# CFA LEVEL II CURRICULUM 2020 vs 2022

## Los Changes

SSEI
Sanjay Saraf Educational Institute Pvt. Ltd.
A positive NPV Training Center

# Quantitative Methods

| 2020 | | 2022 | |
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| **STUDY SESSION 2** | | **STUDY SESSION 1** | |
| **BOX 1** | | | |
| **READING 4. INTRODUCTION TO LINEAR REGRESSION** | | **READING 1. INTRODUCTION TO LINEAR REGRESSION** | |
| **LOS** | | **LOS** | |
| a | distinguish between the dependent and independent variables in a linear regression; | a | describe a simple linear regression model and the roles of the dependent and independent variables in the model; |
| b | explain the assumptions underlying linear regression and interpret regression coefficients; | b | describe the least squares criterion, how it is used to estimate regression coefficients, and their interpretation; |
| c | calculate and interpret the standard error of estimate, the coefficient of determination, and a confidence interval for a regression coefficient; | c | explain the assumptions underlying the simple linear regression model, and describe how residuals and residual plots indicate if these assumptions may have been violated; |
| 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; | d | calculate and interpret the coefficient of determination and the F-statistic in a simple linear regression; |
| e | calculate the predicted value for the dependent variable, given an estimated regression model and a value for the independent variable; | e | describe the use of analysis of variance (ANOVA) in regression analysis, interpret ANOVA results, and calculate and interpret the standard error of estimate in a simple linear regression; |
| f | calculate and interpret a confidence interval for the predicted value of the dependent variable; | f | formulate a null and an alternative hypothesis about a population value of a regression coefficient, and determine whether the null hypothesis is rejected at a given level of significance; |
| g | describe the use of analysis of variance (ANOVA) in regression analysis, interpret ANOVA results, and calculate and interpret the F-statistic; | g | calculate and interpret the predicted value for the dependent variable, and a prediction interval for it, given an estimated linear regression model and a value for the independent variable; |
| h | describe limitations of regression analysis. | h | describe different functional forms of simple linear regressions |



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| 2020 | | 2022 | |
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| STUDY SESSION 2 | | STUDY SESSION 1 | |
| BOX 2 | | | |
| | READING 5. MULTIPLE REGRESSION | | READING 2. MULTIPLE REGRESSION |
| LOS | | LOS | |
| 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; | 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; | 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; | 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; | 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; | e | calculate and interpret 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; | 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; | 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; | h | contrast 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; | 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 | j | formulate and interpret a multiple regression, including qualitative |



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| | to represent qualitative factors and interpret the coefficients and regression results; | | independent variables; |
| k | explain the types of heteroskedasticity and how heteroskedasticity and serial correlation affect statistical inference; | 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; | 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; | 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; | n | interpret an estimated logistic regression; |
| o | evaluate and interpret a multiple regression model and its results. | o | evaluate and interpret a multiple regression model and its results. |



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| 2020 | | 2022 | |
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| STUDY SESSION 2 | | STUDY SESSION 1 | |
| BOX 3 | | | |
| | READING 6. TIME-SERIES ANALYSIS | | READING 3. TIME-SERIES ANALYSIS |
| LOS | | LOS | |
| 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; | 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; | 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; | 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; | 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; | 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; | f | explain mean reversion and calculate a mean-reverting level; |
| g | contrast in-sample and out-sample forecasts and compare the forecasting accuracy of different time-series models based on the root mean squared error criterion; | g | contrast in-sample and out-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; | h | explain the instability of coefficients of time-series models; |
| i | describe characteristics of random walk processes and contrast them to covariance stationary processes; | 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 | 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 |



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| | so it can be analyzed with an AR model; | | 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; | 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; | 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; | 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; | n | explain how time-series variables should be analyzed for nonstationarity and/or cointegration before use in a linear regression; and |
| o | determine an appropriate time-series model to analyze a given investment problem and justify that choice. | o | determine an appropriate time-series model to analyze a given investment problem and justify that choice. |



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| 2020 | | 2022 | |
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| STUDY SESSION 3 | | STUDY SESSION 2 | |
| BOX 4 | | | |
| READING 7. MACHINE LEARNING | | READING 4. MACHINE LEARNING | |
| **LOS** | | **LOS** | |
| a | distinguish between supervised machine learning, unsupervised machine learning, and deep learning; | a | describe supervised machine learning, unsupervised machine learning, and deep learning; |
| b | describe over fitting and identify methods of addressing it; | b | describe over fitting 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; | 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; | 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. | e | describe neural networks, deep learning nets, and reinforcement learning. |



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| STUDY SESSION 3 | | STUDY SESSION 2 | |
| BOX 5 | | | |
| READING 8. BIG DATA PROJECTS | | READING 5. BIG DATA PROJECTS | |
| LOS | | LOS | |
| a | state and explain steps in a data analysis project; | a | identify and explain steps in a data analysis project; |
| b | describe objectives, steps, and examples of preparing and wrangling data; | b | describe objectives, steps, and examples of preparing and wrangling data; |
| c | describe objectives, methods, and examples of data exploration; | c | describe objectives, methods, and examples of data exploration; |
| d | describe objectives, steps, and techniques in model training; | d | describe objectives, steps, and techniques in model training; |
| e | describe preparing, wrangling, and exploring text-based data for financial forecasting; | e | describe preparing, wrangling, and exploring text-based data for financial forecasting; |
| f | describe methods for extracting, selecting and engineering features from textual data; | f | describe methods for extracting, selecting and engineering features from textual data; |
| g | evaluate the fit of a machine learning algorithm. | g | evaluate the fit of a machine learning algorithm. |



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| 2020 | | 2022 | |
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| **STUDY SESSION 3** | | | |
| **READING 9. EXCERPT FROM “PROBABILISTIC APPROACHES: SCENARIO ANALYSIS, DECISION TREES, AND SIMULATIONS”** | | | |
| **LOS** | | | **REMOVED** |
| 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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# Economics

| 2020 | | 2022 | |
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| **STUDY SESSION 4** | | **STUDY SESSION 3** | |
| **BOX 6** | | | |
| **READING 10. CURRENCY EXCHANGE RATES: UNDERSTANDING EQUILIBRIUM VALUE** | | **READING 6. CURRENCY EXCHANGE RATES: UNDERSTANDING EQUILIBRIUM VALUE** | |
| **LOS** | | **LOS** | |
| 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; | 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; | 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; | c | explain 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; | d | calculate the mark-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); | 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; | 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; | 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; | 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; | 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; | 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 | k | explain the potential effects of monetary and fiscal policy on |



