



*The Global Mark of Distinction in Alternative Investments*



# September 2010 CAIA<sup>®</sup> Level II Study Guide

Chartered Alternative Investment  
Analyst Association<sup>®</sup>

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## Introduction to the Level II Program

Congratulations on your successful completion of Level I, and welcome to Level II of the Chartered Alternative Investment Analyst<sup>SM</sup> program. The CAIA<sup>®</sup> program, organized by the CAIA Association<sup>®</sup> and co-founded by the Alternative Investment Management Association (AIMA) and the Center for International Securities and Derivatives Markets (CISDM), is designed to be the only globally recognized professional designation in the area of alternative investments, the fastest growing segment of the investment industry. The curriculum provides breadth and depth by first placing emphasis on understanding alternative asset classes and then by building applications in manager selection, risk management and asset allocation.

The Level I curriculum built a foundation by introducing candidates to alternative asset classes and the role of active management in asset allocation and portfolio construction. Level II provides advanced coverage of some of the topics covered in Level I as well introduces candidates to recent academic and industry research. Further, the Level II curriculum includes readings related to the most recent developments in the financial industry.

The business school faculty and industry practitioners who built our program bring years of experience in the financial services industry. Our goal is to provide you with a curriculum that reflects current industry practices and academic research. The methods employed in our program have proven effective in professional courses. Our study guides are organized for quick learning and easy retention. Each topic is structured around keywords and learning objectives with action words that help candidates concentrate on what is most important for the exam. For all these reasons, we believe that the CAIA Association has built a rigorous program with high standards while also maintaining an awareness of the value candidates place upon their time.

Upon successful completion of the Level II exam and meeting the membership requirements, the CAIA Association will confer the CAIA designation upon the candidate. CAIA candidates must pass the Level II exam within 3 years of passing the Level I exam to qualify for the CAIA designation.

## Building on the Prerequisite Program and the Level I Curriculum

Candidates should be aware that the prerequisite program has been expanded. Because the Level II curriculum builds on the prerequisite program and the Level I material, this study guide assumes a strong understanding of concepts found in that material. **Candidates may be expected to incorporate specific parts of the prerequisite program and the Level I curriculum into some of their responses to a Level II examination question.** For example, candidates may be expected to calculate Sharpe ratios (a Level I concept) as part of an answer to a Level II question.

We therefore highly recommend that candidates obtain the **Prerequisite Study Guide**, work through the Prerequisite Outline, study the reading materials and take the Prerequisite Diagnostic Review (PDR), an assessment tool available on the CAIA website. Candidates who score 70% or higher on the PDR are assumed to have the background knowledge necessary to complete the CAIA program.

## Preparing for the Level II Exam

Candidates should purchase all the reading materials and follow the outline provided in the Study Guide. The reading materials for the Level II exam are:

*Standards of Practice Handbook*. 9<sup>th</sup> edition. Charlottesville, Virginia: CFA Institute, 2005. ISBN: 1932495339.

*CAIA Level II: Advanced Core Topics in Alternative Investments*. Wiley. 2009. ISBN: 978-0-470-69426-8.

*CAIA Level II: Integrated Topics and Applications*. Institutional Investor, Inc. 2009. ISBN: 978-0-9842550-0-9.

*CAIA Level II: Current and Integrated Topics*. Institutional Investor, Inc. 2010. ISBN: 978-0-9842550-2-3.

The learning objectives are an important way for candidates to organize their study as they form the basis for examination questions. Learning objectives provide guidance on the concepts, equations, and keywords that are most important to understanding CAIA curriculum. A candidate that is able to meet all learning objectives in this study guide should be well prepared for the exam.

Candidates should be aware that key equations are no longer provided in the study guide and will not be provided on the exam. This is an outgrowth of the new curriculum and the use of original reading materials developed by CAIA. All equations in the readings are important to understand. Some equations may be provided as part of an examination question.

Candidates should be able to define all keywords provided whether or not this is stated explicitly in a learning objective. Keywords can also help candidates to focus their progress towards fulfilling the learning objectives. Candidates should know how keywords are related to or extend the learning objectives when applicable.

The action words used within the learning objectives can indicate a type of exam question to expect. However, actual exam questions are not limited in scope to the exact action word used in the learning objectives. For example, the action word "understand" could result in an exam question that asks candidates to define, explain, calculate and so forth. A complete list of the action words used with learning objectives is provided in the back of the study guide in the Action Words Table.

## Preparation Time

Regarding the amount of time necessary to devote to the program, we understand that all candidates are different. Therefore, it is nearly impossible to estimate the amount of study time appropriate for everyone. Candidate surveys suggest an average of 150 hours of study time. We believe that to be successful, a candidate should spend a minimum of 200 hours studying. Because the number of keywords, main points, and learning objectives differ across the 11 topics, the amount of time per topic may vary greatly.

## Exam Format

The Level II examination, administered twice annually, is a four-hour computerized exam that is offered at test centers throughout the world. For more information visit the CAIA website at [www.caia.org](http://www.caia.org). The format of the Level II exam includes both multiple choice and essay questions. The second portion of the exam occurs after an optional 30 minute break. It requires candidates to respond in essay format using software provided by the test center and may cover material from any of the 11 topics or any combination of the topics. Candidates are expected to type their answers using a computer and should be familiar with a point-and-click mouse. Complete answers can be written in one or two paragraphs.

## Level II Exam Topic Weights and Question Format

Topic	Approximate Exam Weight
1 Professional Standards and Ethics	10% - 15%
2 Venture Capital and Private Equity	10% - 15%
3 Commodities	5% - 10%
4 Managed Futures	5% - 10%
5 Real Estate	5% - 10%
6 Hedge Funds	15% - 20%
7-11 Current, Integrated Topics & Application	30% - 40%

Minutes	Format	Approximate Weight
120	Multiple Choice (all parts)	70%
30	Optional break	-
90	Essay (all parts)	30%
<b>210</b>	<b>Total Exam Minutes</b>	<b>100%</b>

There are 100 multiple choice questions and 3 essay questions on the Level II exam.

All Level II topics may be tested in either a multiple choice format, essay format, or a combination of both formats. In some cases a set of multiple choice questions will be based on a common scenario. The approximate weighting for each part is provided in the

table above. Although essays comprise only 30% of the total weight of the exam, additional time is provided to develop essay answers.

## **Errata Sheet**

Correction notes appear in this study guide to address known errors existing in the assigned readings. Occasionally additional errors in the readings and learning objectives are brought to our attention and we will then post errata on the study guide website: <http://www.caia.org/program/studyguides/>. It is the responsibility of the candidate to review these errata prior to taking the exam. Please report suspected errata to [curriculum@caia.org](mailto:curriculum@caia.org).

## **Calculator Policy**

You will need a calculator for the Level II examination. The calculations you are required to perform range from simple mathematical operations to more complex methods of valuation. The CAIA Association allows candidates to bring into the examination the TI BA II Plus (as well as the Professional model) or the HP 12C (as well as the Platinum edition). No other calculators will be allowed in the testing center. The exam proctor will require that all calculator memory be cleared prior to the start of the exam.

## **Level II Sample Questions**

These questions are designed to be representative of the format and nature of actual CAIA Level II examination questions in September 2010. The sample questions are not a facsimile of the actual questions. The sample questions do not cover all of the study materials that comprise the CAIA Level II curriculum, nor have they been verified to be equally difficult as the actual questions. Accordingly, these sample questions should not be used to assess a candidate's level of preparedness for the exam.

Candidates should be aware that multiple-choice exam questions ask for the "best" answer. In some cases this means that it is possible that a choice is technically accurate but is not the correct answer because it is superseded by another choice.

## Study Materials: Level II

Registered candidates can find detailed information on ordering and retrieving required curriculum materials on the CAIA Association® website at [www.caia.org](http://www.caia.org). To access this information, registered candidates should follow the link to “Curriculum Readings” under the “The Program” menu. The Level II reading material is comprised of 4 books; the details are listed below.

### Books

1. *Standards of Practice Handbook*. 9<sup>th</sup> edition. Charlottesville, Virginia: CFA Institute, 2005. ISBN: 1932495339.
2. *CAIA Level II: Advanced Core Topics in Alternative Investments*. Wiley. 2009. ISBN: 978-0-470-69426-8.
3. *CAIA Level II: Integrated Topics and Applications*. Institutional Investor, Inc. 2009. ISBN: 978-0-9842550-0-9.

### Part I: Private Equity

- Kocis, J., J. Bachman, A. Long, and C. Nickels. “The IRR” Chapter 7 in *Inside Private Equity: The Professional Investor’s Handbook*. 2009.
- Guennoc, D., P.Y. Mathonet, and T. Meyer. “Distribution Waterfall.” CAIA Association 2009.
- Aigner, P., S. Albrecht, G. Beyschlag, T. Friederich, M. Kalepky, and R. Zagst. “What Drives PE? Analyses of Success Factors for Private Equity Funds.” *Journal of Private Equity*. Fall 2008, p. 63-85.

### Part II: Commodities and Managed Futures

- Pojarliev, M. and R.M. Levich. “Do Professional Currency Managers Beat the Benchmark?” *Financial Analysts Journal*. Vol. 64, no. 5, September/October 2008, p. 18-32.
- Till, H. “The Oil-Price Spike of 2008: Inferences from Price Relationships and Other Publicly Available Data.” Chapter excerpted from the EDHEC Position Paper “Oil Prices: The True Role of Speculation.” Amenc, N, B. Maffei, and H. Till. November, 2008.

### Part III: Real Estate

- Kaiser, R.W. and J. Clayton. “Assessing and Managing Risk in Institutional Real Estate Investment.” *Journal of Real Estate Portfolio Management*. Vol. 14, no. 4, 2008, p. 287-306.

- Tyrrell, N. and T. Jowett. "Risks, Returns, and Correlations for Global Private Real Estate Markets." *Journal of Real Estate Portfolio Management*. Vol. 14, no. 4, 2008, p. 335-350.

#### **Part IV: Hedge Funds**

- Casa, T.D., M. Rechsteiner, and A. Lehmann. "Hedge Fund Investing in Distressed Securities." Man Investments. 2008.
- Reddy, G., P. Brady, and K. Patel. "Are Funds of Funds Simply Multi-Strategy Managers with Extra Fees?" *The Journal of Alternative Investments*. Winter 2007.
- De Souza, C. and S. Gokcan. "Hedge Fund Investing: A Quantitative Approach to Hedge Fund Selection and De-Selection." *The Journal of Wealth Management*. Spring 2004. p. 52-73.

#### **Part V: Risk Management & Credit Derivatives**

- Jorion, P. "Risk Management for Alternative Investments." CAIA Association 2009.
  - Kazemi, H. "Credit Derivatives." CAIA Association 2009.
4. CAIA *Level II: Current and Integrated Topics*. Institutional Investor, Inc. 2010. ISBN: 978-0-9842550-2-3.

#### **Part I: Structured Products, New Products and Strategies, and Regulation**

- Weistroffer, C. "Coping with Climate Change." Deutsche Bank Research. November 15, 2007, p. 1-20.
- Amenc, N., W. Géhin, L. Martellini, and J.-C. Meyfredi. "Passive Hedge Fund Replication: A Critical Assessment of Existing Techniques." *Journal of Alternative Investments*. Vol. 11, no. 2, Fall 2008, p. 69-83.
- Coval, J., J. Jurek, and E. Stafford. "The Economics of Structured Finance." *Journal of Economic Perspectives*. Vol. 23, no. 1. Winter 2009, p. 3-25.
- Brunnermeier, M., A. Crocket, C. Goodhart, A. Persaud, and H. Shin. "The Fundamental Principles of Financial Regulation." Geneva Reports on the World Economy, International Center for Monetary and Banking Studies. 2009. Chapters 2 and 3.

#### **Part II: Asset Allocation**

- Perold, A. F. and W.F. Sharpe. "Dynamic Strategies for Asset Allocation." *Financial Analysts Journal*. January/February 1995, p. 149-160.
- Chhabra, A. "Beyond Markowitz: A Comprehensive Wealth Allocation Framework for Individual Investors." *The Journal of Wealth Management*. Vol. 7, no. 4, Spring 2005, p. 8-34.
- Erb, C. and C. Harvey. "The Strategic and Tactical Value of Commodity Futures." *Financial Analysts Journal*. Vol. 62, no. 2, March/April 2006, p. 69-97.

- Marcato, G. and T. Key. "Smoothing and Implications for Asset Allocation Choices." *The Journal of Portfolio Management*. Special Issue September 2007, p. 85-98.

### **Part III: Portfolio and Risk Management**

- Hill, J. "A Perspective on Liquidity Risk and Horizon Uncertainty." *The Journal of Portfolio Management*. Vol. 35, no. 4, Summer 2009, p. 60-68.
- Meredith, R., N. De Brito, and R. De Figueiredo. "Portfolio Management with Illiquid Investments." *Citi Alternative Investments*. June 2006, p. 26-31.
- Healy, A. and A. Lo. "Jumping the Gates: Using Beta-Overlay Strategies to Hedge Liquidity Constraints." *Journal of Investment Management*. Vol. 7, no. 3, Third Quarter 2009, p. 11-30.

### **Part IV: Research Issues in Alternative Investments**

- Gorton, G. and K. G. Rouwenhorst. "Facts and Fantasies about Commodity Futures." *Financial Analysts Journal*. Vol. 62, no. 2, March/April 2006, p. 47-68.
- Klier, D., M. Welge, and K. Harrigan. "The Changing Face of Private Equity: How Modern Private Equity Firms Manage Investment Portfolios." *The Journal Of Private Equity*. Vol. 12, no. 4, Fall 2009, p. 7-13.
- Phalippou, L. "Beware of Venturing into Private Equity." *Journal of Economic Perspectives*. Vol. 23, no. 1, Winter 2009, p. 147-166.
- Derwall, J., J. Huij, D. Brounen, and W. Marquering. "REIT Momentum and the Performance of Real Estate Mutual Funds." *Financial Analysts Journal*. Vol. 65, no. 5, September/October 2009, p. 24-34.
- Clarke, A. and N. Motson. "Locking in the Profits or Putting It All on Black? An Empirical Investigation into the Risk-Taking Behavior of Hedge Fund Managers." *The Journal of Alternative Investments*. Vol. 12, no. 2, Fall 2009, p. 7-25.

### **Part V: Current Topics**

- Khandani, A.E. and A.W. Lo. "What Happened To The Quants In August 2007?" *Journal of Investment Management*. Vol. 5, no. 4, Fourth Quarter 2007, p. 29-78.
- Crouhy, M., R. Jarrow, and S. Turnbull. "The Subprime Credit Crisis of 2007." *The Journal of Derivatives*. Vol. 16, no. 1, Fall 2008, p. 81-110.

