STUDY SESSION

1

Ethical and Professional Standards

The readings in this study session address the CFA Institute Code of Ethics and Standards of Professional Conduct (Code and Standards. The Code and Standards provide guidance to help identify and resolve ethical conflicts present in everyday activities in the investment profession. "Guidance" in the *Standards of Practice Handbook* addresses the practical application of the Code and Standards by reviewing the purpose and scope of each Standard, presenting recommended procedures for compliance, and providing examples of the Standard in practice.

READING ASSIGNMENTS

Reading 1	Code of Ethics and Standards of Professional Conduct *Standards of Practice Handbook*, Eleventh Edition
Reading 2	Guidance for Standards I–VII *Standards of Practice Handbook*, Eleventh Edition
Reading 3	Application of the Code and Standards: Level II

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.

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READING 2. GUIDANCE FOR STANDARDS I–VII

The candidate should be able to:

a demonstrate a thorough knowledge of the CFA Institute 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. APPLICATION OF THE CODE AND STANDARDS: LEVEL II

The candidate should be able to:

a evaluate practices, policies, and conduct relative to the CFA Institute Code of Ethics and Standards of Professional Conduct;

b explain how the practices, policies, and conduct do or do not violate the CFA Institute Code of Ethics and Standards of Professional Conduct.

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STUDY SESSION

2

Quantitative Methods (1)

This study session provides coverage on how linear regression and time-series analysis are used as tools in financial analysis for identifying relationships among variables. The session begins by examining linear regression with a single (independent) variable to explain or predict the value of another (dependent) variable. Multiple regression, using more than one independent variable to explain or predict a dependent variable, is explored next. Time-series analysis, in which the dependent variable's past values are included as independent variables, concludes the session.

READING ASSIGNMENTS

Reading 4	Introduction to Linear Regression by Richard A. DeFusco, PhD, CFA, Dennis W. McLeavey, DBA, CFA, Jerald E. Pinto, PhD, CFA, and David E. Runkle, PhD, CFA
Reading 5	Multiple Regression by Richard A. DeFusco, PhD, CFA, Dennis W. McLeavey, DBA, CFA, Jerald E. Pinto, PhD, CFA, and David E. Runkle, PhD, CFA
Reading 6	Time-Series Analysis by Richard A. DeFusco, PhD, CFA, Dennis W. McLeavey, DBA, CFA, Jerald E. Pinto, PhD, CFA, and David E. Runkle, PhD, CFA

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LEARNING OUTCOMES

READING 4. INTRODUCTION TO LINEAR REGRESSION

The candidate should be able to:

a distinguish between the dependent and independent variables in a linear regression;

b explain the assumptions underlying linear regression and interpret regression coefficients;

c calculate and interpret the standard error of estimate, the coefficient of determination, and a confidence interval for a regression coefficient;

d 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;

e calculate the predicted value for the dependent variable, given an estimated regression model and a value for the independent variable;

f calculate and interpret a confidence interval for the predicted value of the dependent variable;

g describe the use of analysis of variance (ANOVA) in regression analysis, interpret ANOVA results, and calculate and interpret the F-statistic;

h describe limitations of regression analysis.

READING 5. MULTIPLE REGRESSION

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;

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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 6. 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.

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STUDY SESSION

3

Quantitative Methods (2)

This study session provides coverage on techniques that underlie how financial technology (fintech) is affecting areas within the investment industry, such as investment analysis, automated advice, and risk management. The first reading introduces techniques in machine learning (ML) that involve clustering, simplifying, classifying, and predicting relationships in the large datasets that are often found in finance. The next reading examines how data projects involving large datasets are structured with an application to sentiment analysis in investment analysis using machine learning techniques for natural language processing (NLP). The session concludes with coverage of probability-based techniques for assessing risk, with a focus on simulation models.