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| | exchange rates; | | exchange rates; |
| l | describe objectives of central bank or government intervention and capital controls and describe the effectiveness of intervention and capital controls; | 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. | m | describe warning signs of a currency crisis. |



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| 2020 | | 2022 | |
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| STUDY SESSION 4 | | STUDY SESSION 3 | |
| BOX 7 | | | |
| READING 11. ECONOMIC GROWTH AND THE INVESTMENT DECISION | | READING 7. ECONOMIC GROWTH | |
| LOS | | LOS | |
| a | compare factors favoring and limiting economic growth in developed and developing economies; | 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; | 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; | 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; | d | contrast 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; | e | demonstrate forecasting 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; | 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; | 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; | 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; | i | compare classical growth theory, neoclassical growth theory, and endogenous growth theory; |
| j | explain and evaluate convergence hypotheses; | j | explain and evaluate convergence hypotheses; |



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| k | describe the economic rationale for governments to provide incentives to private investment in technology and knowledge; | 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. | l | describe the expected impact of removing trade barriers on capital investment and profits, employment and wages, and growth in the economies involved. |

| 2020 | | 2022 | |
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| STUDY SESSION 4 | | STUDY SESSION 3 | |
| BOX 8 | | | |
| READING 12. ECONOMICS OF REGULATION | | READING 8. ECONOMICS OF REGULATION | |
| LOS | | LOS | |
| a | describe the economic rationale for regulatory intervention; | a | describe the economic rationale for regulatory intervention; |
| b | explain the purposes of regulating commerce and financial markets; | 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; | 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; | d | describe classifications of regulations and regulators; |
| e | describe uses of self-regulation in financial markets; | e | describe uses of self-regulation in financial markets; |
| f | describe regulatory interdependencies and their effects; | f | describe regulatory interdependencies and their effects; |
| g | describe tools of regulatory intervention in markets; | g | describe tools of regulatory intervention in markets; |
| h | describe benefits and costs of regulation; | h | describe benefits and costs of regulation; |
| i | describe the considerations when evaluating the effects of regulation on an industry. | i | describe the considerations when evaluating the effects of regulation on an industry. |



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# Financial Statement Analysis (1)

| 2020 | | 2022 | |
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| **STUDY SESSION 5** | | **STUDY SESSION 4** | |
| **BOX 9** | | | |
| **READING 13. INTERCORPORATE INVESTMENTS** | | **READING 9. INTERCORPORATE INVESTMENTS** | |
| **LOS** | | **LOS** | |
| 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; | 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; | b | compare and contrast IFRS and US GAAP in their 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 inter corporate investments affect financial statements and ratios. | c | analyze how different methods used to account for inter corporate investments affect financial statements and ratios. |



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| 2020 | | 2022 | |
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| STUDY SESSION 5 | | STUDY SESSION 4 | |
| BOX 10 | | | |
| READING 14. EMPLOYEE COMPENSATION: POST-EMPLOYMENTAND SHARE- BASED | | READING 10. EMPLOYEE COMPENSATION: POST-EMPLOYMENTAND SHARE- BASED | |
| LOS | | LOS | |
| a | describe the types of post-employment benefit plans and implications for financial reports; | 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); | 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; | 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; | 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; | 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; | f | interpret pension plan note disclosures including cash flow related information; |
| g | explain issues associated with accounting for share-based compensation; | 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. | 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. |



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| 2020 | | 2022 | |
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| **STUDY SESSION 5** | | **STUDY SESSION 4** | |
| **BOX 11** | | | |
| **READING 15. MULTINATIONAL OPERATIONS** | | **READING 11. MULTINATIONAL OPERATIONS** | |
| **LOS** | | **LOS** | |
| a | distinguish among presentation (reporting) currency, functional currency, and local currency; | a | compare and contrast presentation in (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; | 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; | 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 deter- mine which method is appropriate in various scenarios; | d | compare the current rate method and the temporal method, evaluate how each affects the parent company's balance sheet and income statement, and deter- mine 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; | 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; | 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 hyper-inflationary economies affect financial statements and ratios; | g | analyze how alternative translation methods for subsidiaries operating in hyper- inflationary economies affect financial statements and ratios; |
| h | describe how multinational operations affect a company's effective tax rate; | 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; | i | explain how changes in the components of sales affect the sustainability of sales growth; |



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| j | analyze how currency fluctuations potentially affect financial results, given a company’s countries of operation. | j | analyze how currency fluctuations potentially affect financial results, given a company’s countries of operation. |



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| 2020 | | 2022 | |
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| STUDY SESSION 5 | | STUDY SESSION 4 | |
| BOX 12 | | | |
| READING 16. ANALYSIS OF FINANCIAL INSTITUTIONS | | READING 12. ANALYSIS OF FINANCIAL INSTITUTIONS | |
| LOS | | LOS | |
| a | describe how financial institutions differ from other companies; | a | describe how financial institutions differ from other companies; |
| b | describe key aspects of financial regulations of financial institutions; | 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; | 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; | d | describe other factors to consider in analyzing a bank; |
| e | analyze a bank based on financial statements and other factors; | 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. | f | describe key ratios and other factors to consider in analyzing an insurance company. |



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# Financial Statement Analysis (2)

| 2020 | | 2022 | |
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| **STUDY SESSION 6** | | **STUDY SESSION 5** | |
| **BOX 13** | | | |
| **READING 17. EVALUATING QUALITY OF FINANCIAL REPORTS** | | **READING 13. EVALUATING QUALITY OF FINANCIAL REPORTS** | |
| **LOS** | | **LOS** | |
| a | demonstrate the use of a conceptual framework for assessing the quality of a company's financial reports; | 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; | b | explain potential problems that affect the quality of financial reports; |
| c | describe how to evaluate the quality of a company's 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; | d | evaluate the quality of a company's financial reports; |
| e | describe the concept of sustainable (persistent) earnings; | e | describe the concept of sustainable (persistent) earnings; |
| f | describe indicators of earnings quality; | 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; | 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; | h | evaluate the earnings quality of a company; |
| i | describe indicators of cash flow quality; | i | describe indicators of cash flow quality; |
| j | evaluate the cash flow quality of a company; | j | evaluate the cash flow quality of a company; |
| k | describe indicators of balance sheet quality; | k | describe indicators of balance sheet quality; |
| l | evaluate the balance sheet quality of a company; | l | evaluate the balance sheet quality of a company; |
| m | describe sources of information about risk. | m | describe sources of information about risk. |



