CAIA ASSOCIATION®

The Global Mark of Distinction in Alternative Investments

March 2010
CAIA® Level II Study Guide

Chartered Alternative Investment Analyst Association®

Contents

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℠ program. The CAIA® program, organized by the CAIA Association® 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 global mark of distinction for professionals employed in all areas of alternative investment markets. 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 in asset allocation.

The Level I curriculum built a foundation in quantitative methods and alternative investment markets. For example, you have been introduced to many unique strategies, as well as, to the range of statistics that are used to define investment performance. Level II now focuses on these same strategies in more depth and in the context of risk management and asset allocation. As in Level I, candidates will be asked to work through an outline, identify and describe aspects of financial markets, develop reasoning skills, and in some cases, make computations necessary to solve problems.

The business school faculty and industry practitioners who built our program bring years of experience in alternative investment markets, in setting curriculum, in teaching, in writing examinations, and in setting standards. 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 the answer of 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, 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. 9th 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. 2009-2010 edition. Institutional Investor, Inc. 2009. ISBN: 978-0-9821898-5-6.

The learning objectives are the best way for candidates to organize their study as they form the basis for examination questions. Learning objectives provide guidance on what concepts, equations and keywords need to be understood. Each exam question is based on one learning objective or a combination of learning objectives and may be in combination with keywords. 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.

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 objective 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. The format of the Level II exam is multiple choice and essay questions. The second portion of the exam occurs after the optional 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 and Integrated Topics	30% - 40%

Minutes	Format	Percentage
120	Multiple Choice (all parts)	70%
90	Essay (all parts)	30%
210	**Total Exam Minutes**	**100%**

All Level II topics may be tested in either a multiple choice format, essay format, or 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 below. Although essays comprise only 30% of the total weight of the exam, additional time is

provided to develop essay answers. There is an optional 30 minute break between the multiple choice section and the essay section.

Errata Sheet

Correction notes appear in this study guide to address known errors existing in the assigned readings. Occasionally additional errors in the readings are brought to our attention and we will then post errata on the study guide website: http://www.caia.org/program/studyguides/. Please report suspected errata to curriculum_errata@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 I examination questions in March 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 I 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. 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*. 9th 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., Bachman, J., Long, A., 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 PE 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*. 2008. Vol. 64, no. 5, 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." CAIA Association 2009.
- Kazemi, H. "Credit Derivatives." CAIA Association 2009.

4. *CAIA Level II: Current and Integrated Topics*. 2009-2010 edition. Institutional Investor, Inc. 2009. ISBN: 978-0-9821898-5-6.

Topic 7: Structured Products, New Products and New Strategies

- Mansour, A., and H. Nadji. "Performance Characteristics of Infrastructure Investments." RREEF Research - A Member of the Deutsche Bank Group. August 2007, p. 1-18.
- 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.* Fall 2008, p. 69-83.
- Gonzalez-Heres, J., and K. Beinkampen. "The Convergence of Private Equity and Hedge Funds." Morgan Stanley's Investment Management Journal. Vol. 2, no. 1, 2006, p. 1-10.

Topic 8: Asset Allocation

- Perold, A. F., and W.F. Sharpe. "Dynamic Strategies for Asset Allocation." *Financial Analysts Journal*. January/February 1988, p. 16-27.
- Chhabra, A. "Beyond Markowitz: A Comprehensive Wealth Allocation Framework for Individual Investors." *The Journal of Wealth Management*. Spring 2005, p. 8-34.
- 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.

- Idzorek, T.M., M. Barad, and S.L. Meier. "Global Commercial Real Estate." *The Journal of Portfolio Management*. Special Issue, 2007, p. 37-52.

Topic 9: Current Topics

- Till, H. "Amaranth Lessons Thus Far." *The Journal of Alternative Investments*. Spring 2008, p. 82-98.
- 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.
- Crouhy, M., Jarrow, R. and Turnbull, S. "The Subprime Credit Crisis of 2007." *The Journal of Derivatives*. Fall 2008, p. 81-110.

Topic 10: Portfolio and Risk Management

- Bhansali, V. "Tail Risk Management." *The Journal of Portfolio Management*. Summer 2008, p. 68-75.
- Sullivan, R. "Taming Global Village Risk." *The Journal of Portfolio Management*. Summer 2008, p. 58-67.
- Meredith, R., N. De Brito, and R. De Figueiredo. "Portfolio Management with Illiquid Investments." Citi Alternative Investments. June 2006, p. 26-31.