READING ASSIGNMENTS

Reading 7	Machine Learning by Kathleen DeRose, CFA, and Christophe Le Lannou
Reading 8	Big Data Projects by Sree Mallikarjun, PhD, and Ahmed Abbasi, PhD
Reading 9	Excerpt from "Probabilistic Approaches: Scenario Analysis, Decision Trees, and Simulations" by Aswath Damodaran

LEARNING OUTCOMES

READING 7. MACHINE LEARNING

The candidate should be able to:

a distinguish between supervised machine learning, unsupervised machine learning, and deep learning;

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b describe overfitting and identify methods of addressing it;

c describe supervised machine learning algorithms—including penalized regression, support vector machine, k-nearest neighbor, classification and regression tree, ensemble learning, and random forest—and determine the problems for which they are best suited;

d describe unsupervised machine learning algorithms—including principal components analysis, k-means clustering, and hierarchical clustering—and determine the problems for which they are best suited;

e describe neural networks, deep learning nets, and reinforcement learning.

READING 8. BIG DATA PROJECTS

The candidate should be able to:

a state and explain steps in a data analysis project;

b describe objectives, steps, and examples of preparing and wrangling data;

c describe objectives, methods, and examples of data exploration;

d describe objectives, steps, and techniques in model training;

e describe preparing, wrangling, and exploring text-based data for financial forecasting;

f describe methods for extracting, selecting and engineering features from textual data;

g evaluate the fit of a machine learning algorithm.

READING 9. 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.

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STUDY SESSION

4

Economics

This study session begins with fundamental foreign exchange concept and theories of exchange rate determination. As a means to understanding exchange rate risk exposures, discussion centers on theoretical long-term equilibrium values. International parity conditions and the carry trade are described. Both direct (capital controls, foreign exchange intervention) and indirect (monetary, fiscal policy) exchange rate influencers are considered. A discussion of long-term growth and its relationship to investment returns follows. The three theories of growth (classical, neoclassical, endogenous) are presented. The session concludes with an overview of regulation, including the types of regulation, roles played by regulation, and considerations to use when evaluating the effects of regulation on an industry.

READING ASSIGNMENTS

Reading 10	Currency Exchange Rates: Understanding Equilibrium Value by Michael R. Rosenberg and William A. Barker, PhD, CFA
Reading 11	Economic Growth and the Investment Decision by Paul R. Kutasovic, PhD, CFA
Reading 12	Economics of Regulation by Chester S. Spatt, PhD

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LEARNING OUTCOMES

READING 10. CURRENCY EXCHANGE RATES: UNDERSTANDING EQUILIBRIUM VALUE

The candidate should be able to:

a calculate and interpret the bid–offer spread on a spot or forward 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 conditions (covered and uncovered interest rate parity, forward 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 explain the potential effects of monetary and fiscal policy on exchange rates;

l describe objectives of central bank or government intervention and capital controls and describe the effectiveness of intervention and capital controls;

m describe warning signs of a currency crisis.

READING 11. 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;

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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 12. ECONOMICS OF REGULATION

The candidate should be able to:

a describe the economic rationale for regulatory intervention;

b explain the purposes of regulating commerce and financial markets;

c describe anticompetitive behaviors targeted by antitrust laws globally and evaluate the antitrust risk associated with a given business strategy;

d describe classifications of regulations and regulators;

e describe uses of self-regulation in financial markets;

f describe regulatory interdependencies and their effects;

g describe tools of regulatory intervention in markets;

h describe benefits and costs of regulation;

i describe the considerations when evaluating the effects of regulation on an industry.

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STUDY SESSION

5

Financial Reporting and Analysis (1)

This study session covers investments in other companies, post-employment benefits, and foreign currency transactions. Intercorporate investments take the form of investments in 1) financial assets, 2) associates, 3) joint ventures, 4) business combinations, and 5) special purpose and variable interest entities. Current and new reporting standards for these investments are examined. The valuation and treatment of post-employment benefits follows, including share-based compensation (grants, options). Differences in valuation methods between defined-contribution and defined-benefit plans are described. The effect of foreign currency on a business's financials and methods to translate foreign currency from operations for consolidated financial statement reporting is examined. Analysis of financial institutions, including factors for consideration and an analysis approach (CAMELS), concludes the session.