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| 2020 | | 2022 | |
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| STUDY SESSION 6 | | STUDY SESSION 5 | |
| BOX 14 | | | |
| READING 18. INTEGRATION OF FINANCIAL STATEMENT ANALYSIS TECHNIQUES | | READING 14. INTEGRATION OF FINANCIAL STATEMENT ANALYSIS TECHNIQUES | |
| LOS | | LOS | |
| 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); | 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; | 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; | 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; | 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. | 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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# Corporate Issuers (1)

| 2020 | | 2022 | |
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| STUDY SESSION 7 | | STUDY SESSION 6 | |
| BOX 15 | | | |
| READING 20. CAPITAL STRUCTURE | | READING 15. CAPITAL STRUCTURE | |
| LOS | | LOS | |
| 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; | a | **explain the Modigliani–Miller propositions regarding capital structure;** |
| b | **describe target capital structure and explain why a company's actual capital structure may fluctuate around its target;** | b | **explain the effects on costs of capital and capital structure decisions of taxes, financial distress, agency costs, and asymmetric information;(Los a in 2020)** |
| c | **describe the role of debt ratings in capital structure policy;** | c | explain factors an analyst should consider in evaluating the effect of capital structure policy on valuation;**(Los d in 2020)** |
| d | explain factors an analyst should consider in evaluating the effect of capital structure policy on valuation; | d | describe international differences in the use of financial leverage, factors that explain these differences, and implications of these differences for investment analysis.**(Los e in 2020)** |
| e | describe international differences in the use of financial leverage, factors that explain these differences, and implications of these differences for investment analysis. | | |



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| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 7 | | STUDY SESSION 6 | |
| BOX 16 | | | |
| READING 21. ANALYSIS OF DIVIDENDS AND SHARE REPURCHASES | | READING 16. ANALYSIS OF DIVIDENDS AND SHARE REPURCHASES | |
| LOS | | LOS | |
| a | describe the expected effect of regular cash dividends, extra dividends, liquidating dividends, stock dividends, stock splits, and reverse stock splits on share- holders' wealth and a company's financial ratios; | a | describe the expected effect of regular cash dividends, extra dividends, liquidating dividends, stock dividends, stock splits, and reverse stock splits on share- holders' 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; | b | compare theories of dividend policy and explain implications of each for share value given a description of a corporate dividend action; |
| c | describe types of information (signals) that dividend initiations, increases, decreases, and omissions may convey; | 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; | d | explain how agency costs may affect a company's payout policy; |
| e | explain factors that affect dividend policy in practice; | 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; | 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; | g | compare stable dividend with constant dividend payout ratio, and calculate the dividend under each policy; |
| h | compare share repurchase methods; | 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; | 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; |



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|---|---|---|---|
| j | calculate the effect of a share repurchase on book value per share; | j | calculate the effect of a share repurchase on book value per share; |
| k | explain the choice between paying cash dividends and repurchasing shares; | k | explain the choice between paying cash dividends and repurchasing shares; |
| l | describe broad trends in corporate payout policies; | 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; | 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. | n | identify characteristics of companies that may not be able to sustain their cash dividend. |



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# Corporate Issuers (2)

| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 8 | | STUDY SESSION 7 | |
| BOX 17 | | | |
| READING 22. CORPORATE GOVERNANCE AND OTHER ESG CONSIDERATIONS IN INVESTMENT ANALYSIS | | READING 17. ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) CONSIDERATIONS IN INVESTMENT ANALYSIS | |
| LOS | | LOS | |
| a | describe global variations in ownership structures and the possible effects of these variations on corporate governance policies and practices; | a | describe global variations in ownership structures and the possible effects of these variations on corporate governance policies and practices; |
| b | evaluate the effectiveness of a company's corporate governance policies and practices; | 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; | 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. | d | evaluate ESG risk exposures and investment opportunities related to a company. |



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| 2020 | | 2022 | |
|---|---|---|---|
| **STUDY SESSION 8** | | **STUDY SESSION 7** | |
| **BOX 18** | | | |
| **READING 23. MERGERS AND ACQUISITIONS** | | **READING 18. MERGERS AND ACQUISITIONS** | |
| **LOS** | | **LOS** | |
| a | classify merger and acquisition (M&A) activities based on forms of integration and relatedness of business activities; | 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; | b | explain common motivations behind M&A activity; |
| c | explain bootstrapping of earnings per share (EPS) and calculate a company's post- merger EPS; | c | explain bootstrapping of 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; | 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; | 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; | 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;** | g | compare the discounted cash flow, comparable company, and comparable transaction analyses for valuing a target company, including the advantages and disadvantages of each;**(Los h in 2020)** |
| h. | compare the discounted cash flow, comparable company, and comparable transaction analyses for valuing a target company, including the advantages and disadvantages of each; | h | **evaluate a takeover bid and its effects on the target shareholders versus the acquirer shareholders;(Los k in 2020)** |
| i. | **calculate free cash flows for a target company and estimate the company's intrinsic value based on discounted cash flow analysis;** | i | explain how price and payment method affect the distribution of risks and benefits in M&A transactions;**(Los l in 2020)** |
| j. | **estimate the value of a target company using comparable company and comparable transaction analyses;** | j | describe characteristics of M&A transactions that create value;**(Los m in 2020)** |
| k. | evaluate a takeover bid and calculate the estimated post-acquisition value of an acquirer and the gains accrued to the target shareholders | k | distinguish among equity carve-outs, spin-offs, split-offs, and liquidation;**(Los n in 2020)** |



