturities;
- e** describe the factors that affect yield spreads between non-inflation-adjusted and inflation-indexed bonds;
- f** explain how the phase of the business cycle affects credit spreads and the performance of credit-sensitive fixed-income instruments;
- g** explain how the characteristics of the markets for a company's products affect the company's credit quality;
- h** explain how the phase of the business cycle affects short-term and long-term earnings growth expectations;
- i** explain the relationship between the consumption-hedging properties of equity and the equity risk premium;
- j** describe cyclical effects on valuation multiples;
- k** describe the implications of the business cycle for a given style strategy (value, growth, small capitalization, large capitalization);
- l** describe how economic analysis is used in sector rotation strategies;
- m** describe the economic factors affecting investment in commercial real estate.

## READING 51. ANALYSIS OF ACTIVE PORTFOLIO MANAGEMENT

The candidate should be able to:

- a** describe how value added by active management is measured;
- b** calculate and interpret the information ratio (*ex post* and *ex ante*) and contrast it to the Sharpe ratio;
- c** state and interpret the fundamental law of active portfolio management including its component terms—transfer coefficient, information coefficient, breadth, and active risk (aggressiveness);
- d** explain how the information ratio may be useful in investment manager selection and choosing the level of active portfolio risk;
- e** compare active management strategies (including market timing and security selection) and evaluate strategy changes in terms of the fundamental law of active management;
- f** describe the practical strengths and limitations of the fundamental law of active management.

## READING 52. ALGORITHMIC TRADING AND HIGH-FREQUENCY TRADING

The candidate should be able to:

- a** define algorithmic trading;
- b** distinguish between execution algorithms and high-frequency trading algorithms;
- c** describe types of execution algorithms and high-frequency trading algorithms;

- d** describe market fragmentation and its effects on how trades are placed;
- e** describe the use of technology in risk management and regulatory oversight;
- f** describe issues and concerns related to the impact of algorithmic and high-frequency trading on securities markets.