Note: Changes in accounting standards as well as new rulings and/or pronouncements issued after the publication of the readings on financial reporting and analysis may cause some of the information in these readings to become dated. Candidates are *not* responsible for anything that occurs after the readings were published. In addition, candidates are expected to be familiar with the analytical frameworks contained in the readings, as well as the implications of alternative accounting methods for financial analysis and valuation discussed in the readings. Candidates are also responsible for the content of accounting standards, but not for the actual reference numbers. Finally, candidates should be aware that certain ratios may be defined and calculated differently. When alternative ratio definitions exist and no specific definition is given, candidates should use the ratio definitions emphasized in the readings.

READING ASSIGNMENTS

Reading 13	Intercorporate Investments by Susan Perry Williams, CPA, CMA, PhD
Reading 14	Employee Compensation: Post-Employment and Share-Based by Elaine Henry, PhD, CFA, and Elizabeth A. Gordon, PhD, MBA, CPA
Reading 15	Multinational Operations by Timothy S. Doupnik, PhD, and Elaine Henry, PhD, CFA
Reading 16	Analysis of Financial Institutions by Jack T. Ciesielski, CPA, CFA, and Elaine Henry, PhD, CFA

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LEARNING OUTCOMES

READING 13. 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 14. 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 15. 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;

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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.

READING 16. ANALYSIS OF FINANCIAL INSTITUTIONS

The candidate should be able to:

a describe how financial institutions differ from other companies;

b describe key aspects of financial regulations of financial institutions;

c explain the CAMELS (capital adequacy, asset quality, management, earnings, liquidity, and sensitivity) approach to analyzing a bank, including key ratios and its limitations;

d describe other factors to consider in analyzing a bank;

e analyze a bank based on financial statements and other factors;

f describe key ratios and other factors to consider in analyzing an insurance company.

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STUDY SESSION

6

Financial Reporting and Analysis (2)

This study session focuses on evaluating financial reporting quality and applying financial analysis techniques to investment decisions. A conceptual framework for assessing the quality of a company's financial reports, including the quality of earnings, is provided. Indicators of low quality reporting, including quality of earnings, cash flow, and balance sheet are examined. The session concludes with mini cases, which demonstrate the value in applying financial statement analysis to inform practical investment decisions.

Note: Changes in accounting standards as well as new rulings and/or pronouncements issued after the publication of the readings on financial reporting and analysis may cause some of the information in these readings to become dated. Candidates are *not* responsible for anything that occurs after the readings were published. In addition, candidates are expected to be familiar with the analytical frameworks contained in the readings, as well as the implications of alternative accounting methods for financial analysis and valuation discussed in the readings. Candidates are also responsible for the content of accounting standards, but not for the actual reference numbers. Finally, candidates should be aware that certain ratios may be defined and calculated differently. When alternative ratio definitions exist and no specific definition is given, candidates should use the ratio definitions emphasized in the readings.

READING ASSIGNMENTS

Reading 17	Evaluating Quality of Financial Reports by Jack T. Ciesielski, CPA, CFA, Elaine Henry, PhD, CFA, and Thomas I. Selling, PhD, CPA
Reading 18	Integration of Financial Statement Analysis Techniques by Jack T. Ciesielski, CPA, CFA

LEARNING OUTCOMES

READING 17. 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;

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e describe the concept of sustainable (persistent) earnings;

f describe indicators of earnings quality;

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 18. 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.

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STUDY SESSION

7

Corporate Finance (1)

This study session covers the capital budgeting process with emphasis on its principles and investment decision criteria. Project evaluation through the use of spreadsheet modeling is presented. Other income and valuation model approaches are compared. The subject of capital structure is introduced with the classic Modigliani–Miller irrelevance theory, which proposes that capital structure decisions should have no effect on company value. Additional considerations of taxes, agency costs, and financial distress are introduced. The session concludes with discussion on dividend policies, factors affecting distribution or reinvestment, and dividend payout or share repurchase decisions.