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| | versus the acquirer shareholders; | | |
| l. | explain how price and payment method affect the distribution of risks and benefits in M&A transactions; | l | explain common reasons for restructuring.**(Los o in 2020)** |
| 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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| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 8 | | STUDY SESSION 7 | |
| BOX 19 | | | |
| READING 19. CAPITAL BUDGETING | | READING 19. CAPITAL BUDGETING | |
| LOS | | LOS | |
| a | calculate the yearly cash flows of expansion and replacement capital projects and evaluate how the choice of depreciation method affects those cash flows; | 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; | 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; | 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; | d | explain how sensitivity analysis, scenario analysis, and Monte Carlo simulation can be used to assess the standalone risk of a capital project; |
| e. | **explain and calculate the discount rate, based on market risk methods, to use in valuing a capital project;** | e | **describe types of real options relevant to a capital project;(Los f in 2020)** |
| f. | describe types of real options and evaluate a capital project using real options; | f | describe common capital budgeting pitfalls.**(Los g in 2020)** |
| 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.** | | |



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# Equity Valuation (1)

| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 9 | | STUDY SESSION 8 | |
| BOX 20 | | | |
| READING 24. EQUITY VALUATION: APPLICATIONS AND PROCESSES | | READING 20. EQUITY VALUATION: APPLICATIONS AND PROCESSES | |
| LOS | | LOS | |
| a | define valuation and intrinsic value and explain sources of perceived mispricing; | 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; | 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; | c | describe definitions of value and justify which definition of value is most relevant to public company valuation; |
| d | describe applications of equity valuation; | d | describe applications of equity valuation; |
| e. | describe questions that should be addressed in conducting an industry and competitive analysis; | 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; | 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; | g. | describe sum-of-the-parts valuation and conglomerate discounts; |
| h. | explain broad criteria for choosing an appropriate approach for valuing a given company. | h. | explain broad criteria for choosing an appropriate approach for valuing a given company. |



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| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 9 | | STUDY SESSION 8 | |
| BOX 21 | | | |
| READING 25. RETURN CONCEPTS | | READING 21. RETURN CONCEPTS | |
| LOS | | LOS | |
| 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; | a | contrast 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; | b | calculate and interpret an equity risk premium using historical and forward- looking estimation approaches; |
| c | determine 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); | c | determine 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 plusrisk premium); |
| d | explain beta estimation for public companies, thinly traded public companies, and non-public companies; | d | explain beta estimation for public companies, thinly traded public companies, and non-public companies; |
| e. | describe strengths and weaknesses of methods used to estimate the required return on an equity investment; | 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; | f | explain international considerations in required return estimation; |
| g. | explain and calculate the weighted average cost of capital for a company; | 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 discountrate, given a description of the cash flow to be discounted and other relevant facts. | h. | evaluate the appropriateness of using a particular rate of return as a discountrate, given a description of the cash flow to be discounted and other relevant facts. |



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# Equity Valuation (2)

| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 10 | | STUDY SESSION 9 | |
| BOX 22 | | | |
| READING 26. INDUSTRY AND COMPANY ANALYSIS | | READING 22. INDUSTRY AND COMPANY ANALYSIS | |
| LOS | | LOS | |
| a | compare top-down, bottom-up, and hybrid approaches for developing inputs to equity valuation models; | 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; | 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; | 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; | d | **demonstrate methods to 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; | e | describe approaches to balance sheet modeling; |
| f. | describe the relationship between return on invested capital and competitive advantage; | f | describe the relationship between return on invested capital and competitive advantage; |
| g. | explain how competitive factors affect prices and costs; | 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; | h. | evaluate 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; | 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; | 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; | 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; | 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. | m | demonstrate the development of a sales-based pro forma company model. |



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| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 10 | | STUDY SESSION 9 | |
| BOX 23 | | | |
| READING 27. DISCOUNTED DIVIDEND VALUATION | | READING 23. DISCOUNTED DIVIDEND VALUATION | |
| LOS | | LOS | |
| 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; | 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; | 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; | 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; | d | calculate the value of non-callable fixed-rate perpetual preferred stock;**(Los g in 2020)** |
| 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; | e | calculate and interpret the implied growth rate of dividends using the Gordon growth model and current stock price;**(Los d in 2020)** |
| f. | calculate and interpret the justified leading and trailing P/Es using the Gordon growth model; | f | calculate and interpret the present value of growth opportunities (PVGO) and the component of the leading price-earnings ratio (P/E) related to PVGO;**(Los e in 2020)** |
| g. | calculate the value of noncallable fixed-rate perpetual preferred stock; | g. | calculate and interpret the justified leading and trailing P/Es using the Gordon growth model;**(Los f in 2020)** |
| h. | describe strengths and limitations of the Gordon growth model and justify its selection to value a company's common shares; | 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; | i. | explain the growth phase, transition phase, and maturity phase of a business;**(Los j in 2020)** |



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| j. | explain the growth phase, transition phase, and maturity phase of a business; | j. | 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;**(Los i in 2020)** |
| k. | describe terminal value and explain alternative approaches to determining the terminal value in a DDM; | 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; | 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; | m. | explain the use of spreadsheet modeling to forecast dividends and to value common shares;**(Los n in 2020)** |
| n. | explain the use of spreadsheet modeling to forecast dividends and to value common shares; | n. | estimate a required return based on any DDM, including the Gordon growth model and the H-model;**(Los m in 2020)** |
| 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; | 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. | 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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# Equity Valuation (3)

| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 11 | | STUDY SESSION 10 | |
| BOX 24 | | | |
| READING 28. FREE CASH FLOW VALUATION | | READING 24. FREE CASH FLOW VALUATION | |
| LOS | | LOS | |
| a | compare the free cash flow to the firm (FCFF) and free cash flow to equity (FCFE) approaches to valuation; | 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; | 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; | 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; | d | calculate FCFF and FCFE; |
| e. | describe approaches for forecasting FCFF and FCFE; | e | describe approaches for forecasting FCFF and FCFE; |
| f. | compare the FCFE model and dividend discount models; | 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; | 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; | 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; | i. | explain the single-stage (stable-growth), two-stage, and three-stage FCFF and FCFE models and justify the selection of the appropriate model given a company's characteristics; |
| j. | estimate a company's value using the appropriate free cash flow model(s); | 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; | 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; | l | describe approaches for calculating the terminal value in a multistage valuation model; and |
| m. | evaluate whether a stock is overvalued, fairly valued, or undervalued based on a free cash flow valuation model. | m. | evaluate whether a stock is overvalued, fairly valued, or undervalued based on a free cash flow valuation model. |