Topic 11: Research Issues in Alternative Investments

- Gorton, G., and K. G. Rouwenhorst. "Facts and Fantasies about Commodity Futures." *Financial Analysts Journal*. Vol. 62, no. 2, 2006, p. 47-68.
- Marcato, G., and T. Key. "Smoothing and Implications for Asset Allocation Choices." *The Journal of Portfolio Management*. Special Issue 2007, p. 85-98.
- Fung, W.K.H., and D.A. Hsieh. "Hedge Funds: An Industry in Its Adolescence." Federal Reserve Bank of Atlanta, Economic Review. Fourth Quarter 2006, p. 1-34.
- Conroy, R. and Harris, R. "How Good are Private Equity Returns?" *Journal of Applied Corporate Finance*. Vol. 19, no. 3, Summer 2007, p. 96-108.

CAIA Level II Outline

Topic 1: Professional Standards and Ethics
- CFA Institute Standards of Professional Conduct

Topic 2: Venture Capital and Private Equity Funds
- Private Equity Market Landscape
- Routes Into Private Equity
- Private Equity Funds Structure
- The Investment Process
- Private Equity Portfolio Design
- Private Equity Fund Manager Selection
- 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 PE 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 Indexes
- Investment Vehicles and Asset Allocation
- The Oil Markets: Let the Data Speak for Itself

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 New Strategies
Performance Characteristics of Infrastructure Investments
Coping with Climate Change
Passive Hedge Fund Replication: A Critical Assessment of Existing Techniques
The Convergence of Private Equity and Hedge Funds
Credit Derivatives

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
Global Commercial Real Estate

Topic 9: Current Topics
Amaranth Lessons Thus Far
What Happened To The Quants In August 2007
The Subprime Credit Crisis of 2007

Topic 10: Portfolio and Risk Management
Tail Risk Management
Taming Global Village Risk
Portfolio Management with Illiquid Investments
Risk Management by Philip Jorion

Topic 11: Research Issues in Alternative Investments
Facts and Fantasies about Commodity Futures
Smoothing and Implications for Asset Allocation Choices
Hedge Funds: An Industry in Its Adolescence
How Good are Private Equity Returns?

Topic 1: Professional Standards and Ethics

Readings

1. *Standards of Practice Handbook*. 9th 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
Block allocation
Block trades
Brokerage
Buy-side
Commissions
Composites
Custody
Directed brokerage
Due diligence
Execution of orders
Fair dealing
Firewalls
"Flash" report
Fraud
Global Investment Performance Standards (GIPS)
"Hot issue" securities
Insider trading
Market manipulation
Material changes
Material nonpublic information
Mosaic theory
Oversubscribed issue
Plagiarism
"Pump and dump"
Restricted list
Round-lot
Sell-side
Secondary offerings
Soft commissions
Soft dollars
Thinly traded security
Watch list
Whisper number
Whistle-blowing

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 – 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., Bachman, J., Long, A., 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 PE 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
Over-commitment 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
Private Equity Fund Manager Selection

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 IIRR 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.

Reading 1, Chapter 8
Monitoring Private Equity Investments

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.

Reading 1, Chapter 9
Private Equity Fund Valuation

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.

Keywords

Distribution-in-kind

Over-commitment 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.

Reading 2, Article A
The IRR

Keywords

Smell test

Learning Objectives

1. Define the Internal Rate of Return (IRR) in words and as a formula.
2. Compute the mathematically correct IRR(s) for a set of cash flows and apply the smell test to select the logical solution if more than one exists.
3. Describe how an existing (positive or negative) IRR is affected by subsequent cash flows.
4. List two reasons for obtaining multiple IRRs.
5. List and briefly describe the pitfalls of the IRR.

Reading 2, Article 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.

Reading 2, Article C
What Drives PE? Analyses of Success Factors for PE Funds

Keywords

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

Learning Objectives

1. Explain how and why the endogenous factors such as region, industry sector, financing stage, vintage year, 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, 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.

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

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

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.

Reading 1, Chapter 16
Commodity Indexes

Keywords

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

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).

Reading 1, Chapter 17
Investment Vehicles and Asset Allocation

Keywords

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

Reading 2, Article A
The Oil Markets: Let the Data Speak for Itself

Keywords

Baltic Dry Index
Crack spread
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, p. 18-32.

Reading 1, Chapter 18
Managed Futures Industry Development and Regulation

Keywords

Actively managed
Commodity Futures Trading Commission (CFTC)
Commodity pool operators (CPOs)
Commodity Trading Advisors (CTAs)
Funds
Futures commission merchants (FCMs)
Futures fund
Introducing brokers (IBs)
Managed accounts
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
Channel breakout
Countertrend
Degradation
Discretionary strategies
Fundamental analysis
"Look back"
Moving average
Non-trend following strategies
Overfitting
Systematic strategies
Relative Strength Index (RSI)
Relative value strategies
Technical analysis
Trend following strategies

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.