## CAIA Level II Outline

### **Topic 1: Professional Standards and Ethics**

CFA Institute Standards of Professional Conduct

### **Topic 2: Private Equity**

Private Equity Market Landscape

Routes Into Private Equity

Private Equity Funds Structure

The Investment Process

Private Equity Portfolio Design

Fund Manager Selection Process

Benchmarking in the Private Equity World

Monitoring Private Equity Investments

Private Equity Fund Valuation

Private Equity Fund Discount Rate

The Management of Liquidity

The IRR

Distribution Waterfall

What Drives PE? Analyses of Success Factors for Private Equity Funds

### **Topic 3: Commodities**

Key Concepts in Commodity Market Analysis

Role of Commodities in Asset Allocation

Methods of Delivering Long Commodity Exposure

Methods of Delivering Commodity Alpha

Commodity Indices

Investment Vehicles and Asset Allocation

The Oil-Price Spike of 2008: Inferences from Price Relationships and Other Publicly Available Data

### **Topic 4: Managed Futures**

Managed Futures Industry Development and Regulation

Managed Futures Strategies

Risk and Performance Measurement in Managed Futures Strategies

Benchmarking and Investment Products

Investment Analysis in Managed Futures

Do Professional Currency Managers Beat the Benchmark?

### **Topic 5: Real Estate**

Real Estate Investments

Real Estate Indices

Real Estate Equity Valuation

Real Estate Investment Risks and Due Diligence

Residential and Commercial Mortgages

Mortgage-Backed Securities

Real Estate and Asset Allocation

Alternative Real Estate Investment Vehicles  
Real Estate Development  
Assessing and Managing Risk in Institutional Real Estate Investment  
Risks, Returns, and Correlations for Global Private Real Estate Markets

**Topic 6: Hedge Funds**

Convertible Arbitrage  
Global Macro  
Equity Long/Short  
Fund-of-Hedge-Funds and Investible Indices  
Strategy Specific Due Diligence  
Operational Risk  
Hedge Fund Investing in Distressed Securities  
Are Funds of Funds Simply Multi-Strategy Managers with Extra Fees  
Hedge Fund Investing: A Quantitative Approach to Hedge Fund Manager Selection  
and De-Selection

**Topic 7: Structured Products, New Products and Strategies, and Regulation**

Credit Derivatives  
Coping with Climate Change  
Passive Hedge Fund Replication: A Critical Assessment of Existing Techniques  
The Economics of Structured Finance  
The Fundamental Principles of Financial Regulation

**Topic 8: Asset Allocation**

Dynamic Strategies for Asset Allocation  
Beyond Markowitz: A Comprehensive Wealth Allocation Framework for Individual  
Investors  
The Strategic and Tactical Value of Commodity Futures  
Smoothing and Implications for Asset Allocation Choices

**Topic 9: Portfolio and Risk Management**

Risk Management for Alternative Investments  
A Perspective on Liquidity Risk and Horizon Uncertainty  
Portfolio Management with Illiquid Investments  
Jumping the Gates: Using Beta-Overlay Strategies to Hedge Liquidity Constraints

**Topic 10: Research Issues in Alternative Investments**

Facts and Fantasies about Commodity Futures  
The Changing Face of Private Equity: How Modern Private Equity Firms Manage  
Investment Portfolios  
Beware of Venturing into Private Equity  
REIT Momentum and the Performance of Real Estate Mutual Funds  
Locking in the Profits or Putting It All on Black? An Empirical Investigation into the  
Risk-Taking Behavior of Hedge Fund Managers

**Topic 11: Current Topics**

What Happened To The Quants In August 2007  
The Subprime Credit Crisis of 2007

## Topic 1: Professional Standards and Ethics

### Readings

1. *Standards of Practice Handbook*. 9<sup>th</sup> edition. Charlottesville, Virginia: CFA Institute, 2005. CFA Institute Standards of Professional Conduct
  - A. Standards I – III
  - B. Standards IV – VI

### Reading 1, A

Standard I: Professionalism

Standard II: Integrity of Capital Markets

Standard III: Duties to Clients

### Keywords

Best execution	Market manipulation
Block allocation	Material changes
Block trades	Material nonpublic information
Brokerage	Mosaic theory
Buy-side	Oversubscribed issue
Commissions	Plagiarism
Composites	"Pump and dump"
Custody	Restricted list
Directed brokerage	Round-lot
Due diligence	Sell-side
Execution of orders	Secondary offerings
Fair dealing	Soft commissions
Firewalls	Soft dollars
"Flash" report	Thinly traded security
Fraud	Watch list
Global Investment Performance Standards (GIPS)	Whisper number
"Hot issue" securities	Whistle-blowing
Insider trading	

### Learning Objectives

1. Apply Standard I with respect to:
  - a. knowledge of the law.
  - b. independence and objectivity.
  - c. misrepresentation.
  - d. misconduct.
2. Apply Standard II with respect to:
  - a. material nonpublic information.

- b. market manipulation.
- 3. Apply Standard III with respect to:
  - a. loyalty, prudence, and care.
  - b. fair dealing.
  - c. suitability.
  - d. performance presentation.
  - e. preservation of confidentiality.

**Reading 1, B**

Standard IV: Duties to Employers

Standard V: Investment Analysis, Recommendations, and Actions

Standard VI: Conflicts of Interest

**Keywords**

Additional compensation  
Blackout/restricted periods  
Disclosure  
Fact versus opinion  
Front-running  
Incentive fees  
Independent contractors

Misappropriation  
Performance fees  
Reasonable basis  
Referral fees  
Secondary research  
Self-dealing

**Learning Objectives**

1. Apply Standard IV with respect to:
  - a. loyalty.
  - b. additional compensation arrangements.
  - c. responsibilities of supervisors.
2. Apply Standard V with respect to:
  - a. diligence and reasonable basis.
  - b. communication with clients and prospective clients.
  - c. record retention.
3. Apply Standard VI with respect to:
  - a. disclosure of conflicts.
  - b. priority of transactions.
  - c. referral fees.

## Topic 2: Private Equity

### Readings

1. *CAIA Level II: Advanced Core Topics in Alternative Investments*. Wiley. 2009. ISBN: 978-0-470-69426-8. Part I – Venture Capital and Private Equity, Chapters 1 – 11.
2. *CAIA Level II: Integrated Topics and Applications*. Institutional Investor, Inc. 2009. ISBN: 978-0-9842550-0-9. Part I – Private Equity.
  - A. Kocis, J., J. Bachman, A. Long, and C. Nickels. “The IRR” Chapter 7 in *Inside Private Equity: The Professional Investor’s Handbook*. 2009.
  - B. Guennoc, D., P.Y. Mathonet, and T. Meyer. “Distribution Waterfall.” CAIA Association. 2009.
  - C. Aigner, P., S. Albrecht, G. Beyschlag, T. Friederich, M. Kalepky, and R. Zagst. “What Drives PE? Analyses of Success Factors for Private Equity Funds.” *Journal of Private Equity*. Fall 2008, p. 63-85.

### Reading 1, Chapter 1

Private Equity Market Landscape

### Keywords

Buyout funds

Carried interest

Cash flow J-curve

General Partner

J-curve

Limited Partner

Mezzanine funds

Net asset value (NAV) J-curve

Venture capital (VC) funds

### Learning Objectives

1. Compare and contrast buyout funds with venture capital funds.
2. Describe the relationship life cycle between limited partners and general partners.
3. Describe the J-curve.

### Reading 1, Chapter 2

Routes into Private Equity

### Keywords

Commitments

Contractually limited life

Distributions

Drawdown

Fundraising cycle

Hurdle rate or preferred return

Investment period

Limiting liability

Limited Partner

Management fees

Secondary transactions

## Learning Objectives

1. Identify key characteristics of private equity funds and private equity funds-of-funds.
2. Discuss the value added and costs of using a private equity fund-of-funds structure relative to an in-house private equity investment program.

### Reading 1, Chapter 3

#### Private Equity Funds Structure

## Keywords

Bad-leaver clause  
Carried-interest split  
Clawbacks  
Distribution waterfall  
Good-leaver clause

Key person provision  
Limited Partnership Agreements  
(LPA)  
Qualified majority

## Learning Objectives

1. Describe how limited partnership agreement terms are designed to align the interests of private equity market participants.

### Reading 1, Chapter 4

#### The Investment Process

## Keywords

Naïve allocation  
Overcommitment ratio

Over-commitment strategy  
Vintage years

## Learning Objectives

1. Identify three key performance drivers for private equity.
2. Describe the primary steps in the investment process and the rationale for each.
3. Describe the three pillars of risk management of private equity portfolios.

### Reading 1, Chapter 5

#### Private Equity Portfolio Design

## Keywords

Bottom-up approach  
Core-satellite approach  
Cost-averaging approach

Market timing approach  
Mixed approach  
Naïve diversification

Top-down approach

Vintage year diversification

## Learning Objectives

1. Differentiate between a bottom-up, a top-down and a mixed approach to constructing a private equity portfolio.
2. Compare the core-satellite approach to diversification approaches for managing risk in private equity portfolios.
3. Explain the rationale for using naïve diversification in the private equity markets.
4. Compare market timing with cost-averaging in the private equity markets.

### Reading 1, Chapter 6

Fund Manager Selection Process

## Keywords

Private equity grading

## Learning Objectives

1. Describe the private equity fund selection process.
2. Describe trends in private equity with respect to gaining access to top funds.
3. Discuss the importance and limitations of due diligence in fund manager selection.
4. Describe the steps of the due diligence process.

### Reading 1, Chapter 7

Benchmarking in the Private Equity World

## Keywords

Bailey criteria

Benchmarking

Commitment weighted

Distribution to paid in-ratio (DPI)

Interim internal rate of return (IIRR)

Public market equivalent (PME)

Residual value to paid-in ratios  
(RVPI)

Survivorship bias

Total value to paid-in ratio (TVPI)

## Learning Objectives

1. Discuss private equity benchmarks in the context of the Bailey criteria for appropriate investment benchmarks.
2. Calculate the following performance measures and discuss their drawbacks: interim internal rate of return (IIRR), total value to paid-in ratio (TVPI), distribution to paid in-ratio (DPI), and residual value to paid-in ratio (RVPI).
3. Compare classical and other relative benchmarks to absolute benchmarks.

4. Compare the returns offered by the two private equity funds to those of public securities, calculating the gap between the IRR of each private equity (PE) fund and the public market equivalent.
5. Discuss performance measures for portfolios of funds relative to performance measures of individual funds.

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**Corrections to reading:**

Page 65, “Multiplying this sum by the value of the CAC 40 at the end of the period yields \$2419, which represents the amount an investor...” should instead be “Multiplying this sum by the value of the CAC 40 at the end of the period yields \$2438.48, which represents the amount an investor...”

Page 65, 2<sup>nd</sup> paragraph in section on *Portfolio of Funds* "Performance Measures," when explaining the IRR, the word "period" is misspelled as "periot."

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<b>Reading 1, Chapter 8</b> Monitoring Private Equity Investments
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**Keywords**

Special purpose vehicle (SPV)  
Style drift

Transparency

**Learning Objectives**

1. Outline the tradeoffs to consider when determining the appropriate amount of monitoring of private equity investments.
2. Outline the costs and benefits of style drift in private equity funds.
3. Discuss issues surrounding information gathering and transparency in the private equity industry.
4. Describe two main exit routes prior to private equity funds' maturity.
5. Outline potential actions for addressing private equity funds that receive a poor evaluation.

<b>Reading 1, Chapter 9</b> Private Equity Fund Valuation
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**Keywords**

Economic value approach  
Modified bottom-up approach

Modified comparable approach

## Learning Objectives

1. Explain how private equity returns follow a J-curve.
2. Argue for or against the use of the Net Asset Value (NAV) approach to value private equity funds.
3. Compare the interim IRR (IIRR) to the traditional IRR.
4. Describe the three components of the interim IRR in private equity investments.
5. Describe economic value approaches to private equity fund valuation.

### Reading 1, Chapter 10

#### Private Equity Fund Discount Rate

## Keywords

Bottom-up betas

Opportunity cost of capital

## Learning Objectives

1. Discuss the shortcomings of applying the Capital Asset Pricing Model (CAPM) to private equity funds.
2. Defend the choice of a particular risk-free rate as an input to the CAPM for the purpose of estimating a private equity fund discount rate.
3. Defend the choice of a particular equity risk premium as an input to the CAPM for the purpose of estimating a private equity fund discount rate.
4. Describe various methods for estimating private equity betas.
5. Describe two alternatives to the CAPM for estimating private equity fund discount rates.

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### Correction to reading:

Page 94; Table 10.7, the data is missing for "Japan."

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### Reading 1, Chapter 11

#### The Management of Liquidity

## Keywords

Distribution-in-kind

Overcommitment ratio

## Learning Objectives

1. Explain the over-commitment strategy by limited partners.
2. Identify seven sources of liquidity for private equity funds.

3. Compare and contrast various approaches to making cash flow projections.

<b>Reading 2, Article A</b> The IRR
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**Keywords**

Smell test  
Point-to-point IRR

Time-Zero IRR

**Learning Objectives**

1. Understand the reasons that the Internal Rate of Return (IRR) is an important measure of private equity performance.
2. Define the Internal Rate of Return (IRR) in words and as a formula.
3. Compute the mathematically correct IRR(s) for various sets of cash flows.
4. Understand challenges of multiple or misleading mathematically correct IRR solutions and explain how results may be interpreted.
5. Describe how an existing (positive or negative) IRR is affected by subsequent cash flows.
6. Understand challenges to using IRR with total loss of capital, with initial positive cash flows, in the aggregation of fund IRRs and in the ranking of funds.
7. Understand other measures related to IRR.

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**Correction to reading:**

Page 19. On Table 7.2 the calculated XIRR should be -17.05%. This figure affects the calculations done in the middle of the page. Consequently, the result reported for equation (7.9) is incorrect and must change to -13.00%.

---

<b>Reading 2, Article B</b> Distribution Waterfall
---

**Keywords**

Carried interest  
Catch-up  
Clawback  
Distribution provisions  
Distributions-in-kind  
Floor  
General partner investment in fund

Hard hurdle  
Hurdle rate  
Limitations  
Management fees  
Preferred return  
Soft hurdle  
Vesting

## Learning Objectives

1. Explain why the waterfall distribution is important.
  2. Discuss the following aspects of an incentive structure: management fees, amount of the general partner's investment in fund, carried interest split, vesting provisions, and distribution provisions.
  3. Determine private equity fund profits on an aggregate and individual transaction basis.
  4. Evaluate various carried interest schemes.
  5. Determine how proceeds are distributed and calculate the preferred return when provided appropriate terms and assumptions.
  6. Compute the break even IRR for two funds with different carried interest, catch-up and hurdle rate provisions.
  7. Compare the preferred return to a free option.
  8. Compare and contrast deal-by-deal and fund-as-a-whole carried interest distribution approaches.
  9. Determine the amount of clawback from the general partner when provided appropriate assumptions and parameters.
  10. Discuss the limitations of clawback provisions.
- 

### Corrections to reading:

#### Page 34, Question #1

The correct answer, USD 8.25 Million, is not listed as an option.

$$133,000,000 - 100,000,000 = 33,000,000$$

This is the limited partners' share, which is 80% of the total profit.

$$33,000,000 \div 80\% = 41,250,000 \text{ Total profits}$$

$$41,250,000 \times 20\% = 8,250,000$$

#### Page 42, solution to Question #4:

$$\text{USD } 30 \text{ million} \times (1.08)^2 + \text{USD } 10 \text{ million} \times 1.08 = \text{USD } 5.6 \text{ million.}$$

Should be:

$$\text{USD } 30 \text{ million} \times (1.08)^2 + \text{USD } 10 \text{ million} \times (1.08) - \text{USD } 40 \text{ million} = \text{USD } 5.8 \text{ million.}$$

The Waterfall Table would be:

<b>Example for Waterfall (in millions)</b>			
	<b>Limited Partners</b>	<b>General Partner</b>	<b>Total</b>
Original Contributions	(USD 40)		(USD 40)
<b>Sale of investment for USD 100 million</b>			
Return of capital	USD 40		USD 40
Preferred return to limited partners	USD 5.8		USD 5.8
General partner catch-up		USD 1.4	USD 1.4
80%/20% split of residual amount	USD 42.2	USD 10.6	USD 52.8
Closing balance	USD 48	USD 12	USD 60

$$48 = (100 - 40) \times 80\%$$

$$52.8 = 42.2 \div 80\%$$

$$12 = (100 - 40) \times 20\%$$

$$10.6 = 52.8 \times 20\%$$

$$42.2 = 48 - 5.8$$

$$1.4 = 12 - 10.6$$

Page 43, solution to Question 6:

$$\text{USD } 100 \text{ million} \times (1.08)^5 = \text{USD } 146.9$$

Should be:

$$\text{USD } 100 \text{ million} \times (1.08)^4 = \text{USD } 136.05$$

The remaining proceeds of 153.1 million....