READING ASSIGNMENTS

Reading 19	Capital Budgeting by John D. Stowe, PhD, CFA, and Jacques R. Gagné, FSA, CFA, CIPM
Reading 20	Capital Structure by Raj Aggarwal, PhD, CFA, Pamela Peterson Drake, PhD, CFA, Adam Kobor, PhD, CFA, and Gregory Noronha, PhD, CFA
Reading 21	Analysis of Dividends and Share Repurchases by Gregory Noronha, PhD, CFA, and George H. Troughton, PhD, CFA

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LEARNING OUTCOMES

READING 19. 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 20. 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 21. ANALYSIS OF DIVIDENDS AND SHARE REPURCHASES

The candidate should be able to:

a describe the expected effect of regular cash dividends, extra dividends, liquidating dividends, stock dividends, stock splits, and reverse stock splits on shareholders' wealth and a company's financial ratios;

b compare theories of dividend policy and explain implications of each for share value given a description of a corporate dividend action;

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c describe types of information (signals) that dividend initiations, increases, decreases, and omissions may convey;

d explain how clientele effects and agency costs may affect a company's payout policy;

e explain factors that affect dividend policy in practice;

f 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;

g compare stable dividend, constant dividend payout ratio, and residual dividend payout policies, and calculate the dividend under each policy;

h compare share repurchase methods;

i calculate and compare the effect of a share repurchase on earnings per share when 1) the repurchase is financed with the company's surplus cash and 2) the company uses debt to finance the repurchase;

j calculate the effect of a share repurchase on book value per share;

k explain the choice between paying cash dividends and repurchasing shares;

l describe broad trends in corporate payout policies;

m calculate and interpret dividend coverage ratios based on 1) net income and 2) free cash flow;

n identify characteristics of companies that may not be able to sustain their cash dividend.

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STUDY SESSION

8

Corporate Finance (2)

This study session presents two major organizational topics of corporate finance. The first topic presented is environmental, social, and governance (ESG) considerations in investment analysis. The process for identifying ESG-related risks and opportunities relevant to security analysis are described. ESG considerations provide analysts with a broader perspective of the risks and investment opportunities of a company's securities. Next, mergers, acquisitions, and corporate restructurings—which create changes in ownership and control—are examined to determine whether 1) value is created from the transaction and 2) acquisition price is justified by the transaction's benefits.

READING ASSIGNMENTS

Reading 22	Corporate Governance and Other ESG Considerations in Investment Analysis by Deborah S. Kidd, CFA, Young Lee, CFA, and Johan Vanderlugt
Reading 23	Mergers and Acquisitions by Rosita P. Chang, PhD, CFA, and Keith M. Moore, CFA

LEARNING OUTCOMES

READING 22. CORPORATE GOVERNANCE AND OTHER ESG CONSIDERATIONS IN INVESTMENT ANALYSIS

The candidate should be able to:

a describe global variations in ownership structures and the possible effects of these variations on corporate governance policies and practices;

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b evaluate the effectiveness of a company's corporate governance policies and practices;

c describe how ESG-related risk exposures and investment opportunities may be identified and evaluated;

d evaluate ESG risk exposures and investment opportunities related to a company.

READING 23. 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.

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STUDY SESSION

9

Equity Valuation (1)

This study session introduces essential equity valuation concepts. The various definitions of value and the application of equity valuation techniques to solve everyday problems are first discussed. A five-step equity valuation process is then described with the three main categories of equity valuation models (absolute, relative, total entity) presented in step three. Key return measures including the equity risk premium and derivation of the equity required return using various models (CAPM, multifactor, build up) conclude the session.