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| 2020 | | 2022 | |
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| STUDY SESSION 11 | | STUDY SESSION 10 | |
| BOX 25 | | | |
| READING 29. MARKET-BASED VALUATION: PRICE ANDENTERPRISE VALUE MULTIPLES | | READING 25.MARKET-BASED VALUATION: PRICE ANDENTERPRISE VALUE MULTIPLES | |
| LOS | | LOS | |
| 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; | a | contrast 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; | 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; | 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; | 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; | 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); | f | explain and justify the use of earnings yield (E/P); |
| g. | describe fundamental factors that influence alternative price multiples and dividend yield; | 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; | 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; | 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; | 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 | k. | calculate and interpret the P/E-to-growth (PEG) ratio and explain its |



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| | use in relative valuation; | | 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; | 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; | 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; | n. | calculate and interpret EV multiples and evaluate the use of EV/EBITDA; |
| o. | explain sources of differences in cross-border valuation comparisons; | o. | explain sources of differences in cross-border valuation comparisons; |
| p. | describe momentum indicators and their use in valuation; | 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; | 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. | r. | evaluate whether a stock is overvalued, fairly valued, or undervalued based on comparisons of multiples. |



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| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 11 | | STUDY SESSION 10 | |
| BOX 26 | | | |
| READING 30. RESIDUAL INCOME VALUATION | | READING 26. RESIDUAL INCOME VALUATION | |
| LOS | | LOS | |
| a | calculate and interpret residual income, economic value added, and market value added; | a | calculate and interpret residual income, economic value added, and market value added; |
| b | describe the uses of residual income models; | 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; | 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; | 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; | 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; | 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; | 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; | 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; | 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; | 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; |



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| k. | describe accounting issues in applying residual income models; | 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. | l. | evaluate whether a stock is overvalued, fairly valued, or undervalued based on a residual income model. |



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| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 11 | | STUDY SESSION 10 | |
| BOX 27 | | | |
| READING 31. PRIVATE COMPANY VALUATION | | READING 27. PRIVATE COMPANY VALUATION | |
| LOS | | LOS | |
| a | compare public and private company valuation; | a | compare public and private company valuation; |
| b | describe uses of private business valuation and explain applications of greatest concern to financial analysts; | 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;** | c | explain the income, market, and asset-based approaches to private company valuation and factors relevant to the selection of each approach;**(Los d in 2020)** |
| d | explain the income, market, and asset-based approaches to private company valuation and factors relevant to the selection of each approach; | d | explain cash flow estimation issues related to private companies and adjustments required to estimate normalized earnings;**(Los e in 2020)** |
| e. | explain cash flow estimation issues related to private companies and adjustments required to estimate normalized earnings; | e | calculate the value of a private company using free cash flow, capitalized cash flow, and/or excess earnings methods;**(Los f in 2020)** |
| f. | calculate the value of a private company using free cash flow, capitalized cash flow, and/or excess earnings methods; | f | explain factors that require adjustment when estimating the discount rate for private companies;**(Los g in 2020)** |
| g. | explain factors that require adjustment when estimating the discount rate for private companies; | g. | 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);**(Los h in 2020)** |
| 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); | h. | calculate the value of a private company based on market approach methods and describe advantages and disadvantages of each method;**(Los i in 2020)** |
| i. | calculate the value of a private company based on market approach methods and describe advantages and disadvantages of each method; | i. | describe the asset-based approach to private company valuation;**(Los j in 2020)** |
| j. | describe the asset-based approach to private company valuation; | j. | explain and evaluate the effects on private company valuations of |



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| | | | discounts and premiums based on control and marketability.**(Los k in 2020)** |
| 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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# Fixed Income (1)

| 2020 | | 2022 | |
|---|---|---|---|
| **STUDY SESSION 12** | | **STUDY SESSION 11** | |
| **BOX 28** | | | |
| **READING 32. THE TERM STRUCTURE AND INTEREST RATE DYNAMICS** | | **READING 28. THE TERM STRUCTURE AND INTEREST RATE DYNAMICS** | |
| **LOS** | | **LOS** | |
| a | describe relationships among spot rates, forward rates, yield to maturity, expected and realized returns on bonds, and the shape of the yield curve; | 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;** | b | describe how zero-coupon rates (spot rates) may be obtained from the parcurve by bootstrapping;**(Los c in 2020)** |
| c | describe how zero-coupon rates (spot rates) may be obtained from the parcurve by bootstrapping; | c | describe the assumptions concerning the evolution of spot rates in relation to forward rates implicit in active bond portfolio management;**(Los d in 2020)** |
| d | describe the assumptions concerning the evolution of spot rates in relation to forward rates implicit in active bond portfolio management; | d | describe the strategy of rolling down the yield curve;**(Los e in 2020)** |
| e. | describe the strategy of riding the yield curve; | e | explain the swap rate curve and why and how market participants use it in valuation;**(Los f in 2020)** |
| f. | explain the swap rate curve and why and how market participants use it in valuation; | f | calculate and interpret the swap spread for a given maturity**(Los g in 2020)** |
| g. | calculate and interpret the swap spread for a given maturity; | g. | **describe short-term interest rate spreads used to gauge economy-wide credit risk and liquidity risk;** |
| h. | **describe the Z-spread;** | h. | 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;**(Los j in 2020)** |
| i. | **describe the TED and Libor–OIS spreads;** | i. | 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 |



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| | | | manage yield curve risks;**(Los l in 2020)** |
| 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; | j. | explain the maturity structure of yield volatilities and their effect on price volatility;**(Los m in 2020)** |
| k. | **describe modern term structure models and how they are used;** | k. | **explain how key economic factors are used to establish a view on benchmark rates, spreads, and yield curve changes.** |
| 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. | | |