Reading 1, Chapter 20
Risk and Performance Measurement in Managed Futures Strategies

Keywords

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

Reading 1, Chapter 21
Benchmarking and Investment Products

Keywords

Access bias
Active benchmarks
Passive benchmarks
Slippage costs

Learning Objectives

1. Discuss the attributes of managed futures in terms of: 1) liquidity, 2) non-directional strategy, 3) optionality, 4) implicit leverage, and 5) 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 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.

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.

Reading 1, Chapter 25
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.

Reading 1, Chapter 26
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.

Reading 1, Chapter 27
Residential and Commercial Mortgages

Keywords

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

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.

Reading 1, Chapter 28
Mortgage Backed Securities

Keywords

Accrual tranches (Z-bonds)
Collateralized Mortgage Obligations (CMO)
Commercial mortgage-backed securities (CMBS)
Conditional Prepayment Rate (CPR)
Conduit
Conduit's average margin (excess interest)
Contraction risk
Extension risk
Floating-rate tranches
Interest-only (IO) collateralized mortgage obligations

Mezzanine loans
Mortgage-backed securities (MBS)
Pass-through mortgage backed securities
Planned Amortization Class (PAC) tranches
Principal-only (PO) collateralized mortgage obligations
Public Securities Association (PSA)
Refinancing burnout
Residential mortgage-backed securities (RMBS)
Sequential-pay collateralized mortgage obligation
Single monthly mortality rate
Sub-prime mortgages
Z-bonds (accrual tranches)

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.

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
Forward sales
Full forward funding
Industrial sector
Office sector
Residential developments
Residual method
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 to 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
Beta
Core risks
Enterprise risk
Epsilon
Gamma
Global investing risks
Leverage risk
Manager incentive risk
Metro Area allocation risk
NPI swaps
Obsolescence
Opportunistic risks
Property selection
Property-type allocation risk
Reinvestment risk
Value-added risks

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.

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.

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 – Real Estate, 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. 2008. "Hedge Fund Investing in Distressed Securities." Man Investments.
   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
At-the-money convertibles
Busted convertible bond
Call protection
Conversion premium
Conversion price
Conversion ratio
Convertible price
Delta hedging
Equity proxy convertible bond
Hybrid convertible bond
In-the-money
Junk (distressed) convertible bond
Net delta
Out-of-the-money
Parity
Risk-neutral probability
Vega hedging

Learning Objectives

1. Explain the economic basis for the source of return for 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.

Reading 1, Chapter 33
Global Macro

Keywords

Carry trade
Covered interest 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.

Reading 1, Chapter 34
Equity Long/Short

Keywords

130/30 funds
Anomalies
Blend approach
Bottom-up
Corporate governance (Activists) approach
Equity long/short
Factor-mimicking portfolios
Fama-French four factor model
Growth approach
Margin cost of longs
Margin cost of shorts
Momentum
Quantitative approach
Sector investment approach
Short rebate
Top-down
Valuation based approach
Value approach
Winsorized
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 fund of hedge funds
Concentrate 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), both in terms of 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
Contagion risk
Covered short selling
Frontier markets
Gross exposure
Manager alpha
Market-linked returns
Mortgage arbitrage
Naked short selling
Net exposure
Reverse merger
Static returns

Stop-loss
Swap spread arbitrage
Volatility 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

Reading 1, Chapter 37
Operational Risk

Keywords

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

Reading 2, Article A
Hedge Fund Investing in Distressed Securities

Keywords

Busted convertibles
Debtor-in-possession loans
Distressed debt instruments
PIPEs
Seller paper
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 high yield bond market and discuss the determinants of distressed hedge fund performance over the period from 1994 to the beginning of 2008, and 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 New Strategies

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. Credit Derivatives by Hossein Kazemi
2. *CAIA Level II: Current and Integrated Topics*. 2009-2010 edition. Institutional Investor, Inc. 2009. ISBN: 978-0-9821898-5-6.
   A. Mansour, A., and H. Nadji. "Performance Characteristics of Infrastructure Investments." RREEF Research - A Member of the Deutsche Bank Group. August 2007, p. 1-18. (6-23)
   B. Weistroffer, C. "Coping with Climate Change." Deutsche Bank Research. November 15, 2007, p. 1-20. (24-43)
   C. Amenc, N., W. Géhin, L. Martellini, and J.-C. Meyfredi. "Passive Hedge Fund Replication: A Critical Assessment of Existing Techniques." *Journal of Alternative Investments.* Fall 2008, p. 69-83. (44-58)
   D. Gonzalez-Heres, J., and K. Beinkampen. "The Convergence of Private Equity and Hedge Funds." Morgan Stanley's Investment Management Journal. Vol. 2, no. 1, 2006, p. 1-10. (59-68)