READING ASSIGNMENTS

Reading 24	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
Reading 25	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 24. EQUITY VALUATION: APPLICATIONS AND PROCESSES

The candidate should be able to:

a define valuation and intrinsic value and explain sources of perceived mispricing;

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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 25. 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, macroeconomic 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.

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STUDY SESSION

10

Equity Valuation (2)

This study session focuses on financial modeling including the development of forecast model inputs using available industry and corporate information. Approaches for analyzing key balance sheet, income, and cash flow statement items are presented. Other factors affecting financial forecasts such as competition, inflation, deflation, and technology are considered. An example using pro forma financial statements to build a financial model is shown. The session ends with coverage of discounted cash flow (DCF) valuation models and an emphasis on the dividend discount model (DDM).

READING ASSIGNMENTS

Reading 26	Industry and Company Analysis by Matthew L. Coffina, CFA, Anthony M. Fiore, CFA, and Antonius J. van Ooijen, MSc, CFA
Reading 27	Discounted Dividend Valuation by Jerald E. Pinto, PhD, CFA, Elaine Henry, PhD, CFA, Thomas R. Robinson, PhD, CFA, and John D. Stowe, PhD, CFA

LEARNING OUTCOMES

READING 26. 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;

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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 27. 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, transition 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;

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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.

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STUDY SESSION

11

Equity Valuation (3)

This study session presents additional valuation methods for estimating a company's intrinsic value. The free cash flow model, which takes available cash flows for distribution as the basis for valuation, is presented as an alternative to the dividend discount model, which uses actual dividends distributed. Relative valuation, using price and enterprise value multiples and which includes the comparables and forecasted fundamentals methods, comes next. Residual income valuation, useful when dividends or cash flows are minimal or volatile, or when difficulties exist in forecasting long-term terminal values, follows. The main approaches for valuing private company equity (income, market, asset based) conclude the session.

READING ASSIGNMENTS

Reading 28	Free Cash Flow Valuation by Jerald E. Pinto, PhD, CFA, Elaine Henry, PhD, CFA, Thomas R. Robinson, PhD, CFA, and John D. Stowe, PhD, CFA
Reading 29	Market-Based Valuation: Price and Enterprise Value Multiples by Jerald E. Pinto, PhD, CFA, Elaine Henry, PhD, CFA, Thomas R. Robinson, PhD, CFA, and John D. Stowe, PhD, CFA
Reading 30	Residual Income Valuation by Jerald E. Pinto, PhD, CFA, Elaine Henry, PhD, CFA, Thomas R. Robinson, PhD, CFA, and John D. Stowe, PhD, CFA
Reading 31	Private Company Valuation by Raymond D. Rath, ASA, CFA

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LEARNING OUTCOMES

READING 28. 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 29. 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;

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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 30. 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.

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READING 31. 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.

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STUDY SESSION

12

Fixed Income (1)

This study session introduces the yield curve and key relationships underlying its composition. Traditional and modern theories and models explaining the shape of the yield curve are presented. An arbitrage-free framework using observed market prices is introduced for valuing option-free bonds. This approach also holds for more complex valuation of bonds with embedded options and other bond types.

READING ASSIGNMENTS

Reading 32	The Term Structure and Interest Rate Dynamics by Thomas S.Y. Ho, PhD, Sang Bin Lee, PhD, and Stephen E. Wilcox, PhD, CFA
Reading 33	The Arbitrage-Free Valuation Framework by Steven V. Mann, PhD

LEARNING OUTCOMES

READING 32. 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;

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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 33. 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.

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STUDY SESSION

13

Fixed Income (2)

This study session continues use of the binomial valuation method to value bonds with embedded options. Sensitivity to interest rates and interest rate volatility are key considerations. Option-adjusted spreads are introduced for the evaluation of risky bonds. Credit analysis concepts, tools, and applications are then discussed along with the term structure of credit spreads. The study session concludes with credit default swaps and their use in managing credit exposure.