Should be:

The remaining proceeds of to 163.95 million....

Waterfall for Hard Hurdle (in millions) table:

The third row of numbers should be changed from 46.9 to 36.05.

The fourth row of numbers should be changed from 122.5, 30.6 and 153.1 to 131.16, 32.79 and 163.95.

The final row of numbers should be changed from 169.4 30.6 and 200 to 167.21, 32.79 and 200.

Page 43, question 8, second formula, nominator should be:

$$\frac{7\% \times 50\%}{50\% - 20\%} = 11.67\%$$

## Reading 2, Article C

### What Drives PE? Analyses of Success Factors for Private Equity Funds

#### Keywords

Buyout ratio	Percentage loss
Herfindahl-Hirschman Index (HHI)	Public market equivalent
Markov transition matrix	Vintage year

#### Learning Objectives

1. Explain how and why the endogenous factors such as region, industry sector, financing stage, vintage year, and general partner experience can impact the following private equity performance measures: IRR, public market equivalent and percentage loss.
2. Explain how and why the exogenous factors such as public market performance, interest rates, and GDP growth can impact the following private equity performance measures: IRR, public market equivalent and percentage loss.
3. Explain how Markov transition matrices are used to evaluate the GP's performance persistence, and what Aigner, et al found using this methodology.

---

The following answers to the practice questions for Chapter 1 and 8 are not included in the book. All other answers for this section are on page 76.

#### Chapter 1

1. C
2. B

#### Chapter 8

1. B
  2. C
  3. A
-

## Topic 3: Commodities

### Readings

1. *CAIA Level II: Advanced Core Topics in Alternative Investments*. Wiley. 2009. ISBN: 978-0-470-69426-8. Part II – Commodities, Chapters 12 – 17.
2. *CAIA Level II: Integrated Topics and Applications*. Institutional Investor, Inc. 2009. ISBN: 978-0-9842550-0-9. Part II – Commodities.
  - A. Till, H. 2008. “The Oil-Price Spike of 2008: Inferences from Price Relationships and Other Publicly Available Data.” Chapter excerpted from the EDHEC Position Paper “Oil Prices: The True Role of Speculation.” Amenc, Maffei and Till November, 2008.

### Reading 1, Chapter 12

#### Key Concepts in Commodity Market Analysis

### Keywords

Backwardation	Liquidity Preference Hypothesis
Cash-and-carry arbitrage	Normal backwardation
Consumer surplus	Normal contango
Contango	Preferred Habitat Hypothesis
Convenience yield	Rational Expectations Hypothesis
Cost of carry	Real assets
Durable assets	Segmented market
Forward curve	Stock-out

### Learning Objectives

1. Explain the differences between real and financial assets.
2. Explain the role of investors in commodity markets.
3. Explain the concept of a convenience yield and how it relates to the cost of carry and a commodity futures price determination.
4. Explain the theories of commodity forward curves.

---

### Corrections to reading:

Page 126,

In second full paragraph replace the sentence “Keynes (1930) called this **normal contango.**” with “An upward sloping forward curve is termed contango”.

In the third full paragraph delete the word “normal.”

Prior to the last paragraph (entitled Option-based models), insert the following new paragraph: Contango refers to the condition when long term futures prices are higher than short term futures prices. Since the current spot price can be viewed as a futures contract with no time to delivery, contango can also refer to the idea that futures prices are higher than current spot prices. **Normal contango** refers to the relationship between futures prices and *expected* spot prices. Specifically, normal contango is when the futures price is believed to be higher than the expected spot price. Since we can not directly observe the expected spot price, we can only estimate whether a market is in normal contango.

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**Reading 1, Chapter 13**

## Role of Commodities in Asset Allocation

**Keywords**

Diversification return  
Income return  
Roll return

Scarcity  
Spot return

**Learning Objectives**

1. Discuss the evolution of the role of commodities in asset allocation.
2. Describe the three sources of return to commodity investment and speculation.
3. Discuss the concept of scarcity in commodities, and explain how it impacts investors.
4. Analyze the statistical properties of commodity prices and discuss the reasons that historical commodity prices may be of little value in predicting future returns.

**Reading 1, Chapter 14**

## Methods of Delivering Long Commodity Exposure

**Keywords**

Indirect commodity investment

Private commodity partnership

**Learning Objectives**

1. Explain why indirect ownership of commodities has been mostly preferred over direct physical ownership.
2. Discuss the pros and cons of the following investment vehicles of indirect ownership of commodities: commodity mutual funds and ETFs, long-biased-hedge funds, private commodity partnerships, commodity trade financing and production financing, public commodity-based equities, and bonds issued by commodity firms.

## Reading 1, Chapter 15

### Methods of Delivering Commodity Alpha

#### Keywords

Bear spread	Enterprise value
Bull spread	Location spreads
Calendar spread	Processing spreads
Commodity derivatives	Quality spreads
Commodity rights	Storage strategy
Crack spread	Substitution spreads
Crush spread	

#### Learning Objectives

1. Explain the differences between fundamental and quantitative directional strategies.
2. Describe relative-value strategies and discuss the three risk dimensions possible in relative-value strategies.
3. Describe the different time spreads possible in commodity investing and fully explain and demonstrate in which cases it might be appropriate to utilize each strategy.
4. Describe the correlation spreads possible in commodity investing, and fully explain and demonstrate under what circumstances each would be profitable.
5. Describe intra-market relative-value strategies and fully explain and demonstrate in which cases it might be appropriate to utilize each strategy.
6. Explain the difference between equity-based and debt-based commodity strategies and explain under what circumstances each would be implemented.

---

#### Correction to reading:

Page 140 (revisions underlined). In general, investors can enter two types of calendar spreads – bull spreads and bear spreads – depending on their market views. In a **bull spread**, the investor is long the nearby (near-term) contract and is short the distant (long-term) contract. In backwardated markets the investor is hoping for the spread to narrow widen, whereas in inverted contango markets the bull-spread investor is hoping for the price difference to widen narrow. The losses of a bull-spread investor are limited because, in an efficient market, price differences cannot exceed carrying costs. If, at some point, the differences do exceed carrying costs, arbitrageurs would drive prices down to a level reflecting fair carrying costs.

In a **bear spread**, the investor is long the distant (long-term) contract and is short the nearby (near-term) contract. In backwardated markets the investor wants the spread to widen narrow, whereas in inverted contango markets the bear-spread investor wants the

price difference to widen. If prices move against the investor's position, the bear spread faces unlimited risk since the nearby contract theoretically can rise without an upper limit; consequently the bear spreader would have to deliver or offset at any price.

#### *Example of spread P&L calculation*

The profit and loss (P&L) from a spread position can only be calculated after the spread is closed. Assume the following scenario. In March, a spreader observes ~~an unusually steep backwardation~~ a contango in the crude oil forward curve.

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**Reading 1, Chapter 16**  
Commodity Indices

### **Keywords**

Commodity beta	Excess return index
Commodity index	Maturity
Commodity weights	Total return index
Diversification	Treasury (collateral)
Dynamic asset allocation	

### **Learning Objectives**

1. Describe total return and excess return commodity indexes, and describe their differences.
2. Describe the following possible factors of return to commodity indexes: Beta, roll return, spot return, dynamic asset allocation, diversification, commodity weights, maturity, and T-bill.
3. Explain and calculate the following four measures of commodity index returns: spot, roll, excess, and total returns.
4. Explain the primary differences among the major commodity indices (candidates should concentrate on describing which type of environment each commodity index would benefit from).

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### **Correction to reading:**

Page 149, the last line of table should read: Roll Return:  $.723\% - .723\% = 0$

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**Reading 1, Chapter 17**  
Investment Vehicles and Asset Allocation

**Keywords**

Commodity index swap	Exchange-traded notes (ETNs)
Commodity index-linked note	Leveraged notes
Exchange traded funds (ETF)	Principal-guaranteed notes

**Learning Objectives**

1. Describe and compare the following families of commodity structure products and investment vehicles: Delta-one index-linked structures, index-linked-notes and exchange-traded notes, leveraged and option-based structures, and hedge funds and funds-of-funds.
2. Describe the reasons why commodities have been proven to enhance the risk-adjusted returns of diversified portfolios.
3. Describe the evidence on commodities providing hedging against inflation risk.

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**Clarification to reading:**

Page 158, under Leverage Notes, 1<sup>st</sup> paragraph, should read:

Many index-linked notes offer leveraged exposure to commodity indices. These are referred to as leveraged notes. A common structure offers three times leveraged exposure to a commodity index. Because these notes can default (a decline of more than 33% in the index would result in a default), the issuer and investor can be viewed as having or needing options. The issuer typically purchases option protection against further declines in the commodity. The investor enjoys an implicit protective put through the limited liability of the notes since the price of the note can not become negative.

**Correction to reading:**

Page 159, 1<sup>st</sup> paragraph under Hedge Funds and Funds-of-Funds, revise the last sentence as "...fund managers is in the Commodity Alpha section of *Chapter 15*."

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**Reading 2, Article A**  
The Oil-Price Spike of 2008: Inferences from Price Relationships and Other Publicly Available Data

**Keywords**

Baltic Dry Index	Crack spread
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Negative gamma

## **Learning Objectives**

1. Explain the role of price from a futures trader's perspective.
2. Identify and explain the fundamental factors that have caused the oil prices to increase since 2000.
3. Identify the possible obstacles to predicting the supply and demand for oil products.
4. Explain the impact of the rising Chinese demand for oil products on the world prices of oil products.
5. Illustrate how structural breaks could lead to misinterpretation of fundamental information from price-relationship data, using crude oil market data from 1986-2007.
6. Discuss the role of transparency in futures trading in price discovery (given the inadequate fundamental data).
7. Explain how various activities of market participants impact the price of oil products.
8. Explain how currency prices impact oil prices.
9. Present the arguments for oil as a store-of-value.

## Topic 4: Managed Futures

### Readings

1. *CAIA Level II: Advanced Core Topics in Alternative Investments*. Wiley. 2009. ISBN: 978-0-470-69426-8. Part II – Managed Futures, Chapters 18 – 22.
2. *CAIA Level II: Integrated Topics and Applications*. Institutional Investor, Inc. 2009. ISBN: 978-0-9842550-0-9. Part II – Commodities.
  - A. Pojarliev, M. and R.M. Levich. 2008. “Do Professional Currency Managers Beat the Benchmark?” *Financial Analysts Journal*. Vol. 64, no. 5, September/October 2008, p. 18-32.

### Reading 1, Chapter 18

Managed Futures Industry Development and Regulation

### Keywords

Actively managed	Futures commission merchants (FCMs)
Commodity Futures Trading Commission (CFTC)	Futures fund
Commodity pool operators (CPOs)	Introducing brokers (IBs)
Commodity Trading Advisors (CTAs)	Managed accounts
Funds	National Futures Association (NFA)

### Learning Objectives

1. Discuss the historical foundation and development of the managed futures markets and industry, the role of regulatory agencies and industry associations, and describe the characteristics and functions of industry organizations.

### Reading 1, Chapter 19

Managed Futures Strategies

### Keywords

Break-out strategies	Non-trend following strategies
Channel breakout	Overfitting
Countertrend	Systematic strategies
Degradation	Relative Strength Index (RSI)
Discretionary strategies	Relative value strategies
Fundamental analysis	Technical analysis
“Look back”	Trend following strategies
Moving average	

## Learning Objectives

1. Describe and apply, to a specific futures market, the three groups of systematic trading strategies that are typically employed by CTAs: trend following, non-trend following, and relative value.
2. Discuss the main issues surrounding diversification across trading styles in the context of managed futures.

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### Corrections to reading:

Page 179, set of equations in the middle of the page; replace the second equation (the one that ends with: + . . . ) with

$$\text{EMA}_t(\lambda) = \lambda \times \{P_t + [(1-\lambda) \times P_{t-1}] + [(1-\lambda)^2 \times P_{t-2}] + [(1-\lambda)^3 \times P_{t-3}] + \dots\}$$

Page 185, Table 19.6, under Financials, Currencies listed shows "Japanese Yeh" should be "Japanese Yen."

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### Reading 1, Chapter 20

Risk and Performance Measurement in Managed Futures Strategies

#### Keywords

Backfill bias	Momentum
Capital at Risk (CaR)	Selection bias
Initial margin	Stop loss rules
Look-back bias	Stress test
Margin to equity ratio	Survivorship bias
Maximum drawdown	Value at Risk (VaR)

## Learning Objectives

1. Describe, calculate and interpret the results arising from the main tools available for risk management in the managed futures space.
2. Discuss the main findings and caveats of the research on the performance of individual trading strategies and the benefits of managed futures.

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### Reading 1, Chapter 21

Benchmarking and Investment Products

#### Keywords

Access bias	Active benchmarks
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Passive benchmarks

Slippage costs

## Learning Objectives

1. Discuss the attributes of managed futures in terms of:
  - a. liquidity,
  - b. non-directional strategy,
  - c. optionality,
  - d. implicit leverage, and
  - e. transparency.
2. Explain how adding managed futures to traditional portfolios would benefit these portfolios and what the sources of these benefits are.
3. Describe the three approaches to benchmarking managed futures performance.

### Reading 1, Chapter 22

Investment Analysis in Managed Futures

## Keywords

Administrators

Annual audit

Due diligence

Investment advisory agreement

Offering document

Redemption form

Subscription agreement

## Learning Objectives

1. Describe the process used by investors to identify and analyze managed futures traders, including the following steps that would be common across most approaches to managed futures investments: sourcing managers, qualitative analysis of managers, quantitative analysis of managers, investment recommendation, due diligence, and performance monitoring.

### Reading 2, Article A

Do Professional Currency Managers Beat the Benchmark?

## Keywords

Alpha returns

Beta returns

Information ratio

Reporting biases

## Learning Objectives

1. Identify and explain each of the four style factors of currency returns.
2. Explain the potential risk(s) of each of the following trading strategies: carry trade, trend-following, value, and volatility.