Reading 1, Article A
Credit Derivatives

Keywords

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

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 price of the risky debt and price of equity of the same firm in the context of the structural approach to pricing of credit risk.
5. Calculate the price of a 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 reduced form approach to 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 swap (CDS) and its major components.
13. Describe the six factors that have contributed to the growth of the CDS market.
14. Identify the issues addressed by 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 risky faced by protection sellers.
17. Explain the concept of marking-to-market of CDS and identify the factors that affect 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 spread 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 spread 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 asset backed securities and its two variants.
29. Explain the major features of common CDS indices
30. Describe the major features of single-tranche collateralized debt obligations (CDO).
31. What are the advantages of single-tranche CDOs compared to traditional CDOs.

Reading 2, Article A
Performance Characteristics of Infrastructure Investments

Keywords

Hybrid asset
Lifecycle
Listed infrastructure funds
Unlisted infrastructure funds

Learning Objectives

1. Describe the conceptual characteristics of infrastructure sectors.
2. Compare infrastructure investments with other traditional and alternative assets.
3. Critique the evidence on the performance history of infrastructure investments.
4. Explain how the composition and construction of the following indices impact their relative performance:
   a. RREEF Hypothetical Infrastructure Index.
   b. UBS Global Infrastructure & Utilities Index.
   c. Moody's Economy.com Infrastructure Index.
5. Identify risks involved with infrastructure investments.

Reading 2, Article B
Coping with Climate Change

Keywords

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

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 C
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: {4, p. 44-58}
   a. goals.
   b. methodology.
   c. ability to replicate hedge fund returns.
   d. benefits.
   e. drawbacks.

Reading 2, Article D
The Convergence of Private Equity and Hedge Funds

Keywords

"Buy to own" investing
"Lend to own" debt financing
Claw-back
Convergence
Hybrid funds
Lock-up
Side pockets
Toehold positions

Learning Objectives

1. Discuss the term convergence as it is applied to the alternative investments industry.
2. Compare and contrast the historical objectives of private equity funds with that of hedge funds.
3. Contrast recent hedge fund participation in traditional private equity activities with recent private equity participation in traditional hedge funds activities.
4. Explain why the distressed investment space provides an excellent example of recent convergence of hedge fund and private equity strategies.
5. Describe the emergence of the hybrid hedge fund/private equity fund.
6. Discuss the factors that contributed to the convergence of private equity and hedge fund strategies referencing recent trends in the area.
7. Discuss the concerns and risks related to the trend toward convergence of hedge fund and private equity fund strategies.

Topic 8: Asset Allocation

Readings

1. *CAIA Level II: Current and Integrated Topics*. 2009-2010 edition. Institutional Investor, Inc. 2009. ISBN: 978-0-9821898-5-6.
   A. Perold, A. F., and W.F. Sharpe. "Dynamic Strategies for Asset Allocation." Financial Analysts Journal. January/February 1988, p. 16-27. (70-81)
   B. Chhabra, A. "Beyond Markowitz: A Comprehensive Wealth Allocation Framework for Individual Investors." *The Journal of Wealth Management*. Spring 2005, p. 8-34. (82-108)
   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. (109-137)
   D. Idzorek, T.M., M. Barad, and S.L. Meier. "Global Commercial Real Estate." *The Journal of Portfolio Management*. Special Issue, 2007, p. 37-52. (138-153)

Reading 1, Article A
Dynamic Strategies for Asset Allocation

Keywords

Buy-and-hold
Concave payoff curves
Constant mix
Constant-proportion portfolio insurance
Convex payoff curves
Decision rule
Exposure diagram
Floor
Multiplier
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 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 using information provided to the candidate during the examination.
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. **Note: The 12th line from bottom of the left column should read "if inventories are high, the convenience yield may be low."**
7. Discuss the importance of roll return 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 return and roll return 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.