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| 2020 | | 2022 | |
|---|---|---|---|
| **STUDY SESSION 12** | | **STUDY SESSION 11** | |
| **BOX 29** | | | |
| **READING 33. THE ARBITRAGE-FREE VALUATION FRAMEWORK** | | **READING 29. THE ARBITRAGE-FREE VALUATION FRAMEWORK** | |
| **LOS** | | **LOS** | |
| a | explain what is meant by arbitrage-free valuation of a fixed-income instrument; | 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; | b | calculate the arbitrage-free value of an option-free, fixed-rate coupon bond; |
| c | describe a binomial interest rate tree framework; | 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; | d | describe the process of calibrating a binomial interest rate tree to match a specific term structure;**(Los e in 2020)** |
| e. | describe the process of calibrating a binomial interest rate tree to match a specific term structure; | e | describe the backward induction valuation methodology and calculate the value of a fixed-income instrument given its cash flow at each node;**(Los d in 2020)** |
| f. | compare pricing using the zero-coupon yield curve with pricing using an arbitrage-free binomial lattice; | 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; | 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. | h. | describe a Monte Carlo forward-rate simulation and its application. |
| | | i. | **describe term structure models and how they are used;** |



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# Fixed Income (2)

| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 13 | | STUDY SESSION 12 | |
| BOX 30 | | | |
| READING 34. VALUATION AND ANALYSIS OF BONDS WITH EMBEDDED OPTIONS | | READING 30. VALUATION AND ANALYSIS OF BONDS WITH EMBEDDED OPTIONS | |
| LOS | | LOS | |
| a | describe fixed-income securities with embedded options; | 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; | b | explain the relationships between the values of a callable or putable 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; | 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; | 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; | 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; | 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; | g. | explain the calculation and use of option-adjusted spreads; |
| h. | explain how interest rate volatility affects 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; | i. | calculate and interpret effective duration of a callable or putable bond; |
| j. | compare effective durations of callable, putable, and straight bonds; | 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; | 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; | l. | compare effective convexities of callable, putable, and straight bonds; |



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| m. | calculate the value of a capped or floored floating-rate bond; | m. | calculate the value of a capped or floored floating-rate bond; |
| n. | describe defining features of a convertible bond; | n. | describe defining features of a convertible bond; |
| o. | calculate and interpret the components of a convertible bond's value; | 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; | 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. | 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. |



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| 2020 | | 2022 | |
|---|---|---|---|
| **STUDY SESSION 13** | | **STUDY SESSION 12** | |
| **BOX 31** | | | |
| **READING 35. CREDIT ANALYSIS MODELS** | | **READING 31. CREDIT ANALYSIS MODELS** | |
| **LOS** | | **LOS** | |
| a | explain expected exposure, the loss given default, the probability of default, and the credit valuation adjustment; | a | explain expected exposure, the loss given default, the probability of default, and the credit valuation adjustment; |
| b | explain credit scores and credit ratings; | b | explain credit scores and credit ratings; |
| c | calculate the expected return on a bond given transition in its credit rating; | 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; | 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; | 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; | 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; | 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. | h. | compare the credit analysis required for securitized debt to the credit analysis of corporate debt. |



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| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 13 | | STUDY SESSION 12 | |
| BOX 32 | | | |
| READING 36. CREDIT DEFAULT SWAPS | | READING 32. CREDIT DEFAULT SWAPS | |
| LOS | | LOS | |
| a | describe credit default swaps (CDS), single-name and index CDS, and the parameters that define a given CDS product; | 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; | 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; | 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; | d | describe the use of CDS to manage credit exposures and to express views regarding changes in the 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. | 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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# Derivatives

| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 14 | | STUDY SESSION 13 | |
| BOX 33 | | | |
| READING 37. PRICING AND VALUATION OF FORWARD COMMITMENTS | | READING 33. PRICING AND VALUATION OF FORWARD COMMITMENTS | |
| LOS | | LOS | |
| a | describe and compare how equity, interest rate, fixed-income, and currency forward and futures contracts are priced and valued; | a | **describe the carry arbitrage model without underlying cashflows and with underlying cashflows;** |
| b | calculate and interpret the no-arbitrage value of equity, interest rate, fixed-income, and currency forward and futures contracts; | b | **describe how equity forwards and futures are priced, and calculate and interpret their no-arbitrage value;** |
| c | describe and compare how interest rate, currency, and equity swaps are priced and valued; | c | **describe how interest rate forwards and futures are priced, and calculate and interpret their no-arbitrage value;** |
| d | calculate and interpret the no-arbitrage value of interest rate, currency, and equity swaps. | d | **describe how fixed-income forwards and futures are priced, and calculate and interpret their no-arbitrage value;** |
| | | e | **describe how interest rate swaps are priced, and calculate and interpret their no- arbitrage value;** |
| | | f. | **describe how currency swaps are priced, and calculate and interpret their no- arbitrage value;** |
| | | g. | **describe how equity swaps are priced, and calculate and interpret their no- arbitrage value.** |



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| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 14 | | STUDY SESSION 13 | |
| BOX 34 | | | |
| READING 38. VALUATION OF CONTINGENT CLAIMS | | READING 34. VALUATION OF CONTINGENT CLAIMS | |
| LOS | | LOS | |
| a | describe and interpret the binomial option valuation model and its component terms; | 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; | 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; | 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; | 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; | 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; | 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; | 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; | 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; | 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; | j. | describe how the Black model is used to value European interest rate options and European swaptions; |
| k. | interpret each of the option Greeks; | k. | interpret each of the option Greeks; |
| l. | describe how a delta hedge is executed; | l. | describe how a delta hedge is executed; |



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| m. | describe the role of gamma risk in options trading; | m. | describe the role of gamma risk in options trading; |
| n. | define implied volatility and explain how it is used in options trading. | n. | define implied volatility and explain how it is used in options trading. |