3. Explain the differences in performance for active currency managers at the index level during the 1990s and the post-2000 periods in terms of excess return and volatility.
  4. Identify and explain the biases that are inherent in the professional currency manager index.
  5. Evaluate, justify, and apply the alternative information ratio as an appropriate measure of performance for individual currency managers.
  6. Compare and contrast the traditional and alternative information ratios.
  7. Interpret the positive and negative exposure to style factors.
  8. Identify and explain the sources of alpha for active currency managers.
- 
- 

**Correction to reading:**

Page 85, 2<sup>nd</sup> column, sentence after equation 3, should be changed to where  $R_j$  is the annualized average excess return and  $\sigma(R_j)$  is its annualized standard deviation.

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## Topic 5: Real Estate

### Readings

1. *CAIA Level II: Advanced Core Topics in Alternative Investments*. Wiley. 2009. ISBN: 978-0-470-69426-8. Part III – Real Estate, Chapters 23 – 31.
2. *CAIA Level II: Integrated Topics and Applications*. Institutional Investor, Inc. 2009. ISBN: 978-0-9842550-0-9. Part III – Real Estate.
  - A. Kaiser, R.W. and J. Clayton, “Assessing and Managing Risk in Institutional Real Estate Investment.” *Journal of Real Estate Portfolio Management*. Vol. 14, no. 4, 2008, p. 287-306.
  - B. Tyrrell, N. and T. Jowett, “Risks, Returns, and Correlations for Global Private Real Estate Markets.” *Journal of Real Estate Portfolio Management*. Vol. 14, no., 4, 2008, p. 335-350.

### Reading 1, Chapter 23

#### Real Estate Investments

### Keywords

Commercial real estate  
Commercial mortgage-backed  
securities  
Farmland

Real estate investment trusts (REITs)  
Residential real estate  
Timberland

### Learning Objectives

1. Describe the following characteristics of real estate as an asset class: heterogeneity, indivisibility, and liquidity.
2. Explain how the behavior of private and public real estate investments reflects a mix of equity and debt behaviors.
3. Describe the main characteristics of private and public commercial real estate equity and debt investments.

### Reading 1, Chapter 24

#### Real Estate Indices

### Keywords

Appraisal-based index  
Data smoothing  
Hedonic-price method

Repeated-sales pricing  
Sample selection bias

## Learning Objectives

1. Describe the main characteristics of private and public real estate equity and debt indices.
2. Explain the effects that on real estate indices may have the presence of the following potential biases: sample selection, illiquidity induced, and data smoothing.
3. Explain the appraisal and transactions-based methods used for constructing real estate indices.

<b>Reading 1, Chapter 25</b> Real Estate Equity Valuation
--

### Keywords

Adjusted funds from operations  
(AFFO)  
Depreciation  
Effective gross income  
Funds from operations (FFO)

Net sale proceeds  
Potential gross income  
Vacancy loss rate

## Learning Objectives

1. Calculate the value of private commercial real estate equity using the income approach.
2. Explain the logic for valuing private commercial real estate equity using the comparable sales prices method and the profit approach.
3. Explain how to use the net asset value assessments method to determine whether a real estate investment trust (REIT) is under or overvalued.
4. Calculate the value of a REIT using the discounted cash flow valuation.
5. Calculate the value of a REIT using the dividend discount method.
6. Discuss whether REITs' prices are affected by the behavior of the aggregate stock market.

<b>Reading 1, Chapter 26</b> Real Estate Investment Risks and Due Diligence
--

### Keywords

Business risk  
Financial risk  
Inflation risk

Legal risk  
Liquidity risk  
Management risk

## Learning Objectives

1. Analyze the effects of specific risks in real estate investments.
2. Describe the main elements of due diligence in real estate investments.
3. Describe the basics of the use of real estate derivatives in risk management.

<b>Reading 1, Chapter 27</b> Residential and Commercial Mortgages
--

## Keywords

Balloon payments	Interest Coverage Ratio
Capped interest rates	Interest-only mortgages
Covenants	Margin rate
Cross-collateral provision	Lien Theory
Debt Service Coverage Ratio (DSCR)	Loan-to-value
Effective cost of a mortgage	Option adjustable mortgage loans (option ARMs)
Fixed Charges Ratio	Prepayments
Fixed-rate, constant payment, fully amortized loans	Title Theory
Foreclosure	Variable or adjustable rate mortgages (ARM)
Graduated payment loans	
Index rate	

## Learning Objectives

1. Describe the main characteristics of fixed-rate, constant payment, fully amortized mortgages and calculate monthly mortgage, interest and principal payments, and outstanding balances on such loans.
2. Describe the main characteristics of variable or adjustable rate mortgages and calculate monthly mortgage, interest and principal payments, and outstanding balances on such loans.
3. Describe graduated payment loans and option adjustable rate mortgage loans (option ARMs) and calculate the monthly payment of a mortgage possessing a balloon payment.
4. Describe the main characteristics of commercial mortgages.
5. Explain how to use the four most widely employed financial ratios for commercial mortgages and default risk.

<b>Reading 1, Chapter 28</b> Mortgage-Backed Securities
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## Keywords

Accrual tranches (Z-bonds)	Collateralized Mortgage Obligations (CMO)
----------------------------	--

Commercial mortgage-backed securities (CMBS)	Planned Amortization Class (PAC) tranches
Conditional Prepayment Rate (CPR)	Principal-only (PO) collateralized mortgage obligations
Conduit	Public Securities Association (PSA)
Conduit's average margin (excess interest)	Refinancing burnout
Contraction risk	Residential mortgage-backed securities (RMBS)
Extension risk	Sequential-pay collateralized mortgage obligation
Floating-rate tranches	Single monthly mortality rate
Interest-only (IO) collateralized mortgage obligations	Sub-prime mortgages
Mezzanine loans	Z-bonds (accrual tranches)
Mortgage-backed securities (MBS)	
Pass-through mortgage backed securities	

## Learning Objectives

1. Describe the main characteristics of the residential mortgage backed securities (RMBS) market.
2. Calculate single mortality rates (SMM) and conditional prepayment rates (CPR) and know how to predict prepayments based on the Public Securities Association (PSA) Prepayment benchmark.
3. Explain and calculate how cash flows are allocated in a two-sequential pay tranche Collateralized Mortgage Obligation (CMO).
4. Explain the basics of the following CMO types: Accrual tranches or Z-bonds, principal-only and interest-only, Planned Amortization Class (PAC) tranches, and floating-rate tranches.
5. Explain the main characteristics and the different structures under which a Commercial Mortgage Backed Security (CMBS) can be structured.
6. Calculate a conduit's average margin or excess interest.
7. Identify the risk factors affecting Residential Mortgage Backed Securities and compare them to the risk factors affecting Commercial Mortgage Backed Securities.
8. Explain the main determinants of the US real estate and mortgage crisis of 2007-2008.

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### Correction to reading:

Page 260, 2<sup>nd</sup> to last paragraph, above equation should read: "... prepayment made by borrowers was \$2,297,231."

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**Reading 1, Chapter 29**  
Real Estate and Asset Allocation

**Keywords**

Geographical diversification

**Learning Objectives**

1. Explain the relation between real estate prices and selected macroeconomic variables.
2. Describe the role of real estate in an investor's portfolio.
3. Explain the main problems in relation to diversification that a real estate manager faces.
4. Describe the diversification benefits of REITs investing.
5. Describe the performance of real estate by sectors and the potential for geographical real estate diversification.

**Reading 1, Chapter 30**  
Alternative Real Estate Investment Vehicles

**Keywords**

Closed-end real estate mutual funds  
Commingled real estate funds  
(CREFs)  
Exchange-traded funds based on real  
estate indices  
Gearing  
Joint-venture

Limited partnerships  
Managed funds  
Open-end real estate mutual funds  
Private equity real estate funds  
Property unit trusts  
Syndications

**Learning Objectives**

1. Explain the main characteristics, advantages and disadvantages of investing in the following alternative private real estate investment vehicles: open-end real estate funds, private equity real estate funds, commingled real estate funds, and limited partnerships.
2. Explain the main characteristics of the following alternative private real estate investment vehicles: syndications and joint ventures.
3. Explain the main characteristics of the following alternative public real estate investment vehicles: options and futures on real estate indices, exchange traded funds based on real estate indices, closed-end real estate funds.
4. Describe the main issues of cross-border investments in real estate.
5. Describe the most salient elements of the performance of selected alternative real estate investment vehicles.

**Reading 1, Chapter 31**  
Real Estate Development

**Keywords**

Discounted cash flow (DCF) approach	Office sector
Forward sales	Residential developments
Full forward funding	Residual method
Industrial sector	Retail developments

**Learning Objectives**

1. Discuss the stages of the development process and the associated risks and expected returns.
2. Compare and contrast the key factors of a feasibility study for residential, retail, office and industrial sector developments.
3. Discuss key factors and inputs required to appraise a development project.
4. Use the discounted cash flow approach to calculate the net present value of a proposed development project.
5. Compare and contrast the methodologies, benefits and limitations of the DCF approach, the IRR approach, and the residual value approach to appraisals.
6. Use appropriate decision criteria to choose between two potential mutually exclusive development projects.
7. Discuss the factors that lenders examine when considering financing a development.
8. Compare and contrast forward sales and full forward funding.

**Reading 2, Article A**  
Assessing and Managing Risk in Institutional Real Estate Investment

**Keywords**

Alpha	Metro Area allocation risk
Beta	NPI swaps
Core risks	Obsolescence
Enterprise risk	Opportunistic risks
Epsilon	Property selection
Gamma	Property-type allocation risk
Global investing risks	Reinvestment risk
Leverage risk	Value-added risks
Manager incentive risk	

## Learning Objectives

1. Compare and contrast the standard deviation with downside risk in the context of real estate investing.
2. Compare and contrast beta risks, alpha risks and gamma risks and their components as described by Kaiser and Clayton.
3. Compare and contrast the risks of core, value-added, and opportunistic properties.
4. Describe the steps that institutional investors can take to limit risks. Include a discussion of the time horizon used to analyze data, naive versus strategic diversification, and hedging with swaps.

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### Correction to reading:

Page 156, 1<sup>st</sup> paragraph under *Strategically Limiting Risks* refers to Exhibit 13 but should refer to Exhibit 18.

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### Reading 2, Article B

Risks, Returns, and Correlations for Global Private Real Estate Markets

### Keywords

Jones Lang LaSalle's Real Estate  
Transparency Index

## Learning Objectives

1. Compare invested and total stock of real estate in the U.S., Asia, and Europe (in general terms), and explain why the differences are important to consider.
2. Explain why designing an optimal global real estate portfolio is challenging.
3. Explain how and why changes in nominal GDP can be used to generate estimates of country specific real estate risk, return and covariances.
4. Compare and contrast approaches for determining portfolio allocations, given the real estate risk, return and covariance estimates.

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### Corrections to reading:

Page 168, under the section **Estimating Correlations**, 1<sup>st</sup> paragraph, the last sentence refers to a "point marked X" in Exhibit 11 but there is no "X" in the exhibit; this error does not affect the learning objective.

Page 169, 2<sup>nd</sup> paragraph change Exhibit 12 to Exhibit 13; last sentence in paragraph should be changed from +0.5 for U.S. to +0.6 for U.S.

Page 170, 2<sup>nd</sup> paragraph, change Exhibit 2 to Exhibit 13.

Real Estate Practice Questions In the Integrated Topics and Applications book.

Page 176 (179), Chapter 27, Question #3.

The correct answer is 224,017.59.

<b>Year</b>	<b>1</b>	<b>2</b>	<b>3</b>
Beginning Balance	250,000.00	249,728.46	224,455.16
+ Interest	1,625.00	1,623.24	1,458.96
Ending Balance Before Payment	251,625.00	251,351.70	225,914.12
- Regular Payment	1,896.54	1,896.54	1,896.54
- Irregular Payment	-	25,000.00	-
Ending Balance After Payment	249,728.46	224,455.16	224,017.59

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## Topic 6: Hedge Funds

### Readings

1. *CAIA Level II: Advanced Core Topics in Alternative Investments*. Wiley. 2009. ISBN: 978-0-470-69426-8. Part III – Hedge Funds, Chapters 32 – 37.
2. *CAIA Level II: Integrated Topics and Applications*. Institutional Investor, Inc. 2009. ISBN: 978-0-9842550-0-9. Part IV – Hedge Funds.
  - A. Casa, T.D., M. Rechsteiner, and A. Lehmann. “Hedge Fund Investing in Distressed Securities.” Man Investments. 2008.
  - B. Reddy, G., P. Brady, and K. Patel. 2007. “Are Funds of Funds Simply Multi-Strategy Managers with Extra Fees?” *The Journal of Alternative Investments*. Winter 2007.
  - C. De Souza, C. and S. Gokcan. 2004. “Hedge Fund Investing: A Quantitative Approach to Hedge Fund Selection and De-Selection.” *The Journal of Wealth Management*. Spring. p. 52-73.

### Reading 1, Chapter 32

#### Convertible Arbitrage

### Keywords

Asset swap	Equity proxy convertible bond
At-the-money convertibles	Hybrid convertible bond
Busted convertible bond	In-the-money convertibles
Call protection	Junk (distressed) convertible bond
Conversion premium	Net delta
Conversion price	Out-of-the-money convertibles
Conversion ratio	Parity
Convertible price	Risk-neutral probability
Delta hedging	Vega hedging

### Learning Objectives

1. Explain the economic basis for the source of return for the convertible arbitrage strategy.
2. Understand the terminology of convertible bonds.
3. Calculate the value of convertible securities using the component approach: Valuation of a straight bond and valuation of a call option on the underlying stock.
4. Explain the behavior of a typical convertible bond price in response to changes in interest rates, changes in the equity price of the underlying stock, changes in market volatility, and changes in the credit risk of the underlying firm.
5. Calculate the value of convertible securities using the binomial model. Calculate the binomial trees for:

- a. the stock price,
  - b. the parity,
  - c. the conversion probability,
  - d. the credit-adjusted discount rate, and
  - e. the convertible bond value.
6. The Greeks:
    - a. calculate and explain delta and modified delta, and calculate the binomial tree for the delta of the convertible bond,
    - b. calculate and explain gamma,
    - c. explain vega,
    - d. explain rho, and
    - e. discuss other Greeks: Chi, Omicron, Upsilon and Phi.
  7. Explain and illustrate an arbitrage situation involving convertible bonds. Understand and explain delta hedging and gamma hedging. Explain and illustrate how a convertible arbitrageur uses an asset swap to manage credit risk.
  8. Describe the salient features of the historical performance of the convertible arbitrage strategy.

### Correction to reading:

Page 316, the equation for “Discount Rate” should be:

$$\text{Discount Rate} = [\text{Prob.Conv.} \times (1 + R_f)] + [(1 - \text{Prob.Conv.}) \times (1 + R_f + \text{CS})] - 1$$

### Reading 1, Chapter 33

Global Macro

### Keywords

Carry trade

Covered Interest Rate Parity

Exchange rate risk

Forward (currency) premium

Purchasing Power Parity (PPP)

Uncovered Interest Rate Parity (UIP)

Yield curve relative value trade

### Learning Objectives

1. Compare and contrast the investment process of discretionary versus systematic global macro managers.
2. Understand and apply the Purchasing Power Parity.
3. Compare and contrast the three schools of thought on the sources of returns that global macro funds endeavor to tap: the feedback based, the information based and the model based.
4. Discuss the main elements of a directional currency bet as illustrated by the Exchange Rate Mechanism (EMS) crisis in 1992-1993.