Reading 1, Article D
Global Commercial Real Estate

Keywords

Black-Litterman asset allocation
Private (direct) commercial real-estate: debt
Private (direct) commercial real-estate: equity
Public (indirect) commercial real-estate: debt
Public (indirect) commercial real-estate: equity
Resampled mean-variance optimization

Learning Objectives

1. Discuss the role of global commercial real estate in a strategic asset allocation setting.

2. Identify the components of the commercial real estate asset class and the relative advantages of direct real estate investment and real estate investment trusts (REITs).
3. Explain the historical performance and diversification benefits of select asset classes.
4. Compare the assumptions and results of the CAPM approach to the Black-Litterman approach when determining forward-looking asset allocations.
5. Explain the seven caveats identified by the author as considerations for strategic asset allocation to global commercial real estate.

Topic 9: Current Topics

Readings

1. *CAIA Level II: Current and Integrated Topics*. 2009-2010 edition. Institutional Investor, Inc. 2009. ISBN: 978-0-9821898-5-6.
   A. Till, H. "Amaranth Lessons Thus Far." *The Journal of Alternative Investments*. Spring 2008, p. 82-98. (155-171)
   B. 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. (172-221)
   C. Crouhy, M., Jarrow, R. and Turnbull, S. "The Subprime Credit Crisis of 2007." *The Journal of Derivatives*. Fall 2008, p. 81-110. (222-251)

Reading 1, Article A
Amaranth Lessons Thus Far

Keywords

Backwardation
Calendar spread trading
Contango

Learning Objectives

1. Understand what is meant by the "term structure of a commodity futures curve" and the terms "backwardation" and "contango."
2. Understand the derivation of the futures curve for natural gas and the association between the curve and potential determinants including anticipated production, consumption and seasonal factors.
3. Explain a futures calendar spread trading and the sources of potential profits, potential losses and risk from this type of strategy.
4. Describe the type of calendar spread trading Amaranth employed and explain the rationale for this strategy as it relates to natural gas pricing.
5. Discuss the magnitude of Amaranth's calendar spread positions: explain how this hedge fund was able to accumulate such large positions (including the role of position limits) and describe the effects of the magnitude of the positions on daily profits and losses.
6. Discuss the causes for increased volatility on the natural gas commodity futures market prior to Amaranth's liquidation in September 2006.
7. Discuss how sophisticated storage operators can manage their storage facilities as a set of options on calendar spreads. {
8. Describe how daily volatility as measured by standard deviation can underestimate potential risk (where risk is defined as the likelihood of experiencing severe loss), and explain how scenario analysis can be used to better indicate the risk of a fund's structural position in such circumstances.

9. Describe what is meant by "nodal" or "one-way" liquidity in the commodity markets and how the lack of "two-way" liquidity adversely affected Amaranth.
10. Understand how forced liquidations can affect market prices and why changes in market prices can be correlated with the size and direction of the liquidation.

Reading 1, Article B
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 C
The Subprime Credit Crisis of 2007

Alt-A mortgage loans
Asset Backed Commercial Paper (ABCP)

Asset Backed Security (ABS) trust
Centralized Clearing House (CCH)
Credit enhancement
Monoline Insurers
Positive feedback mechanisms
Short reset loans
Special Investment Vehicle (SIV)
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.

Topic 10: 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. Risk Management by Philip Jorion
2. *CAIA Level II: Current and Integrated Topics*. 2009-2010 edition. Institutional Investor, Inc. 2009. ISBN: 978-0-9821898-5-6.
   A. Bhansali, V. "Tail Risk Management." *The Journal of Portfolio Management*. Summer 2008, p. 68-75. (253-260)
   B. Sullivan, R. "Taming Global Village Risk." *The Journal of Portfolio Management*. Summer 2008, p. 58-67. (261-270)
   C. Meredith, R., N. De Brito, and R. De Figueiredo. "Portfolio Management with Illiquid Investments." Citi Alternative Investments. June 2006, p. 26-31. (271-277)

Reading 1, Article A
Risk Management

Keywords

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

Keywords

Portfolio insurance
Systemic risk
Tail risk
Trend following

Learning Objectives

1. Assess the long-run and short-run benefits of hedging the tail risk of a portfolio.
2. Explain the relationship between systemic risk, liquidity risk, monetary policy and other macro events.
3. Explain why increased correlation among various asset returns during periods of stress could provide opportunities for free insurance against tail risk.
4. Describe the four approaches to hedging or insuring a portfolio against tail risk.
5. Explain why dynamic strategies such as portfolio insurance cannot be used to hedge against tail risk.
6. Describe the three factors that impact the construction of a tail hedge.
7. Explain why long-dated options may provide an inexpensive method for hedging tail risk.