READING ASSIGNMENTS

Reading 34	Valuation and Analysis of Bonds with Embedded Options by Leslie Abreo, MFE, Ioannis Georgiou, CFA, and Andrew Kalotay, PhD
Reading 35	Credit Analysis Models by James F. Adams, PhD, CFA, and Donald J. Smith, PhD
Reading 36	Credit Default Swaps by Brian Rose and Don M. Chance, PhD, CFA

LEARNING OUTCOMES

READING 34. VALUATION AND ANALYSIS OF 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 putable bond, the underlying option-free (straight) bond, and the embedded option;

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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 putable bond;

e explain how changes in the level and shape of the yield curve affect the value of a callable or putable bond;

f calculate the value of a callable or putable 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 putable bond;

j compare effective durations of callable, putable, 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, putable, and straight bonds;

m calculate the value of a capped or floored floating-rate bond;

n describe defining features of a convertible bond;

o calculate and interpret the components of a convertible bond's value;

p describe how a convertible bond is valued in an arbitrage-free framework;

q 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 35. CREDIT ANALYSIS MODELS

The candidate should be able to:

a explain expected exposure, the loss given default, the probability of default, and the credit valuation adjustment;

b explain credit scores and credit ratings;

c calculate the expected return on a bond given transition in its credit rating;

d explain structural and reduced-form models of corporate credit risk, including assumptions, strengths, and weaknesses;

e calculate the value of a bond and its credit spread, given assumptions about the credit risk parameters;

f interpret changes in a credit spread;

g explain the determinants of the term structure of credit spreads and interpret a term structure of credit spreads;

h compare the credit analysis required for securitized debt to the credit analysis of corporate debt.

READING 36. 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;

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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.

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STUDY SESSION

14

Derivatives

This study session introduces key valuation concepts and models for forward commitments (forwards, futures, swaps) and contingent claims (options). Option coverage includes the "Greeks," which measure the effects on value of small changes in underlying asset value, time, volatility, and the risk-free rate.

READING ASSIGNMENTS

Reading 37	Pricing and Valuation of Forward Commitments by Robert E. Brooks, PhD, CFA, and Barbara Valbuzzi, CFA
Reading 38	Valuation of Contingent Claims by Robert E. Brooks, PhD, CFA, and David Maurice Gentle, MEc, BSc, CFA

LEARNING OUTCOMES

READING 37. 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;

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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 38. 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 calculate and interpret the value of an interest rate option using a two-period binomial model;

e describe how the value of a European option can be analyzed as the present value of the option's expected payoff at expiration;

f identify assumptions of the Black–Scholes–Merton option valuation model;

g interpret the components of the Black–Scholes–Merton model as applied to call options in terms of a leveraged position in the underlying;

h describe how the Black–Scholes–Merton model is used to value European options on equities and currencies;

i describe how the Black model is used to value European options on futures;

j describe how the Black model is used to value European interest rate options and European swaptions;

k interpret each of the option Greeks;

l describe how a delta hedge is executed;

m describe the role of gamma risk in options trading;

n define implied volatility and explain how it is used in options trading.

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STUDY SESSION

15

Alternative Investments

This study session focuses on the following categories of alternative investments: real estate, private equity, and commodities. Real estate investments, both private and public, 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 portfolio investments and an investor considering participation in a private equity fund. The study session concludes with a discussion of commodities and commodity futures, including scenarios of contango and backwardation for futures prices.

READING ASSIGNMENTS

Reading 39 Private Real Estate Investments
by Jeffrey D. Fisher, PhD, and Bryan D. MacGregor, PhD, MRICS, MRTPI

Reading 40 Publicly Traded Real Estate Securities
by Anthony Paolone, CFA, Ian Rossa O'Reilly, CFA, and David Kruth, CFA

Reading 41 Private Equity Valuation
by Yves Courtois, CMT, MRICS, CFA, and Tim Jenkinson, PhD

Reading 42 Introduction to Commodities and Commodity Derivatives
by David Burkart, CFA, and James Alan Finnegan, CAIA, RMA, CFA

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LEARNING OUTCOMES

READING 39. 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 indexes, 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 40. 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.