5. Discuss the main elements of spread plays as exemplified by carry trades.
6. Explain and apply the Covered Interest Rate Parity.
7. Discuss contingent yield curve steepening.
8. Describe the role of global macro hedge funds during the Asian currency crisis in 1997.
9. Discuss the basics of risk management and portfolio construction in the context of global macro strategies.
10. Describe the main elements of the historical performance of the global macro strategy.

### Correction to reading:

Page 337: The first and second paragraphs should be:

Mathematically

$$(1 + R_{\text{Foreign}}) = \frac{e_t}{E_t(e_{t+1})} (1 + R_{\text{Domestic}})$$

Thus if .....

For example, suppose .....

$$E(\text{Spot in 1 Year}) = \text{Spot Today} \times (1 + \text{USD}_{1\text{-Year Rate}}) / (1 + \text{Euro}_{1\text{-Year Rate}})$$

$$E(\text{Spot in 1 Year}) = 1.2 \times (1 + .03) / (1 + .035) = 1.1942$$

### Reading 1, Chapter 34

Equity Long/Short

### Keywords

130/30 funds	Margin cost of shorts
Anomalies	Momentum
Blend approach	Quantitative approach
Bottom-up	Sector investment approach
Corporate governance (Activists) approach	Short rebate
Equity long/short	Top-down
Factor-mimicking portfolios	Valuation based approach
Fama-French four factor model	Value approach
Growth approach	Winsorized
Margin cost of longs	Z-scoring

## Learning Objectives

1. Describe the basics of the equity long/short strategy.
2. Discuss the evolution of value-investing.
3. Describe the mechanics of the equity long/short strategy, as depicted by the following steps:
  - a. idea generation,
  - b. optimal idea expression,
  - c. sizing the position,
  - d. executing the trade, and
  - e. managing the risk
4. Discuss the sources of return to the equity long/short strategy.
5. Explain various investment approaches employed by equity long/short managers.
6. Discuss the sources of return to the equity long/short strategy by reviewing investment opportunity sets.
7. Illustrate and calculate the returns attributed to four components from the long positions and five components from the short positions.
8. Compare the equity long/short strategy to the following other strategies:
  - a. Equity market neutral strategy
  - b. Long-only and 130/30 mutual funds
9. Compare and contrast the advantages and disadvantages of the following four investment strategies: equity long/short, equity market neutral, 130/30, and long-only equity mutual funds.
10. Describe the Fama-French four factor model and explain how factor mimicking portfolios are typically created.
11. Describe the salient features of the historical performance of the equity long/short strategy.

### Reading 1, Chapter 35

#### Fund-of-Hedge-Funds and Investible Indices

## Keywords

Access bias

Balanced funds of hedge funds

Concentrated fund of hedge funds

Double layer of fees

Instant history bias

Multi-strategy fund of hedge funds

Negotiated fees

Selection bias

Single-strategy fund of hedge funds

Survivorship bias

## Learning Objectives

1. Discuss the basics of the following three approaches for accessing hedge funds: self-managed, delegated and indexed.
2. Explain the main characteristics of funds of hedge funds (FoHFs) and their approach to diversification.
3. Explain why certain biases found in hedge fund databases may not impact FoHFs.

4. Explain the benefits and the potential disadvantages offered by funds of hedge funds.
5. Compare and contrast funds of hedge funds versus individual hedge funds.
6. Explain the three means through which a fund of hedge funds manager can add value.
7. Explain how FoHFs may help reduce the number of poorly managed hedge funds. How does this claim measure up in the context of hedge fund due diligence and the fraud case associated with Madoff Investment Securities, LLC?
8. Explain the desirable properties of investment indices.
9. Compare and contrast non-investible hedge fund indices versus investible hedge fund indices.
10. Discuss and apply the main due diligence issues arising in the context of funds of hedge funds.

**Reading 1, Chapter 36**  
Strategy Specific Due Diligence

**Keywords**

Capital structure arbitrage	Naked short selling
Contagion risk	Net exposure
Covered short selling	Reverse merger
Frontier markets	Static returns
Gross exposure	Stop-loss
Manager alpha	Swap spread arbitrage
Market-linked returns	Volatility arbitrage
Mortgage arbitrage	Yield curve arbitrage

**Learning Objectives**

1. Assess, explain and apply the main strategy specific issues arising in a due diligence process in the cases of the following hedge fund strategies:
  - a. long/short equity
  - b. convertible arbitrage
  - c. merger arbitrage
  - d. fixed income arbitrage
  - e. emerging markets
  - f. distressed securities

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**Correction to reading:**

Page 394, 3<sup>rd</sup> line of “Volatility Arbitrage” section, revise as “Thus, volatility arbitrage involves taking ~~long~~ *short* positions in fixed-income derivatives and delta hedging the market risk of the position.”

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**Reading 1, Chapter 37**  
Operational Risk

**Keywords**

Agency risk	Focus phase
Assessment phase	Form ADV
Background checks	Forward curve
Credit risk	Market risk
Economic capital (EC)	Private placement memorandum
Expected loss (EL)	Validation phase

**Learning Objectives**

1. Explain the basics of the measures of market risk and credit risk.
2. Discuss the due diligence issues, the early warning signs and the main lessons of the following well publicized hedge fund “blow-ups”:
  - a. The Bayou funds
  - b. Amaranth
  - c. Madoff
3. Assess the operational risk of a hedge fund, including the following elements:
  - a. a typical operational and due diligence process,
  - b. key focus areas,
  - c. liquidity risk,
  - d. the case of managed accounts, and
  - e. operational ratings
4. Assess the operational risk of a fund of hedge funds multi-strategy fund, discussing the advantages, weaknesses and historical performance of multi-strategy hedge funds.

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**Correction to reading:**

Page 418, 1<sup>st</sup> paragraph under the section "Onsight visits and interviews," the text refers to "eight" main functional areas – should indicate “seven” main functional areas.

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**Reading 2, Article A**  
Hedge Fund Investing in Distressed Securities

**Keywords**

Busted convertibles	PIPEs
Debtor-in-possession loans	Seller paper
Distressed debt instruments	Stubs

## Learning Objectives

1. Characterize the US markets that the majority of distressed managers focus on.
2. Describe four phases of the credit cycle and determine the best phases of the credit cycle to invest in distressed securities.
3. Explain why the drop in leveraged loan prices was particularly severe during the most recent market correction.
4. Define distressed debt instruments and describe types of distressed securities.
5. Explain how hedge fund managers trade distressed securities across the lifecycle of a troubled company.
6. Describe the size and growth of the distressed hedge fund universe.
7. Characterize the investment strategy of distressed hedge funds including the use and aspects of top-down and bottom-up approaches, the use of leverage, and aspects of the risk management process.
8. Compare and contrast distressed investing for private equity and hedge funds, and active and passive approaches to distressed investing.
9. Describe the following distressed investing sub-strategies:
  - a. Outright short
  - b. Long/short
  - c. Capital structure arbitrage
  - d. Value/deep value
  - e. Rescue financing
10. Explain why performance of distressed hedge funds may not be highly correlated with returns in the high yield bond market and discuss the determinants of distressed hedge fund performance over the period from 1994 to the beginning of 2008, and the rationale for opportunities existing in the credit markets in early 2008. (Candidates do not need to memorize exact performance statistics.)

### Reading 2, Article B

Are Funds of Funds Simply Multi-Strategy Managers with Extra Fees?

## Keywords

Fee netting  
Headline risk

Manager selection  
Strategy allocation

## Learning Objectives

1. Describe the goal of the study by Reddy, Brady, and Patel, their rationale for using historical data of underlying managers from the TASS database and the criteria they used to choose the data.
2. Explain the potential impact of strategy selection and manager selection on the performance of a hedge fund portfolio and compare the results to those related to traditional asset classes.

3. Describe the potential performance differences between multi-strategy managers and funds of hedge funds in terms of strategy allocation and manager selection and describe the assumptions underlying this conclusion.
4. Discuss the relative benefits of diversification in funds of funds and multi-manager funds.
5. Discuss the relative impacts of the operational risk and fraud and headline risk of funds of funds and multi-manager funds.
6. Compare the business models of funds of funds and multi-strategy funds from the investor's perspective, particularly with respect to fee structures and manager talent.

### **Reading 2, Article C**

Hedge Fund Investing: A Quantitative Approach to Hedge Fund Selection and De-Selection

### **Keywords**

Hurst portfolio  
 Hurst exponent  
 D-Statistic  
 Omega

Cross Product Ratio (CPR)  
 Calmar Ratio  
 Sortino Ratio

### **Learning Objectives**

1. Describe the goal of the study by De Souza and Gokcan, the criteria they used to choose the data and general dispersion and volatility characteristics of the returns data.
2. Identify the type of strategies that are most likely to display large dispersion of performance among hedge fund managers. Discuss the implications of the observed dispersion among managers.
3. Describe the Hurst exponent and explain how contingency tables are constructed to analyze persistence, and compare the degree of persistence found in hedge fund returns, the volatility of hedge fund returns, and Sharpe ratios.
4. Describe the algorithm for risk budgeting used by De Souza and Gokcan, and contrast the approach with the typical approach to risk budgeting.
5. Explain how the Hurst exponent and D-statistics are calculated and are used to analyze hedge fund performance and develop portfolios.
6. Apply DeSouza and Gockan's quantitative model for due diligence pre-screening.
7. Explain the Omega measure.

## Topic 7: Structured Products, New Products and Strategies, and Regulation

### Readings

1. *CAIA Level II: Integrated Topics and Applications*. Institutional Investor, Inc. 2009. ISBN: 978-0-9842550-0-9 Part V. Risk Management & Credit Derivatives.
  - A. Kazemi, H. "Credit Derivatives." CAIA Association 2009.
2. *CAIA Level II: Current and Integrated Topics*. Institutional Investor, Inc. 2010. ISBN: 978-0-9842550-2-3.
  - A. Weistroffer, C. "Coping with Climate Change." Deutsche Bank Research. November 15, 2007, p. 1-20.
  - B. Amenc, N., W. Géhin, L. Martellini, and J.-C. Meyfredi. "Passive Hedge Fund Replication: A Critical Assessment of Existing Techniques." *Journal of Alternative Investments*. Vol. 11, no. 2, Fall 2008, p. 69-83.
  - C. Coval, J., J. Jurek, and E. Stafford. "The Economics of Structured Finance." *Journal of Economic Perspectives*. Vol. 23, no. 1, Winter 2009, p. 3–25.
  - D. Brunnermeier, M., A. Crocket, C. Goodhart, A. Persaud, and H. Shin. "The Fundamental Principles of Financial Regulation." Geneva Reports on the World Economy, International Center for Monetary and Banking Studies. Chapters 2 and 3. 2009.

### Reading 1, Article A Credit Derivatives

### Keywords

Arbitrage-free	Novation
Asset-backed securities	Protection buyer
Basis	Protection seller
Basket CDS	Recovery rate
CDS spread	Reduced-form
CDX	Reference entity
Cheapest-to-deliver	Reference portfolio
Counterparty risk	Risk-neutral pricing
Credit curve	Risky PV01
Credit default swaps	Single-tranche collateralized debt obligation (STCDO)
Credit derivatives	Soft event
Credit events	Structural approach
Deal spread	Subordination
Deliverable obligation	Tranche width
Hard events	Unfunded
iTraxx	Upper and lower attachment points
Mark-to-market	
Notional amount	

## Learning Objectives

1. Describe and calculate expected credit loss.
2. Explain the concept of arbitrage-free risk models.
3. Argue why traditional pricing models (e.g., CAPM) cannot be used to price credit risk.
4. Describe the relationship between the price of risky debt and the price of equity of the same firm in the context of the structural approach to pricing credit risk.
5. Calculate the price of risky debt using the binominal approach.
6. Identify the major advantages and disadvantages of Merton's approach to the pricing of risky debt.
7. Describe the reduced form model and calculate the price of risky debt using the reduced form model.
8. Understand the relationship between credit spread and probability of default using the reduced form model.
9. Identify the major advantages and disadvantages of the reduced form approach to the pricing of risky debt.
10. Compare
  - a. Single-name vs. Multi-name credit instruments
  - b. Funded vs. Unfunded credit instruments
  - c. Sovereign vs. Non-sovereign linked credit instruments
11. Explain how major participants in credit derivatives markets use these instruments
12. Describe credit default swaps (CDS).
13. Describe the six factors that have contributed to the growth of the CDS market.
14. Identify the issues addressed by the International Swaps and Derivatives Association (ISDA).
15. Identify various hard and soft credit events defined by ISDA.
16. Describe the risks associated with CDS and contrast the risks faced by protection buyers with the risks faced by protection sellers.
17. Explain the concept of marking-to-market of CDS and identify the factors that affect the marking-to-market valuation of a CDS.
18. Describe the three methods that can be used to unwind a CDS position.
19. Argue why a position in a CDS is similar to a leveraged position in a corporate bond with a hedge against interest rate risk.
20. Understand the relationship between CDS spread, corporate bond spread, asset swap spread and spread in repo market.
21. Explain how arbitrage profits in CDS and corporate bond markets depend on the cost of funding of the participants.
22. Identify the conditions under which the basis could be negative in the CDS market.
23. Identify the conditions under which the basis could be positive in the CDS market.
24. Explain the typical relationship between changes in CDS spreads and changes in equity prices.
25. Explain the typical relationship between changes in equity prices and changes in the implied volatility of at-the-money options written on the same stock.

26. Explain the typical relationship between changes in CDS spreads and changes in implied volatility skew for options written on the same stock.
27. Describe the credit curve and identify its normal shape.
28. Describe the two variants of asset backed securities.
29. Explain the major features of common CDS indices
30. Describe the major features of single-tranche collateralized debt obligations (CDO).
31. Explain the advantages of single-tranche CDOs compared to traditional CDOs.

### Correction to reading:

Page 279, the top of the second column, the correct equation for  $N(z)$  should be:

$$N(z) = \frac{1}{\sqrt{2\pi}} \int_{-\infty}^z \exp(-0.5x^2) dx$$

Page 294, under Example: the 7% figure is supposed to refer to the spread above the Treasury rather than yield to maturity.

**Reading 2, Article A**  
Coping with Climate Change

### Keywords

Abatement strategies	Contingent capital arrangements
Adjustment strategies	Emission credits
Carbon funds	Emission rights
Catastrophe bonds	EU Allowanced (EUAs)
Catastrophe risks	EU Emission Trading System (EU-ETS)
Clean Development Mechanism (CDM)	Event loss swaps
Climate-related investments	Industry loss warrants
Cat-risk CDOs	

### Learning Objectives

1. Explain the potential economic implications of climate change in terms of its impacts on existing assets, future economic activity, increased regulation, and consumer behavior.
2. Describe the role of financial markets in reducing the economic cost of climate change through
  - a. markets for catastrophe and weather risks.
  - b. emissions trading.
  - c. climate-related investments.