Reading 2, Article B
Taming Global Village Risk

Keywords

Complex adaptive systems
Exposure
Liquidity conundrum
Shadow banking system
Short-termism

Learning Objectives

1. Evaluate the factors that lead to the underpricing of risk by investors.
2. Explain the relationship between the real economy and capital markets and discuss the factors that have made the real economy less volatile through time.
3. Discuss why capital markets are complex and adaptive and explain the implications of these characteristics for models of risk measurement.
4. Compare and contrast the terms risk and uncertainty.
5. Explain the role of the shadow banking system as a source of liquidity and discuss why during periods of market stress this source of liquidity may disappear.
6. Demonstrate how cognitive biases can lead to errors in judgment by financial market participants.

Reading 2, Article C
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.

Topic 11: Research Issues in Alternative Investments

Readings

1. *CAIA Level II: Current and Integrated Topics*. 2009-2010 edition. Institutional Investor, Inc. 2009. ISBN: 978-0-9821898-5-6.
   A. Gorton, G., and K. G. Rouwenhorst. "Facts and Fantasies about Commodity Futures." *Financial Analysts Journal*. Vol. 62, no. 2, 2006, p. 47-68. (279-300)
   B. Marcato, G., and T. Key. "Smoothing and Implications for Asset Allocation Choices." *The Journal of Portfolio Management*. Special Issue 2007, p. 85-98. (301-314)
   C. Fung, W.K.H., and D.A. Hsieh. "Hedge Funds: An Industry in Its Adolescence." Federal Reserve Bank of Atlanta, Economic Review. Fourth Quarter 2006, p. 1-34. (315-348)
   D. Conroy, R. and Harris, R. "How Good are Private Equity Returns?" *Journal of Applied Corporate Finance*. Vol. 19, no. 3, Summer 2007, p. 96-108. (349-361)

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
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.

Reading 1, Article C
Hedge Funds: An Industry in Its Adolescence

Keywords

Alignment of interests
Alternative alphas
Alternative betas
Asset-Based Style (ABS) factors
Backfill
Bottom-up approach
Capital-structure arbitrage
Compensation contract design
Convergence of leveraged opinions
Credit spread
Fixed income volatility
Hazard rate
Incentive fee
Incubation bias
Incubation period
Liquidation bias
Lookback straddles
Market integrity
Market risk factors
Mortgage spread
Multistrategy hedge funds
Selection bias
Serial correlation of hedge fund returns
Survivorship bias
Swap spread
Synthetic hedge funds
Systemic risk
Top-down approach

Learning Objectives

1. Describe the hedge fund business model presented by the authors.
2. Analyze the issues in measuring the growth of the hedge fund industry.
3. Evaluate the potential biases in hedge fund databases.
4. Review the approach and describe the main findings of bottom-up research on hedge fund risk factors.
5. Describe and assess the adequacy of the asset-based style risk factor model used by Fung and Hsieh to analyze hedge fund returns.
6. Discuss the broader risks associated with hedge funds and describe the regulatory concerns.

Reading 1, Article D
How Good are Private Equity Returns?

Keywords

Dimson beta
Listed Private Equity (LPE)
Post-Venture Capital Index (PVCI)
Stale prices

Learning Objectives

1. Describe the role of manager selection in the experience of a private equity investor.
2. Discuss the challenges that an investor would face in measuring the risk-adjusted performance of private equity.
3. Explain the implication of the observation that mean and median returns on private equity databases are significantly different.
4. Explain and identify the potential bias in using the performance of liquidated funds to represent the overall performance of private equity funds.
5. Compare the performance of companies in which private equity firms invest with small cap firms listed on NASDAQ.
6. Explain the liquidity characteristics of listed private equity securities.
7. Discuss the impacts of adjustment for stale prices on risk, return, and diversification benefits of private equity (candidates do need to memorize exact figures).
8. Identify the impact of IPO under-pricing on the performance of the PVCI.
9. Explain how the following issues pose a challenge to private equity investors:
   a. Illiquidity.
   b. parameter uncertainty.
   c. absence of an investible index.
   d. cross-sectional differences in private equity managers.

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	George has identified an opportunity for a convertible arbitrage reverse hedge. What risks are associated with this hedge? A. The convertible may remain overvalued, causing the positive cash flow to harm the position's return profile. B. The short convertible may be called in and the position must be delivered, forcing the hedge to be unwound at an inopportune time. C. The implied volatility may decrease, lowering the bond's value. D. The implied volatility may increase, lowering the bond's value.	You have to **analyze** the positions and factors impacting them. Correct Answer: B
Apply	Make use of	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: A. must adhere to the standards as defined in a neighboring country that has the strictest laws and regulations. B. need not concern herself with ethics codes and standards. C. must adhere to the CFA Institute's codes and standards. D. must adhere to the standards as defined in a neighboring country that has the least strict laws and regulations.	You have to **apply** the CFA Institute Standard I to find the correct answer. Correct Answer: C
Argue	Prove by reason or by presenting the associated pros and cons; debate	Why did the shape of the supply curve for venture capital funds change after 1979?	You have to describe how the curve has changed AND **argue** why it changed by providing reasons and supporting the reasons with statements of facts (e.g., change in regulations.)