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# Alternative Investments

| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 15 | | STUDY SESSION 14 | |
| BOX 35 | | | |
| READING 39. PRIVATE REAL ESTATE INVESTMENTS | | READING 35. REAL ESTATE INVESTMENTS | |
| LOS | | LOS | |
| a | classify and describe basic forms of real estate investments; | a | compare the characteristics, classifications, principal risks, and basic forms of public and private real estate investments; |
| b | describe the characteristics, the classification, and basic segments of real estate; | b | explain portfolio roles and economic value determinants of real estate investments; |
| c | explain the role in a portfolio, economic value determinants, investment characteristics, and principal risks of private real estate; | c | discuss commercial property types, including their distinctive investment characteristics; |
| d | describe commercial property types, including their distinctive investment characteristics; | d | explain the due diligence process for both private and public equity real estate investments; |
| e. | compare the income, cost, and sales comparison approaches to valuing real estate properties; | e | discuss real estate investment indexes, including their construction and potential biases; |
| 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; | f. | discuss the income, cost, and sales comparison approaches to valuing real estate properties; |
| g. | calculate the value of a property using the direct capitalization and discounted cash flow valuation methods; | g. | compare the direct capitalization and discounted cash flow valuation methods; |
| h. | compare the direct capitalization and discounted cash flow valuation methods; | h. | 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; |
| i. | calculate the value of a property using the cost and sales comparison approaches; | i. | calculate the value of a property using the direct capitalization and discounted cash flow valuation methods; |
| j. | describe due diligence in private equity real estate investment; | j. | calculate and interpret financial ratios used to analyze and evaluate private real estate investments; |
| k. | discuss private equity real estate investment indexes, including their | k. | discuss types of REITs; |



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| | 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; | l. | justify the use of net asset value per share (NAVPS) in REIT valuation and estimate NAVPS based on forecasted cash net operating income; |
| m. | calculate and interpret financial ratios used to analyze and evaluate private real estate investments. | m. | describe the use of funds from operations (FFO) and adjusted funds from operations (AFFO) in REIT valuation; |
| | | n. | calculate and interpret the value of a REIT share using the net asset value, relative value (price-to-FFO and price-to-AFFO), and discounted cash flow approaches; and |
| | | o. | explain advantages and disadvantages of investing in real estate through publicly traded securities compared to private vehicles. |



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| 2020 | | 2022 | |
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| **STUDY SESSION 15** | | **STUDY SESSION 14** | |
| **BOX 36** | | | |
| **READING 41. PRIVATE EQUITY VALUATION** | | **READING 36. PRIVATE EQUITY INVESTMENTS** | |
| **LOS** | | **LOS** | |
| a | explain sources of value creation in private equity; | 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; | 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; | c | compare and contrast characteristics of buyout and venture capital investments; |
| d | describe valuation issues in buyout and venture capital transactions; | d | interpret LBO model and VC method output; |
| e. | explain alternative exit routes in private equity and their impact on value; | 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; | f. | explain risks and costs of investing in private equity;**(Los g in 2020)** |
| g. | explain risks and costs of investing in private equity; | g. | explain private equity fund structures, terms, due diligence, and valuation in the context of an analysis of private equity fund returns;**(Los f in 2020)** |
| h. | interpret and compare financial performance of private equity funds from the perspective of an investor; | 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; | 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** | | |



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| 2020 | | 2022 | |
|---|---|---|---|
| **STUDY SESSION 15** | | **STUDY SESSION 14** | |
| **BOX 37** | | | |
| **READING 42. INTRODUCTION TO COMMODITIES AND COMMODITY DERIVATIVES** | | **READING 37. INTRODUCTION TO COMMODITIES AND COMMODITY DERIVATIVES** | |
| **LOS** | | **LOS** | |
| a | compare characteristics of commodity sectors; | a | compare characteristics of commodity sectors; |
| b | compare the life cycle of commodity sectors from production through trading or consumption; | 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; | c | contrast the valuation of commodities with the valuation of equities and bonds; |
| d | describe types of participants in commodity futures markets; | 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; | e | analyze the relationship between spot prices and futures prices in markets in contango and markets in backwardation; |
| f. | compare theories of commodity futures returns; | f. | compare theories of commodity futures returns; |
| g. | describe, calculate, and interpret the components of total return for a fully collateralized commodity futures contract; | 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; | 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; | 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. | j. | describe how the construction of commodity indexes affects index returns. |



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| 2020 | | 2022 |
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| STUDY SESSION 15 | | |
| READING 40. PUBLICLY TRADED REAL ESTATE SECURITIES | | |
| **LOS** | | Removed in 2022 |
| 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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# Portfolio Management (1)

| 2020 | | 2022 | |
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| STUDY SESSION 16 | | STUDY SESSION 15 | |
| BOX 38 | | | |
| READING 43. EXCHANGE-TRADED FUNDS: MECHANICS ANDAPPLICATIONS | | READING 38. EXCHANGE-TRADED FUNDS: MECHANICS ANDAPPLICATIONS | |
| LOS | | LOS | |
| a | explain the creation/redemption process of ETFs and the function of authorized participants; | a. | explain the creation/redemption process of ETFs and the function of authorized participants; |
| b | describe how ETFs are traded in secondary markets; | b. | describe how ETFs are traded in secondary markets; |
| c | describe sources of tracking error for ETFs; | c. | describe sources of tracking error for ETFs; |
| d | describe factors affecting ETF bid–ask spreads; | d. | describe factors affecting ETF bid–ask spreads; |
| e. | describe sources of ETF premiums and discounts to NAV; | e. | describe sources of ETF premiums and discounts to NAV; |
| f. | describe costs of owning an ETF; | f. | describe costs of owning an ETF; |
| g. | describe types of ETF risk; | g. | describe types of ETF risk; |
| h. | identify and describe portfolio uses of ETFs. | h. | identify and describe portfolio uses of ETFs. |



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| 2020 | | 2022 | |
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| **STUDY SESSION 16** | | **STUDY SESSION 15** | |
| **BOX 39** | | | |
| **READING 44. USING MULTIFACTOR MODELS** | | **READING 39. USING MULTIFACTOR MODELS** | |
| **LOS** | | **LOS** | |
| a | describe arbitrage pricing theory (APT), including its underlying assumptions and its relation to multifactor models; | 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; | 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; | 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; | 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; | 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; | 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. | g. | describe the potential benefits for investors in considering multiple risk dimensions when modeling asset returns. |