3. Explain the economics rationale for using financial instruments to transfer risk.
4. Discuss the criteria that need to be fulfilled by instruments employed for risk transfer.
5. Describe existing instruments that can be used to transfer risk and identify potential investors and sponsors of these instruments.
6. Describe both exchange traded as well as over-the-counter weather derivatives.
7. Describe emissions trading, its project based mechanism, and its potential market participants.

### **Reading 2, Article B**

Passive Hedge Fund Replication: A Critical Assessment of Existing Techniques

#### **Keywords**

Conditional factor models  
Factor-replication approach

Payoff distribution approach  
Time varying factor exposure

#### **Learning Objectives**

1. Compare the factor-replication approach to hedge fund replication with the payoff distribution approach to hedge fund replication, in terms of their:
  - a. goals.
  - b. methodology.
  - c. ability to replicate hedge fund returns.
  - d. benefits.
  - e. drawbacks.

### **Reading 2, Article C**

The Economics of Structured Finance

#### **Keywords**

CDO<sup>2</sup>  
Collateralized debt obligation (CDO)  
Investment grade  
Non-conforming mortgages

Over-collateralization  
Special purpose vehicle  
Speculative grade

#### **Learning Objectives**

1. Describe the process through which financial institutions can create structured products of a given credit rating.
2. Describe the importance of default correlation in estimating the credit risk and in transferring default risk between tranches of structured products.
3. Compare and contrast the role of default correlation in the credit risk and credit ratings of single name bonds versus CDO and CDO<sup>2</sup> tranches.

4. Discuss how errors in the assessment of the default correlations, the default probabilities, and the ensuing recovery rates for sub-prime securities can cause underestimation of the likelihood of large losses.
5. Describe how the process of pooling and tranching creates securities whose payoff profiles resemble those of a digital call option.
6. Asses the systemic (macroeconomic) risk exposures of certain CDO tranches.
7. Describe the significance of conflict of interest and perverse incentives in the rise and the fall of the structured finance market.
8. Describe the role of rating agencies, investors, banks and regulators in the rise and the fall of the structured finance market.

### **Reading 2, Article D**

#### The Fundamental Principles of Financial Regulation

### **Keywords**

Contagion

Fire-sale externalities

Funding liquidity

Interconnectedness externalities

Market liquidity

Maturity mismatch

Procyclical leverage

Repo haircuts

### **Learning Objectives**

1. Explain and compare the following terms: Solvency, funding liquidity, market liquidity and maturity mismatch.
2. Explain how attempts by individual institutions to remain solvent can push the financial system into collapse.
3. Asses the domino model as it relates to funding liquidity.
4. Explain the relationship between loss spiral (balance sheet spiral) and asset price movements at times of financial crisis.
5. Identify the role of margin/haircut and its fluctuations in the loss spiral process and the degree of funding available to leveraged institutions.
6. Describe the three reasons why margins increase when asset prices drop.
7. Describe externalities and explain when the existence of externalities provides a rationale for regulation.
8. Differentiate financial institutions based on objective risk-spillover measures.
9. Contrast the rules for individually systemic institutions to those for institutions that are “systemic in a herd.”

## Topic 8: Asset Allocation

### Readings

1. *CAIA Level II: Current and Integrated Topics*. Institutional Investor, Inc. 2010. ISBN: 978-0-9842550-2-3.
  - A. Perold, A. F. and W.F. Sharpe. "Dynamic Strategies for Asset Allocation." *Financial Analysts Journal*. January/February 1995. p. 149-160.
  - B. Chhabra, A. "Beyond Markowitz: A Comprehensive Wealth Allocation Framework for Individual Investors." *The Journal of Wealth Management*. Vol. 7, no. 4, Spring 2005, p. 8-34.
  - C. Erb, C. and Harvey, C. "The Strategic and Tactical Value of Commodity Futures." *Financial Analysts Journal*. Vol. 62, no. 2, March/April 2006, p. 69-97.
  - D. Marcato, G. and T. Key. "Smoothing and Implications for Asset Allocation Choices." *The Journal of Portfolio Management*. Special Issue September 2007, p. 85-98.

### Reading 1, Article A

#### Dynamic Strategies for Asset Allocation

### Keywords

Buy-and-hold	Decision rule
Concave payoff curves	Exposure diagram
Constant mix	Floor
Constant-proportion portfolio insurance	Multiplier
Convex payoff curves	Option-based portfolio insurance

### Learning Objectives

1. Calculate the portfolio's asset values after a given change in the equity value, using:
  - a. buy-and-hold.
  - b. constant mix.
  - c. constant-proportion portfolio insurance.
2. Compare the payoff and exposure diagrams of the buy-and-hold, constant mix, constant-proportion portfolio insurance, and option-based portfolio insurance strategies.
3. Determine the expected performance and cost of implementing strategies with concave payoff curves relative to those with convex payoff curves under:
  - a. trending markets.
  - b. flat (but oscillating) markets.
4. Discuss the motivations for and impact of resetting the parameters of dynamic strategies.

**Reading 1, Article B**

Beyond Markowitz: A Comprehensive Wealth Allocation Framework for Individual Investors

**Keywords**

Aspirational risk  
Barbell strategies  
Event risk

Lifecycle stage  
Market risk  
Personal risk

**Learning Objectives**

1. Describe examples of undiversified “strategies” that have allowed individuals to become wealthy.
2. Describe changes in the financial system which have thrust more responsibility upon individuals with regard to wealth management and asset allocation.
3. Explain and apply the concept of personal risk and its various components to the asset allocation problem faced by individuals.
4. Explain and apply the wealth allocation framework that accounts for various dimensions of risk and leads to an ideal portfolio that provides:
  - a. the certainty of protection from anxiety.
  - b. the high probability of maintaining one’s standard of living.
  - c. the possibility of substantially moving upward in the wealth spectrum.
5. Develop and justify an asset and risk allocation for an individual (candidates may be asked to use the information provided on the exam to develop their plans)
6. Understand the impact of alternative investments, including real estate, executive stock options and human capital, on the asset allocation of individual investors.
7. Describe and apply barbell and option based strategies in the context of asset allocation.

**Reading 1, Article C**

The Strategic and Tactical Value of Commodity Futures

**Keywords**

Arithmetic return  
Contango  
Geometric return

Normal backwardation  
Roll return

**Learning Objectives**

1. Discuss reasons why the performance of rebalanced equally weighted commodity futures portfolio should not be used to represent the return of commodity futures asset class.

2. Explain why the three most commonly used commodity futures indices (GSCI, DJ-AIGCI, CRB) show different levels of return and volatility over a common time period.
3. Explain how the returns of a single cash-collateralized commodity futures and a portfolio of cash-collateralized commodity futures can be decomposed into various sources of return.
4. Discuss the four theoretical frameworks (CAPM, the insurance perspective, hedging pressure hypothesis, theory of storage) used to explain the source of commodity futures excess returns.
5. Explain the concepts of contango, normal backwardation and market backwardation.
6. Calculate the roll yield of a commodity futures contract in backwardation or contango.
7. Discuss the importance of roll returns in explaining the long-run cross-sectional variation of commodity futures returns and the implication for investors.
8. Describe the relative importance of the volatility of spot returns and roll returns in determining the volatility of futures returns.
9. Describe the impact of inflation and unexpected changes in the rate of inflation on individual commodity contracts, sectors, and diversified commodity portfolios and indices.
10. Explain how rebalancing and diversification can impact the geometric rate of return of a portfolio in comparison to its arithmetic rate of return.
11. Discuss the effectiveness of tactical asset allocation in commodity portfolios using strategies based on momentum and the term structure of futures prices.
12. Argue against the use of naïve extrapolation of past commodity returns to forecast future performance and discuss the importance of formulating forward-looking expectations.

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**Correction to reading:**

Page 118, the 12<sup>th</sup> line from bottom of the left column should read “if inventories are **high**, the convenience yield may be low.”

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**Reading 1, Article D**

Smoothing and Implications for Asset Allocation Choices

**Keywords**

First Order Autoregressive Reverse  
Filter (FOARF)  
Full Information Value Index (FIVI)

Second order autoregressive reverse  
filter  
Smoothing

## Learning Objectives

1. Describe the factors that cause smoothing and how smoothing impacts asset allocation decisions.
2. Compare the results of Stevenson (2004) with previous studies on the impact of smoothing models on allocations to real estate.
3. Compare four approaches to generating an unsmoothed total real estate return series.
4. Describe the impact of varying smoothing parameters for UK real estate return data on the optimal allocations to real estate.
5. In the Marcato and Key (2007) study compare and contrast the results of using UK data with those employing US and Australia real estate return data.
6. Argue the best method of adjusting a real estate return series when conducting an asset allocation study.

## Topic 9: Portfolio and Risk Management

### Readings

1. *CAIA Level II: Integrated Topics and Applications*. Institutional Investor, Inc. 2009. ISBN: 978-0-9842550-0-9 Part V. Risk Management & Credit Derivatives.  
A. Jorion, P. "Risk Management for Alternative Investments." CAIA Association 2009.
2. *CAIA Level II: Current and Integrated Topics*. Institutional Investor, Inc. 2010. ISBN: 978-0-9842550-2-3.  
A. Hill, J. "A Perspective on Liquidity Risk and Horizon Uncertainty." *The Journal of Portfolio Management*. Vol. 35, no. 4, Summer 2009, p. 60-68.  
B. Meredith, R., N. De Brito, and R. De Figueiredo. "Portfolio Management with Illiquid Investments." *Citi Alternative Investments*. June 2006, p. 26-31.  
C. Healy, A. and A. Lo. "Jumping the Gates: Using Beta-Overlay Strategies to Hedge Liquidity Constraints." *Journal of Investment Management*. Vol. 7, no. 3, Third Quarter 2009, p. 11-30.

### Reading 1, Article A

#### Risk Management for Alternative Investments

### Keywords

Asset liquidity risk	Historical
Autocorrelation	Historical-simulation
Backward-looking window	Hot spots
Blowup	Hypothetical returns
Capital calls	Leveraged buyouts (LBOs)
Component VaR	Linear methods
Conditional VaR (CVaR)	Liquidity risk
Cornish-Fisher expansion	Lockup periods
Counterparty risk	Long option
Credit risk	Marginal risk
Decay factor	Market risk
Delta-normal	Mean
Dimson beta	Mezzanine debt
Economic capital	Model risk
Estimation error	Modified duration D
Excess kurtosis	Monte Carlo simulation
Exponentially weighted moving average (EWMA)	Notice period
Exposures	Over-the-counter (OTC)
Full valuation methods	Parametric
Funding liquidity risk	Position-based
Gates	Positions
Histogram	Price impact function
	Prospective scenarios

Quantile  
Regulatory risks  
Returns-based information  
Risk aggregation  
Risk budgeting  
Risk engines  
Risk factors  
Risk monitoring  
Senior debt  
Sharpe ratio  
Short option

Skewness  
Stale  
Stop-loss rules  
Subordinated debt  
Suspension  
Systemic risk  
Standard deviation  
Trend-following systems  
Value at Risk (VaR)  
Variance-covariance  
Venture capital

## Learning Objectives

1. Describe the challenges that alternative investments pose to risk managers.
2. Describe market, credit and liquidity risks.
3. Describe the steps that are typically taken to measure market risk.
4. Compare position-based to return-based measures of risk.
5. Explain how hidden risk can lead to misleading results when Sharpe ratio is used to measure performance, and how risk can be properly measured in the presence of such hidden risks.
6. Describe the relationship between modified duration and risk of fixed income instruments.
7. Identify, describe and calculate various measures of leverage.
8. Describe and calculate VaR.
9. Compare VaR to Conditional VaR.
10. Describe and calculate VaR when the return distribution is skewed.
11. Describe the relationship among VaR calculations for different time horizons and explain how autocorrelation in historical returns could impact this relationship.
12. Describe back testing and the implications of Type I and Type II errors.
13. Describe the exponentially weighted smoothing approach to volatility and calculate volatility using this approach.
14. Describe GARCH(1,1) approach to volatility and calculate volatility using this approach.
15. Compare linear models to full-valuation models for calculating VaR for large portfolios.
16. Describe the delta-normal or variance-covariance model for calculating VaR for large portfolios.
17. Describe the historical simulation approach and compare it to the Monte Carlo method.
18. Describe the marginal risk and component risk of a position in a large portfolio.
19. Explain the relationship between marginal risk, component risk and total risk of a portfolio.
20. Calculate marginal and component risks of a portfolio.
21. Describe the concept of risk budgeting.
22. Describe scenario analysis in the context of stress testing.

23. Explain how autocorrelation can be used to measure illiquidity.
24. Describe the impact of illiquidity on measures of risk.
25. Describe various types of liquidity risk and explain their impacts on alternative assets.
26. Explain how alternative asset managers cope with various types of liquidity risk.
27. Explain the limitations of conventional measures of risk when applied to alternative assets.
28. Describe regulatory and counterparty risks.
29. Describe the distributional properties of long and short option positions and compare these to distributional properties of trend following and stop loss trading strategies.
30. Explain the implications of non-transparency for risk management and describe how problems related to lack of transparency can be overcome.

### **Reading 2, Article A**

#### A Perspective on Liquidity Risk Horizon Uncertainty

### **Keywords**

Counterparty risk  
 Delevering  
 De-risking  
 High-volatility regime

Risk-transfer  
 Selling contagion  
 Single horizon

### **Learning Objectives**

1. Explain the three primary forces that affect the returns of broad equity indices during a tail-risk event.
2. Explain why during financial crises security prices may be determined by factors other than economic and financial fundamentals.
3. Discuss the dynamics of high liquidity-risk periods in the U.S. throughout the last several decades.
4. Analyze the underpinnings and limitations of Capital Market Theory as it pertains to investment horizon uncertainty and liquidity risk.
5. Describe the disadvantages of carrying illiquid investments.
6. Argue whether derivatives are a cause or a solution (or both) of liquidity risk.
7. Discuss how options can be used to manage risk during periods of financial stress.

### **Reading 2, Article B**

#### Portfolio Management with Illiquid Investments

### **Keywords**

Allocation drift  
 Capital calls  
 Commitment strategy

Distributions  
 Illiquidity  
 Uncertainty

## Valuation

### Learning Objectives

1. Describe factors complicating the establishment and maintenance of target allocations to illiquid asset classes.
2. Explain the role of Monte-Carlo simulation to achieve stable (steady-state) allocation in this study.
3. Illustrate the total impact of several individual risk factors on private equity allocation drift.

### Reading 2, Article C

Jumping the Gates: Using Beta-Overlay Strategies to Hedge Liquidity Constraints

### Keywords

Beta-blocker overlay  
Commonality  
Definability

Hedging equation  
Tradability  
Unwind risk

### Learning Objectives

1. Describe the beta-hedging overlay strategy.
2. Identify the three criteria that, according to the authors, must be satisfied by a risk factor to be considered an economic variable.
3. Discuss the conditions that must be met in order to implement a beta-hedging overlay strategy.
4. Outline the construction of a beta-hedging overlay program.
5. Describe the relationship between the fit (i.e., R-squared) of the linear factor model and the risk reduction that can be achieved through a beta-blocker program.
6. Summarize the empirical evidence of the beta-blocker program when applied to Long/Short Equity funds.
7. Describe the implications of daily hedging using the beta-blocker framework.