Term	Definition	Sample Question	Example of Term Use
Assess	Determine importance, size, or value	How are lower capital gains taxes expected to impact firm commitments? 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.	You must **assess** the significance of the change in the tax rate for firm commitments. Correct Answer: A
Calculate	Use a mathematical formula to determine a result	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? A. 8.18% B. 8.26% C. 8.34% D. 8.54%	You have to **calculate** the effective annual yield. Correct Answer: D
Classify	Arrange or organize according to a class or category	Classify compliance issues considered by examiners when investigating firms that market private equity securities.	You have to correctly **classify** the aspects of private equity firms relating to the various compliance issues.
Compare	Describe similarities and differences	Which of the following least accurately compares the Sharpe and Teynor ratios? 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	You have to **compare** the three approaches based on their most important similarities and their most important differences Correct Answer: D

Term	Definition	Sample Question	Example of Term Use
Compare and Contrast	Examine in order to note similarities or differences	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: A. the initial payment will be the same. 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. C. the present value of the payment streams of the two loan types are the same. D. the constant payment mortgage loan balance exceeds that of the constant amortization mortgage during the first six months of the loan.	You have to **compare** indices to arrive at the answer. Correct Answer: C
Compute	Determine an amount or number	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? A. $9,757 B. $9,797 C. $9,837 D. $9,917	You have to **compute** a value from a set of inputs. Correct Answer: D
Construct	Make or form by combining or arranging parts or elements	A reverse convertible arbitrage hedge consists of a: A. short convertible position plus a put option on the stock. B. long convertible position plus a put option on the stock. C. short convertible position plus a call option on the stock. D. short convertible position plus a long position in the stock.	You have to combine positions to **construct** the hedge. Correct Answer: D
Contrast	Expound on the differences	Which of the following best characterizes a difference between Value at Risk (VaR) and Modified Value at Risk? A. Modified VaR is expressed as a percent while VaR is a dollar value B. Modified VaR uses a user defined confidence interval while VaR uses a 99% interval C. Modified VaR incorporates non-normality while traditional VaR assumes normality D. Modified VaR is for a single trading period while traditional VaR is multiple period	You have to **contrast** the assumptions of the first model to those of the second model so that the differences are clear. Correct Answer: C

Term	Definition	Sample Question	Example of Term Use
Critique	Evaluate with reasoned judgment	Compared with ranking investment opportunities using NPV, which of the following best describes the appropriateness of the IRR approach? 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	You must **critique** the various risk measures so that the advantages and disadvantages have been enumerated and justified. Correct Answer: A
Defend	To support or maintain through argument; justify	Justify the use of an adjusted stochastic.	You must **defend** the use of an adjusted stochastic instead of a traditional stochastic.
Define	State the precise meaning	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: A. prime rate. B. discount rate. C. federal funds rate. D. call money rate.	You have to **define**, in this case, the federal funds rate. Correct Answer: C
Describe	Convey an idea or characterize	Which of the following words best describes expected return? A. Spread B. Average C. Spread squared D. Average squared	You need to choose the word that best **describes** the concept from a list. Correct Answer: B
Determine	Establish or ascertain definitively, as after consideration, calculation or investigation	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? A. 25% B. 33% C. 41% D. 49%	You have to **determine** a precise value from a set of inputs. Correct Answer: B

Term	Definition	Sample Question	Example of Term Use
Differentiate	Constitute the distinction between; distinguish	What type of convertible hedge entails shorting a convertible and going long in the underlying stock? A. Call option hedge B. Traditional convergence hedge C. Implied volatility convergence hedge D. Reverse hedge	You have to **differentiate** one type of hedge from another. Correct Answer: D
Discuss	Examine or consider a subject	Discuss the limitations of private equity data.	You have to present a **discussion** of a set of ideas in a list or paragraph.
Distinguish	Separate using differences	Which of the following best distinguishes between the covariance and the correlation coefficient? 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	You have to **distinguish** between risk measurement approaches based on their assumptions regarding the distribution of returns. Correct Answer: D
Explain	Illustrate the meaning	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. or 2. Which of the following best explains risk from the standpoint of investment? 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.	1. You have to place a series of thoughts together as an **explanation** of a term or issue. 2. You need to identify the term that best **explains** a term or issue. Correct Answer: D