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READING 41. 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 41)

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 42. INTRODUCTION TO COMMODITIES AND COMMODITY DERIVATIVES

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 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.

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STUDY SESSION

16

Portfolio Management (1)

This study session begins by examining exchange-traded funds (ETFs), including the creation and trading of ETFs, costs and risks of using ETFs, and how ETFs are used in strategic, tactical, and portfolio efficiency applications. Multifactor models including the arbitrage pricing theory (APT) and Carhart (4 factor) model are introduced as alternatives to the capital asset pricing model (CAPM). Considerations and applications of the three multifactor model types (macroeconomic, fundamental, statistical) are presented. The session ends with a discussion on value at risk (VaR) and its use in measuring and managing market risk. The three VaR approaches (parametric, historical simulation, Monte Carlo) along with the advantages and limitations of each are examined.

READING ASSIGNMENTS

Reading 43	Exchange-Traded Funds: Mechanics and Applications by Joanne M. Hill, PhD, and Dave Nadig
Reading 44	Using Multifactor Models by Jerald E. Pinto, PhD, CFA, and Eugene L. Podkaminer, CFA
Reading 45	Measuring and Managing Market Risk by Don M. Chance, PhD, CFA, and Michelle McCarthy Beck

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LEARNING OUTCOMES

READING 43. EXCHANGE-TRADED FUNDS: MECHANICS AND APPLICATIONS

The candidate should be able to:

a explain the creation/redemption process of ETFs and the function of authorized participants;

b describe how ETFs are traded in secondary markets;

c describe sources of tracking error for ETFs;

d describe factors affecting ETF bid–ask spreads;

e describe sources of ETF premiums and discounts to NAV;

f describe costs of owning an ETF;

g describe types of ETF risk;

h identify and describe portfolio uses of ETFs.

READING 44. USING 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 45. 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;

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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.

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STUDY SESSION

17

Portfolio Management (2)

This study session begins by identifying and explaining the ties between the real economy and financial markets, including effects on asset values. The "fundamental pricing equation" is presented as a basic pricing framework for financial instruments. The asset prices of risk-free debt, risky debt, public equities, and real estate are shown to be affected via the business cycle's impact on risk-free rates, the yield curve, inflation, and risk premiums. Analysis of active portfolio management follows, including a discussion of active risk and active return (Sharpe, information ratios). The fundamental law of active management is presented along with several investment applications. The session concludes with an overview of how securities trading supports the investment process. This reading discusses direct and indirect costs of trading, developments in electronic trading and the effects on transaction costs and market fragmentation, and the risks posed by electronic trading and how regulators control them.

READING ASSIGNMENTS

Reading 46	Economics and Investment Markets by Andrew Clare, PhD, and Thomas F. Cosimano, PhD
Reading 47	Analysis of Active Portfolio Management by Roger G. Clarke, PhD, Harindra de Silva, PhD, CFA, and Steven Thorley, PhD, CFA
Reading 48	Trading Costs and Electronic Markets by Larry Harris, PhD, CFA

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LEARNING OUTCOMES

READING 46. 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 47. 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.

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READING 48. TRADING COSTS AND ELECTRONIC MARKETS

The candidate should be able to:

a explain the components of execution costs, including explicit and implicit costs;

b calculate and interpret effective spreads and VWAP transaction cost estimates;

c describe the implementation shortfall approach to transaction cost measurement;

d describe factors driving the development of electronic trading systems;

e describe market fragmentation;

f distinguish among types of electronic traders;

g describe characteristics and uses of electronic trading systems;

h describe comparative advantages of low-latency traders;

i describe the risks associated with electronic trading and how regulators mitigate them;

j describe abusive trading practices that real-time surveillance of markets may detect.

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