Figure 3 (a,b,c) from *Jumping the Gates: Using Beta-Overlay Strategies to Hedge Liquidity Constraints* is reprinted here in color.

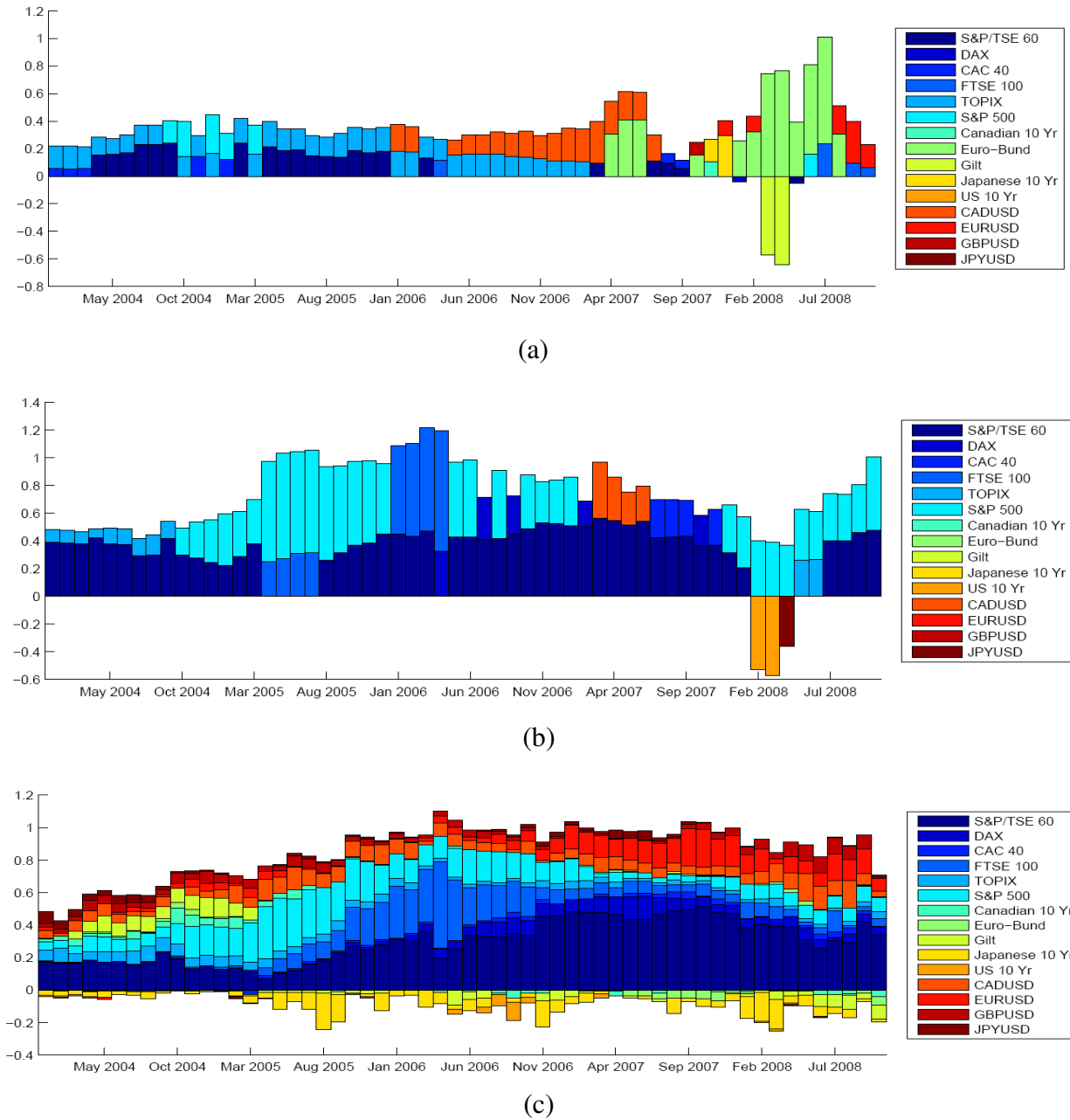


Figure 3: The evolution of the estimated betas of (a) the Long/Short Equity fund from the Lipper/TASS “Live” database with the largest factor turnover (1.14 factors per month), (b) the Long/Short Equity fund with the median factor turnover (0.727 factors per month), and (c) an equal-weighted portfolio of the 47 Long/Short Equity funds in our sample.



## Topic 10: Research Issues in Alternative Investments

### Readings

1. *CAIA Level II: Current and Integrated Topics*. Institutional Investor, Inc. 2010. ISBN: 978-0-9842550-2-3..
  - A. Gorton, G. and K. G. Rouwenhorst. "Facts and Fantasies about Commodity Futures." *Financial Analysts Journal*. Vol. 62, no. 2, March/April 2006, p. 47-68.
  - B. Klier, D., M. Welge, and K. Harrigan. "The Changing Face of Private Equity: How Modern Private Equity Firms Manage Investment Portfolios." *The Journal Of Private Equity*. Vol. 12, no. 4, p. 7-13. Fall 2009.
  - C. Phalippou, L. "Beware of Venturing into Private Equity." *Journal of Economic Perspectives*. Vol. 23, no. 1, Winter 2009, p. 147–166.
  - D. Derwall, J., J. Huij, D. Brounen, and W. Marquering. "REIT Momentum and the Performance of Real Estate Mutual Funds." *Financial Analysts Journal*. Vol. 65, no. 5, September/October 2009, p. 24-34.
  - E. Clarke, A. and N. Motson. "Locking in the Profits or Putting It All on Black? An Empirical Investigation into the Risk-Taking Behavior of Hedge Fund Managers." *The Journal of Alternative Investments*. Vol. 12, no. 2, Fall 2009, p. 7-25.

### Reading 1, Article A

Facts and Fantasies about Commodity Futures

### Keywords

Backwardation  
Basis

Risk premium

### Learning Objectives

1. Illustrate how an investment in commodity futures can earn a positive return when spot commodity prices are falling.
2. Compare commodity spot returns and commodity futures returns.
3. Compare commodity futures returns with stock returns and bond returns.
4. Compare commodity futures risk with equity risk.
5. Discuss the use of commodity futures as a hedge against inflation.
6. Explain the diversification benefits of commodity futures.
7. Describe the performance of commodity futures from a non-US investor's perspective.
8. Describe the difference between normal backwardation and a market that is in backwardation.
9. Describe a trading strategy that uses basis in futures markets as an indication of risk premium in futures markets.

**Reading 1, Article B**

The Changing Face of Private Equity: How Modern Private Equity Firms Manage Investment Portfolios

**Keywords**

Active management approach

**Learning Objectives**

1. Compare and contrast the two private equity management models: the “Financial advisor” and the “Interventionist.”
2. Describe the reported impact on the performance of the two private equity management models, and argue whether active ownership adds substantial value to the investment portfolio of a private equity firm.
3. Describe the five factors Interventionists share that may help them generate superior returns.

**Reading 1, Article C**

Beware of Venturing into Private Equity

**Keywords**

Catch up provision  
Claw-back provision  
Monitoring fees

Organizational expenses  
Transaction fees

**Learning Objectives**

1. Summarize the evidence on the puzzle that private equity funds have provided low average returns.
2. Describe typical compensation contracts and the various associated fees for private equity and buyout fund managers.
3. Compute the fees and the reported performance for a representative buyout firm.
4. Illustrate how an investor cannot know in advance the quality and quantity of investments in which it will be invited to co-invest, and the relationship between the outcome, the fees and the eventual return.
5. Discuss the following potential reasons behind investors’ misperceptions regarding expected payments by buyout funds:
  - a. Variations within similar-looking fees,
  - b. Shrouded negative internal rates of returns,
  - c. Shrouded accounting information and keeping losers at cost,
  - d. Using flaws in the internal rate of return,
  - e. Sample bias (good tracking records are shown more often), and
  - f. Shrouded key details (duration, leverage, net-of-fees performance, and fee details).

7. Discuss the following three features of buyout contracts that may lead to conflict of interest:
  - a. Carried interest and strategic timing of cash flows,
  - b. Incentives to exit early, and
  - c. Transaction fee incentives.

### **Reading 1, Article D**

#### REIT Momentum and the Performance of Real Estate Mutual Funds

### **Keywords**

Book-to-market factor  
 Company-specific variables  
 Liquidity risk factor

REIT momentum factor  
 Size factor

### **Learning Objectives**

1. Compare and contrast the literature on the factors that explain REIT returns.
2. Describe the five models that are used to measure the performance of REIT portfolios.
3. Discuss the role of REIT momentum in explaining REIT mutual fund performance and performance persistence.
4. Discuss the three main practical implications of the study.

### **Reading 1, Article E**

#### Locking in the Profits or Putting It All on Black? An Empirical Investigation into the Risk-Taking Behavior of Hedge Fund Managers

### **Keywords**

Assessment period  
 Risk adjustment ratio (RAR)

Tournament behavior

### **Learning Objectives**

1. Understand the relationship between the fee structure and risk-taking behavior of hedge fund managers
2. Discuss the two important reasons why hedge fund incentive fees are a contentious issue.
3. Compare and contrast the fund manager's risk choices under the following theoretical models of behavior: Carpenter (2000), Goetzmann, Ingersoll and Ross (2003), Panageas and Westerfield (2009), and Hodder and Jackwerth (2007).
4. Explain the concept of the moneyness of the incentive options for hedge funds.
5. Discuss two explanations for the finding that the standard deviation of funds with out-of-the-money incentive options and funds with in-the-money incentive

- options are statistically larger than the standard deviation of funds with at-the-money incentive options.
6. Discuss the empirical findings of this paper in relationship to the risk-taking decisions of hedge fund managers and:
    - a. Their realized relative performance;
    - b. The value of their incentive option.
  7. Discuss the relationship between fund size, age, survival and risk-taking.

## Topic 11: Current Topics

### Readings

1. *CAIA Level II: Current and Integrated Topics*. Institutional Investor, Inc. 2010. ISBN: 978-0-9842550-2-3..
  - A. Khandani, A.E. and A.W. Lo. "What Happened To The Quants In August 2007?" *Journal of Investment Management*. Vol. 5, no. 4, 2007, p. 29-78.
  - B. Crouhy, M., R. Jarrow, and S. Turnbull. "The Subprime Credit Crisis of 2007." *The Journal of Derivatives*. Vol. 16, no. 1, Fall 2008, p. 81-110.

### Reading 1, Article A

What Happened To The Quants In August 2007?

### Keywords

130/30

Active extension

Adaptive markets hypothesis

Contrarian

Long/short equity

Quantitative equity market-neutral

Statistical arbitrage

### Learning Objectives

1. Discuss eight hypotheses explaining the market events of August 2007.
2. Illustrate an understanding of the terminology used to describe distinct categories of fund strategies that fall under the broad heading of "long/short equity."
3. Describe the anatomy of the long/short equity strategy. Explain how it is simulated in the paper, how the strategy provides liquidity to the market place, how leveraged portfolio returns are constructed, the relationship between market capitalization and the strategy's profitability, and the practical implications of transactions costs.
4. Explain the return pattern of the main simulated strategy during the second week of August 2007.
5. Compare and contrast market events in August 2007 with August 1998.
6. Explain how the increase in total assets under management and the number of long/short funds over the 1998 to 2007 time period likely impacted expected returns and the use of leverage.
7. Describe the set of hypotheses that are collectively referred to as the "unwind hypothesis."
8. Discuss one proposed measure of illiquidity of long/short equity funds and how the results have changed over the past decade.
9. Describe a method for approximating a network view of the hedge-fund industry and what such a view indicates.
10. Evaluate the statement: Quant failed in August 2007.
11. Critique the methodology of the article.

12. Evaluate the current outlook for systemic risk in the hedge fund industry.

### **Reading 1, Article B**

The Subprime Credit Crisis of 2007

### **Keywords**

Alt-A mortgage loans	Monoline Insurers
Asset Backed Commercial Paper (ABCP)	Positive feedback mechanisms
Asset Backed Security (ABS) trust	Short reset loans
Centralized Clearing House (CCH)	Special Investment Vehicle (SIV)
Credit enhancement	Waterfall Payment Structure (WPS)

### **Learning Objectives**

1. Describe a subprime loan and discuss the four principal reasons for the recent increase in sub-prime loan delinquencies.
2. Explain the economic motivations that enabled the waterfall payment structure of an ABS trust or CDO structure with a collateral pool consisting of high-yield securities to attain an investment grade rating for the securities they issued and the resulting contribution to the credit crisis.
3. Explain the role of rating agencies in the credit crisis.
4. Criticize the incentive compensation system for mortgage brokers and lenders and its adverse effect on the due-diligence efforts at the firms.
5. Explain the factors affecting the rating of a special investment vehicle (SIV).
6. Describe the role of monolines.
7. Explain the lack of incentives for banks to perform due diligence on the collateral pool.
8. Explain the role and actions of central banks in 2007 and early 2008.
9. Explain the role of valuation methods.
10. Describe the lack of transparency in the credit markets.
11. Describe how systemic risk arose in 2007.
12. Argue how increased transparency in the rating process is necessary.
13. Argue how standardization can simplify valuation issues.
14. Assess the hidden risks of implicit and explicit off balance-sheet bank commitments and argue how increased transparency can provide investors with information regarding financial institutions' exposure.
15. Describe how new product design can dampen market disruptions.
16. Discuss possible regulatory responses.
17. Describe sound risk management practices.
18. Describe nonlinearities in the risk of subprime CDO tranches.

## Action Words

In each of the above learning objectives, action words are used to direct your study focus. Below is a list of all action words used in the study guide, along with definitions and two examples of usage, in a sample question and in a description. Should you not understand what is required for any learning objective, we suggest you refer to the table below for clarification.