Term	Definition	Sample Question	Example of Term Use
Formulate	State or reduce to a formula	The holding period return (HPR) on a share of stock is equal to: A. the capital gain yield minus the inflation rate over the period. B. the capital gain yield plus the dividend yield over the period. C. the current yield plus the dividend yield. D. the dividend yield plus the risk premium.	You have to **formulate** the meaning of some term or issue. Correct Answer: B
Identify	Establish the identity	The investments that have historically performed best during periods of recession are: A. commodities. B. treasury bills. C. stocks and bonds. D. gold.	You have to **identify** the term that best meets the criterion of the question. Correct Answer: C
Illustrate	Clarify through examples or comparisons	For two types of convergence hedges, what situations present profitable opportunities, how are the hedges set up, and what are the associated risks?	You have to provide an example for each hedge or compare the two to **illustrate** how they work.
Interpret	Explain the meaning	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: A. 30-day CD, no matter what you expect interest rates to do in the future. B. 2-year CD, no matter what you expect interest rates to do in the future. C. 30-day CD if you expect that interest rates will fall in the future. D. 2-year CD if you expect that interest rates will fall in the future.	You have to **interpret** the features of an investment scenario. Correct Answer: D
List	Create a series of items	List the determinants of real interest rates.	You have to differentiate from a **list** those items that are consistent with the question.

Term	Definition	Sample Question	Example of Term Use
Name	State a word by which an entity is designated or distinguished from others	As of December 31, 1999, which class of mutual funds had the largest amount of assets invested? A. Stock funds B. Bond funds C. Mixed asset classes, such as asset allocation funds D. Money market funds	You need to **name** the correct statement or phrase from a group of potential answers. Correct Answer: A
Outline	Summarize tersely	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? A. Add one to each return, add them together, divide by T and subtract one B. Add one to each return, multiply them together, divide by T and subtract one C. Add one to each return, add them together, take the Tth root and subtract one D. Add one to each return, multiply them together, take the Tth root and subtract one	You must **outline** the study's most important findings rather than explain them in detail. Correct Answer: D
Price	State the amount by which an asset is valued or value an asset in monetary terms	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. A. $20.25 B. $25.75 C. $31.25 D. $36.75	You have to **price**, according to a formula, a value from a set of inputs. Correct Answer: B
Rank	Determine relative position	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? A. Liquidated, IPOs, merged, and continued private B. IPOs, liquidated, merged, and continued private C. Merged, liquidated, continued private, and IPOs D. Continued private, IPOs, merged, and liquidated	You have to choose the correct **ranking** of a number (4) of items according to a particular criterion (percentage). Correct Answer: A

Term	Definition	Sample Question	Example of Term Use
Recommend	Indicate as preferred	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? E. Drawdown F. Skewness G. Kurtosis H. Variance	You have to **recommend** which procedure reflects best practices. Correct Answer: B
Relate	Show or establish logical or causal connection	Which of the following effects does NOT help to explain growth in the venture capital industry? 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	You must **relate** effects or factors (e.g., the prudent man rule) to another result or concept (e.g., growth in an industry). Correct Answer: C
Solve	Find a solution	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? A. 4,938,372 B. 5,713,372 C. 6,488,372 D. 7,263,372	You have to place various inputs into a formula and **solve** for the unknown. Correct Answer: C
State	Set forth in words or declare	State the main risks faced by distressed securities investors.	You have to present a list or set of sentences that **states** main ideas.
Summarize	Cover all the main points succinctly	Summarize the performance of trend and momentum strategies, and compare their performance to the buy-and-hold strategy.	You have to **summarize** a longer discussion or complicated concept or set of results by focusing on the main ideas.

Term	Definition	Sample Question	Example of Term Use
Understand	Perceive and comprehend nature and significance; grasp meaning	Which of the following would increase the net asset value of a mutual fund share, assuming all other things remain unchanged? 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	You have to use reasoning to illustrate an **understanding** of a specific issue. Correct Answer: D
Use	Apply for a purpose or employ	Illustrate the financial benefits of merger arbitrage using an actual merger transaction.	You have to **use** facts or values from a situation to answer a specific question.
Value	Assign or calculate numerical quantity	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? A. $11.26 B. $18.11 C. $24.96 D. $31.81	You have to determine a numerical **value** from a set of inputs and a formula. Correct Answer: B

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