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| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 16 | | STUDY SESSION 15 | |
| BOX 40 | | | |
| READING 45. MEASURING AND MANAGING MARKET RISK | | READING 40. MEASURING AND MANAGING MARKET RISK | |
| LOS | | LOS | |
| a | explain the use of value at risk (VaR) in measuring portfolio risk; | 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; | 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; | c. | estimate and interpret VaR under the parametric, historical simulation, and Monte Carlo simulation methods; |
| d | describe advantages and limitations of VaR; | d. | describe advantages and limitations of VaR; |
| e. | describe extensions of VaR; | e. | describe extensions of VaR; |
| f. | describe sensitivity risk measures and scenario risk measures and compare these measures to 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; | 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; | 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; | 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; | j. | explain constraints used in managing market risks, including risk budgeting, position limits, scenario limits, and stop-loss limits;**(Los k in 2020)** |
| k. | explain constraints used in managing market risks, including risk budgeting, position limits, scenario limits, and stop-loss limits; | k. | explain how risk measures may be used in capital allocation decisions;**(Los l in 2020)** |
| l. | explain how risk measures may be used in capital allocation decisions. | l. | describe risk measures used by banks, asset managers, pension funds, and insurers.**(Los j in 2020)** |



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| 2020 | | 2022 | |
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| | | STUDY SESSION 15 | |
| BOX 41 | | | |
| | | READING 41. BACKTESTING AND SIMULATION | |
| | | LOS | |
| | | a. | describe objectives in backtesting an investment strategy; |
| | | b. | describe and contrast steps and procedures in backtesting an investment strategy; |
| | | c. | interpret metrics and visuals reported in a backtest of an investment strategy; |
| | | d. | identify problems in a backtest of an investment strategy; |
| | | e. | evaluate and interpret a historical scenario analysis; |
| | | f. | contrast Monte Carlo and historical simulation approaches; |
| | | g. | explain inputs and decisions in simulation and interpret a simulation; and |
| | | h. | demonstrate the use of sensitivity analysis. |



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# Portfolio Management (2)

| 2020 | | 2022 | |
|---|---|---|---|
| **STUDY SESSION 17** | | **STUDY SESSION 16** | |
| **BOX 42** | | | |
| **READING 46. ECONOMICS AND INVESTMENT MARKETS** | | **READING 42. ECONOMICS AND INVESTMENT MARKETS** | |
| **LOS** | | **LOS** | |
| 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; | 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; | 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; | 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; | 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 | 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; | 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; | 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; | 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; | i. | explain the relationship between the consumption hedging properties of equity and the equity risk premium; |
| j. | describe cyclical effects on valuation multiples; | j. | describe cyclical effects on valuation multiples; |



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|---|---|---|---|
| k. | **describe the implications of the business cycle for a given style strategy (value, growth, small capitalization, large capitalization);** | k. | describe how economic analysis is used in sector rotation strategies;**(Los l in 2020)** |
| l. | describe how economic analysis is used in sector rotation strategies; | l. | describe the economic factors affecting investment in commercial real estate.**(Los m in 2020)** |
| m. | describe the economic factors affecting investment in commercial real estate. | | |



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|---|---|---|---|
| **STUDY SESSION 17** | | **STUDY SESSION 16** | |
| **BOX 43** | | | |
| **READING 47. ANALYSIS OF ACTIVE PORTFOLIO MANAGEMENT** | | **READING 43. ANALYSIS OF ACTIVE PORTFOLIO MANAGEMENT** | |
| **LOS** | | **LOS** | |
| a. | describe how value added by active management is measured; | 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; | 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); | c. | describe 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; | 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; | 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. | f. | describe the practical strengths and limitations of the fundamental law of active management. |



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| STUDY SESSION 17 | | STUDY SESSION 16 | |
| BOX 44 | | | |
| READING 48. TRADING COSTS AND ELECTRONIC MARKETS | | READING 44. TRADING COSTS AND ELECTRONIC MARKETS | |
| LOS | | LOS | |
| a. | explain the components of execution costs, including explicit and implicit costs; | a. | explain the components of execution costs, including explicit and implicit costs; |
| b. | calculate and interpret effective spreads and VWAP transaction cost estimates; | b. | calculate and interpret effective spreads and VWAP transaction cost estimates; |
| c. | describe the implementation shortfall approach to transaction cost measurement; | c. | describe the implementation shortfall approach to transaction cost measurement; |
| d. | describe factors driving the development of electronic trading systems; | d. | describe factors driving the development of electronic trading systems; |
| e. | describe market fragmentation; | e. | describe market fragmentation; |
| f. | distinguish among types of electronic traders; | f. | identify and contrast the types of electronic traders; |
| g. | describe characteristics and uses of electronic trading systems; | g. | describe characteristics and uses of electronic trading systems; |
| h. | describe comparative advantages of low-latency traders; | h. | describe comparative advantages of low-latency traders; |
| i. | describe the risks associated with electronic trading and how regulators mitigate them; | 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. | j. | describe abusive trading practices that real-time surveillance of markets may detect. |



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# Ethical and Professional Standards

| 2020 | | 2022 | |
|---|---|---|---|
| STUDY SESSION 1 | | STUDY SESSION 17 | |
| BOX 45 | | | |
| READING 1. CODE OF ETHICS AND STANDARDS OF PROFESSIONAL CONDUCT | | READING 45. CODE OF ETHICS AND STANDARDS OF PROFESSIONAL CONDUCT | |
| LOS | | LOS | |
| a. | describe the six components of the Code of Ethics and the seven Standards of Professional Conduct; | 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. | 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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| 2020 | | 2022 | |
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| STUDY SESSION 1 | | STUDY SESSION 17 | |
| BOX 46 | | | |
| READING 2. GUIDANCE FOR STANDARDS I–VII | | READING 46. GUIDANCE FOR STANDARDS I–VII | |
| **LOS** | | **LOS** | |
| 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; | 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. | b. | recommend practices and procedures designed to prevent violations of the Code of Ethics and Standards of Professional Conduct. |



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| 2020 | | 2022 | |
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| STUDY SESSION 1 | | STUDY SESSION 17 | |
| BOX 47 | | | |
| READING 3. APPLICATION OF THE CODE AND STANDARDS: LEVEL II | | READING 47. APPLICATION OF THE CODE AND STANDARDS: LEVEL II | |
| LOS | | LOS | |
| a. | evaluate practices, policies, and conduct relative to the CFA Institute Code of Ethics and Standards of Professional Conduct; | 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. | 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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