Term	Definition	Sample Question	Example of Term Use
Analyze	Study the interrelations	<p>George has identified an opportunity for a convertible arbitrage reverse hedge. What risks are associated with this hedge?</p> <ul style="list-style-type: none"> <li>A. The convertible may remain overvalued, causing the positive cash flow to harm the position's return profile.</li> <li>B. The short convertible may be called in and the position must be delivered, forcing the hedge to be unwound at an inopportune time.</li> <li>C. The implied volatility may decrease, lowering the bond's value.</li> <li>D. The implied volatility may increase, lowering the bond's value.</li> </ul>	<p>You have to <b>analyze</b> the positions and factors impacting them.</p> <p>Correct Answer: B</p>
Apply	Make use of	<p>Alicia Weeks, CFA, Real Estate Investment Advisor, works in an Asian country where there are no securities laws or regulations. According to CFA Institute Standard I, Fundamental Responsibilities, Alicia:</p> <ul style="list-style-type: none"> <li>A. must adhere to the standards as defined in a neighboring country that has the strictest laws and regulations.</li> <li>B. need not concern herself with ethics codes and standards.</li> <li>C. must adhere to the CFA Institute's codes and standards.</li> <li>D. must adhere to the standards as defined in a neighboring country that has the least strict laws and regulations.</li> </ul>	<p>You have to <b>apply</b> the CFA Institute Standard I to find the correct answer.</p> <p>Correct Answer: C</p>
Argue	Prove by reason or by presenting the associated pros and cons; debate	<p>Why did the shape of the supply curve for venture capital funds change after 1979?</p>	<p>You have to describe how the curve has changed <b>AND argue</b> why it changed by providing reasons and supporting the reasons with statements of facts (e.g., change in regulations.)</p>

Term	Definition	Sample Question	Example of Term Use
Assess	Determine importance, size, or value	<p>How are lower capital gains taxes expected to impact firm commitments?</p> <p>A. Through increased supply of capital, firm commitments are expected to rise.            B. Through decreased supply of capital, firm commitments are expected to rise.            C. Through decreased after-tax return on venture investments, firm commitments are expected to rise.            D. Through increased after-tax return on venture investments, firm commitments are expected to decline.</p>	<p>You must <b>assess</b> the significance of the change in the tax rate for firm commitments.</p> <p>Correct Answer: A</p>
Calculate	Use a mathematical formula to determine a result	<p>A T-bill has a face value of \$10,000 and sells for \$9,800. If the T-bill matures in 90 days, what is its effective annual yield?</p> <p>A. 8.18%            B. 8.26%            C. 8.34%            D. 8.54%</p>	<p>You have to <b>calculate</b> the effective annual yield.</p> <p>Correct Answer: D</p>
Classify	Arrange or organize according to a class or category	<p>Classify compliance issues considered by examiners when investigating firms that market private equity securities.</p>	<p>You have to correctly <b>classify</b> the aspects of private equity firms relating to the various compliance issues.</p>
Compare	Describe similarities and differences	<p>Which of the following least accurately compares the Sharpe and Teynor ratios?</p> <p>A. Both ratios contain excess return in the numerator            B. Both ratios express a measure of return per unit of some measure of risk            C. The Sharpe ratio is based on total risk while the Treynor ratio is based on systematic risk            D. The Sharpe ratio is the inverse of the Treynor ratio</p>	<p>You have to <b>compare</b> the three approaches based on their most important similarities and their most important differences</p> <p>Correct Answer: D</p>

Term	Definition	Sample Question	Example of Term Use
Compare and Contrast	Examine in order to note similarities or differences	<p>A comparison of monthly payments and loan balances of the constant payment mortgage with the constant amortization mortgage with the same loan terms will show that:</p> <ul style="list-style-type: none"> <li>A. the initial payment will be the same.</li> <li>B. the payments of the constant payment mortgage are initially greater than those of the constant amortization mortgage, but at some time period the payments of the constant payment mortgage become less.</li> <li>C. the present value of the payment streams of the two loan types are the same.</li> <li>D. the constant payment mortgage loan balance exceeds that of the constant amortization mortgage during the first six months of the loan.</li> </ul>	<p>You have to <b>compare</b> indices to arrive at the answer.</p> <p>Correct Answer: C</p>
Compute	Determine an amount or number	<p>The "asked" discount yield on a T-bill is 5%. What is the asked price of the bill if it matures in 60 days and has a face value of \$10,000?</p> <ul style="list-style-type: none"> <li>A. \$9,757</li> <li>B. \$9,797</li> <li>C. \$9,837</li> <li>D. \$9,917</li> </ul>	<p>You have to <b>compute</b> a value from a set of inputs.</p> <p>Correct Answer: D</p>
Construct	Make or form by combining or arranging parts or elements	<p>A reverse convertible arbitrage hedge consists of a:</p> <ul style="list-style-type: none"> <li>A. short convertible position plus a put option on the stock.</li> <li>B. long convertible position plus a put option on the stock.</li> <li>C. short convertible position plus a call option on the stock.</li> <li>D. short convertible position plus a long position in the stock.</li> </ul>	<p>You have to combine positions to <b>construct</b> the hedge.</p> <p>Correct Answer: D</p>
Contrast	Expound on the differences	<p>Which of the following best characterizes a difference between Value at Risk (VaR) and Modified Value at Risk?</p> <ul style="list-style-type: none"> <li>A. Modified VaR is expressed as a percent while VaR is a dollar value</li> <li>B. Modified VaR uses a user defined confidence interval while VaR uses a 99% interval</li> <li>C. Modified VaR incorporates non-normality while traditional VaR assumes normality</li> <li>D. Modified VaR is for a single trading period while traditional VaR is multiple period</li> </ul>	<p>You have to <b>contrast</b> the assumptions of the first model to those of the second model so that the differences are clear.</p> <p>Correct Answer: C</p>

Term	Definition	Sample Question	Example of Term Use
Critique	Evaluate with reasoned judgment	<p>Compared with ranking investment opportunities using NPV, which of the following best describes the appropriateness of the IRR approach?</p> <p>A. The IRR approach does not rank different sized projects as well            B. The IRR approach requires the user to supply an interest rate            C. The IRR approach requires annuity computations            D. The IRR approach does not consider future cash flows</p>	<p>You must <b>critique</b> the various risk measures so that the advantages and disadvantages have been enumerated and justified.</p> <p>Correct Answer: A</p>
Defend	To support or maintain through argument; justify	Justify the use of an adjusted stochastic.	You must <b>defend</b> the use of an adjusted stochastic instead of a traditional stochastic.
Define	State the precise meaning	<p>The interest rate charged by banks with excess reserves at a Federal Reserve Bank to banks needing overnight loans to meet reserve requirements is called the:</p> <p>A. prime rate.            B. discount rate.            C. federal funds rate.            D. call money rate.</p>	<p>You have to <b>define</b>, in this case, the federal funds rate.</p> <p>Correct Answer: C</p>
Describe	Convey an idea or characterize	<p>Which of the following words best describes expected return?</p> <p>A. Spread            B. Average            C. Spread squared            D. Average squared</p>	<p>You need to choose the word that best <b>describes</b> the concept from a list.</p> <p>Correct Answer: B</p>
Determine	Establish or ascertain definitively, as after consideration, calculation or investigation	<p>Assume you sold short 100 shares of common stock at \$50 per share. The initial margin is 60%. What would be the maintenance margin if a margin call was made at a stock price of \$60?</p> <p>A. 25%            B. 33%            C. 41%            D. 49%</p>	<p>You have to <b>determine</b> a precise value from a set of inputs.</p> <p>Correct Answer: B</p>

Term	Definition	Sample Question	Example of Term Use
Differentiate	Constitute the distinction between; distinguish	<p>What type of convertible hedge entails shorting a convertible and going long in the underlying stock?</p> <p>A. Call option hedge            B. Traditional convergence hedge            C. Implied volatility convergence hedge            D. Reverse hedge</p>	<p>You have to <b>differentiate</b> one type of hedge from another.</p> <p>Correct Answer: D</p>
Discuss	Examine or consider a subject	<p>Discuss the limitations of private equity data.</p>	<p>You have to present a <b>discussion</b> of a set of ideas in a list or paragraph.</p>
Distinguish	Separate using differences	<p>Which of the following best distinguishes between the covariance and the correlation coefficient?</p> <p>E. The covariance indicates the extent to which two assets move together or apart            F. The correlation coefficient is the expected product of the deviations of two variables            G. The covariance is the square root of the correlation coefficient            H. The correlation coefficient is scaled and bounded between +1 and -1</p>	<p>You have to <b>distinguish</b> between risk measurement approaches based on their assumptions regarding the distribution of returns.</p> <p>Correct Answer: D</p>
Explain	Illustrate the meaning	<p>1. Explain why return on assets (ROA) rather than return on equity (ROE) might be the preferred measure of performance in the case of hedge funds.</p> <p>or</p> <p>2. Which of the following best explains risk from the standpoint of investment?</p> <p>A. Investors will lose money.            B. Terminal wealth will be less than initial wealth.            C. Final wealth will be greater than initial wealth.            D. More than one outcome is possible.</p>	<p>1. You have to place a series of thoughts together as an <b>explanation</b> of a term or issue.</p> <p>2. You need to identify the term that best <b>explains</b> a term or issue.</p> <p>Correct Answer: D</p>

Term	Definition	Sample Question	Example of Term Use
Formulate	State or reduce to a formula	<p>The holding period return (HPR) on a share of stock is equal to:</p> <ul style="list-style-type: none"> <li>A. the capital gain yield minus the inflation rate over the period.</li> <li>B. the capital gain yield plus the dividend yield over the period.</li> <li>C. the current yield plus the dividend yield.</li> <li>D. the dividend yield plus the risk premium.</li> </ul>	<p>You have to <b>formulate</b> the meaning of some term or issue.</p> <p>Correct Answer: B</p>
Identify	Establish the identity	<p>The investments that have historically performed best during periods of recession are:</p> <ul style="list-style-type: none"> <li>A. commodities.</li> <li>B. treasury bills.</li> <li>C. stocks and bonds.</li> <li>D. gold.</li> </ul>	<p>You have to <b>identify</b> the term that best meets the criterion of the question.</p> <p>Correct Answer: C</p>
Illustrate	Clarify through examples or comparisons	<p>For two types of convergence hedges, what situations present profitable opportunities, how are the hedges set up, and what are the associated risks?</p>	<p>You have to provide an example for each hedge or compare the two to <b>illustrate</b> how they work.</p>
Interpret	Explain the meaning	<p>Your certificate of deposit will mature in one week, and you are considering how to invest the proceeds. If you invest in a 30-day CD, the bank will pay you 4%. If you invest in a 2-year CD, the bank will pay you 6% interest. You should choose the:</p> <ul style="list-style-type: none"> <li>A. 30-day CD, no matter what you expect interest rates to do in the future.</li> <li>B. 2-year CD, no matter what you expect interest rates to do in the future.</li> <li>C. 30-day CD if you expect that interest rates will fall in the future.</li> <li>D. 2-year CD if you expect that interest rates will fall in the future.</li> </ul>	<p>You have to <b>interpret</b> the features of an investment scenario.</p> <p>Correct Answer: D</p>
List	Create a series of items	<p>List the determinants of real interest rates.</p>	<p>You have to differentiate from a <b>list</b> those items that are consistent with the question.</p>

Term	Definition	Sample Question	Example of Term Use
Name	State a word by which an entity is designated or distinguished from others	<p>As of December 31, 1999, which class of mutual funds had the largest amount of assets invested?</p> <ul style="list-style-type: none"> <li>A. Stock funds</li> <li>B. Bond funds</li> <li>C. Mixed asset classes, such as asset allocation funds</li> <li>D. Money market funds</li> </ul>	<p>You need to <b>name</b> the correct statement or phrase from a group of potential answers.</p> <p>Correct Answer: A</p>
Outline	Summarize tersely	<p>Which of the following best characterizes the steps in computing a geometric mean return based on a series of periodic returns from T time periods?</p> <ul style="list-style-type: none"> <li>A. Add one to each return, add them together, divide by T and subtract one</li> <li>B. Add one to each return, multiply them together, divide by T and subtract one</li> <li>C. Add one to each return, add them together, take the Tth root and subtract one</li> <li>D. Add one to each return, multiply them together, take the Tth root and subtract one</li> </ul>	<p>You must <b>outline</b> the study's most important findings rather than explain them in detail.</p> <p>Correct Answer: D</p>
Price	State the amount by which an asset is valued or value an asset in monetary terms	<p>Widgets Inc. paid a dividend of \$2.50 last year. Required return on Widget Inc.'s stock is determined to be 13% per year, and the dividend is expected to grow at 3% per year forever. Determine a fair market price for Widget Inc.'s stock, assuming the constant dividend growth model holds.</p> <ul style="list-style-type: none"> <li>A. \$20.25</li> <li>B. \$25.75</li> <li>C. \$31.25</li> <li>D. \$36.75</li> </ul>	<p>You have to <b>price</b>, according to a formula, a value from a set of inputs.</p> <p>Correct Answer: B</p>
Rank	Determine relative position	<p>According to the analysis by Gompers and Lerner, which of the following best ranks, from low to high (by percentage), the four outcomes for total venture-backed firms?</p> <ul style="list-style-type: none"> <li>A. Liquidated, IPOs, merged, and continued private</li> <li>B. IPOs, liquidated, merged, and continued private</li> <li>C. Merged, liquidated, continued private, and IPOs</li> <li>D. Continued private, IPOs, merged, and liquidated</li> </ul>	<p>You have to choose the correct <b>ranking</b> of a number (4) of items according to a particular criterion (percentage).</p> <p>Correct Answer: A</p>

Term	Definition	Sample Question	Example of Term Use
Recommend	Indicate as preferred	<p>Sue Arnold works for a hedge fund and has been asked to develop a methodology for the fund to measure and report on the potential tendency of various investment strategies to have a much higher probability of large negative outcomes than large positive outcomes. Which of the following would be the most appropriate risk measure for Ms. Arnold to suggest in response to this concern?</p> <p>E. Drawdown F. Skewness G. Kurtosis H. Variance</p>	<p>You have to <b>recommend</b> which procedure reflects best practices.</p> <p>Correct Answer: B</p>
Relate	Show or establish logical or causal connection	<p>Which of the following effects does NOT help to explain growth in the venture capital industry?</p> <p>A. Amendments to the prudent man rule B. The rise of limited partnerships as an organizational form C. Decline in the valuations of small capitalization stocks D. The activities of investment advisors in the venture capital market</p>	<p>You must <b>relate</b> effects or factors (e.g., the prudent man rule) to another result or concept (e.g., growth in an industry).</p> <p>Correct Answer: C</p>
Solve	Find a solution	<p>Diversified Portfolios had year-end assets of \$279,000,000 and liabilities of \$43,000,000. If Diversified's net asset value was \$36.37, how many shares does the fund have?</p> <p>A. 4,938,372 B. 5,713,372 C. 6,488,372 D. 7,263,372</p>	<p>You have to place various inputs into a formula and <b>solve</b> for the unknown.</p> <p>Correct Answer: C</p>
State	Set forth in words or declare	<p>State the main risks faced by distressed securities investors.</p>	<p>You have to present a list or set of sentences that <b>states</b> main ideas.</p>
Summarize	Cover all the main points succinctly	<p>Summarize the performance of trend and momentum strategies, and compare their performance to the buy-and-hold strategy.</p>	<p>You have to <b>summarize</b> a longer discussion or complicated concept or set of results by focusing on the main ideas.</p>

Term	Definition	Sample Question	Example of Term Use
Understand	Perceive and comprehend nature and significance; grasp meaning	<p>Which of the following would increase the net asset value of a mutual fund share, assuming all other things remain unchanged?</p> <p>A. An increase in the number of fund shares outstanding            B. An increase in the fund's accounts payable            C. A change in the fund's management            D. An increase in the value of one of the fund's stocks</p>	<p>You have to use reasoning to illustrate an <b>understanding</b> of a specific issue.</p> <p>Correct Answer: D</p>
Use	Apply for a purpose or employ	<p>Illustrate the financial benefits of merger arbitrage using an actual merger transaction.</p>	<p>You have to <b>use</b> facts or values from a situation to answer a specific question.</p>
Value	Assign or calculate numerical quantity	<p>Multiple Mutual Fund had year-end assets of \$457,000,000 and liabilities of \$17,000,000. There were 24,300,000 shares in the fund at year-end. What was Multiple Mutual's net asset value?</p> <p>A. \$11.26            B. \$18.11            C. \$24.96            D. \$31.81</p>	<p>You have to determine a numerical <b>value</b> from a set of inputs and a formula.</p> <p>Correct Answer: B</p>

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