

# Global Body of Investment Knowledge

In 2007 the CFA Institute Board of Governors charged the Education Advisory Committee (EAC) with the responsibility of ensuring that the Global Body of Investment Knowledge (GBIK) and the Candidate Body of Knowledge (CBOK) remain relevant to the investment profession as well as reflect a global perspective. The EAC employs a technique known as practice analysis to achieve these goals. Practice analysis is a process that, through a series of focus groups and surveys, delineates the responsibilities and knowledge associated with competency in the investment profession. While practice analysis has been used by CFA Institute since 1995 to update the CBOK every five years, the EAC revised the process to<sup>1</sup>:

- update the GBIK on a continuous basis;
- use a collaborative website followed by regional discussion panels and member surveys; and,
- update portions of the CBOK on an annual basis.

After an intense year of rigorous study, the EAC approved a revised version of the GBIK on 1 September 2009.

## **The Global Body of Investment Knowledge**

The GBIK is the comprehensive outline of knowledge for the investment profession. Investment professionals may use GBIK concepts at any stage of their career – novice through expert, generalist and/or specialist. The GBIK includes mainstream and frontier concepts based on research that has been, or is still being debated and may encompass views well outside the mainstream. Geared more toward the CFA charterholder, the GBIK serves as a member tool for continuing education and lifelong learning by members. In addition, the revised GBIK serves as a guide to all CFA Institute lifelong learning activities, including publications, conferences, and other continuing education programs. The revised version of the GBIK outline is attached and the “live” version can be found on the [collaborative website](#) where topic domain moderators, EAC working body members, and member and non-member investment professionals “meet” virtually to discuss the GBIK. Consensus opinion from this discussion serves as the basis for future regional discussion panels and member surveys.

## **The Candidate Body of Knowledge**

As part of the practice analysis process, members identify components of the GBIK that are relevant to the CFA Program CBOK. The CFA Program [CBOK](#) is the core knowledge, skills, and abilities (competencies) that are generally accepted and applied by investment professionals. These knowledge, skills, and abilities are used in practice in a generalist context and are expected to be demonstrated by a recently qualified CFA charterholder. Members evaluate the GBIK and propose knowledge, skills, and abilities that should also be included in the CBOK. These proposed additions to the CBOK are evaluated by a broad, cross-section of CFA Institute members.

The current CBOK consists of four components:

- a broad topic outline which lists the major knowledge areas<sup>2</sup>,
- topic area weights which indicate the relative exam weightings of the top level topic areas<sup>3</sup>,
- learning outcome statements which advise a candidate as to what they should be able to do with this knowledge – these are provided in candidate study sessions<sup>4</sup> and at the beginning of each reading, and
- the curriculum which provides the material the candidate is expected to master and is provided upon exam registration.

---

<sup>1</sup> The revised practice analysis process is described in more detail in The CFA Program: Our Fifth Decade <http://www.cfainstitute.org/cfaprogram/overview/pdf/IntoOur5thDecade.pdf>

<sup>2</sup> The CBOK evolves over time and topics and weights may change. This listing was current as of publication of this article. Please see the current version available at <http://www.cfainstitute.org/cfaprogram/courseofstudy/topic.html>

<sup>3</sup> Current version available at <http://www.cfainstitute.org/cfaprogram/courseofstudy/topicareaweights.html>

<sup>4</sup> Current versions available at <http://www.cfainstitute.org/cfaprogram/resources/studysessions.html>

# Global Body of Investment Knowledge

## I. ETHICAL AND PROFESSIONAL STANDARDS

### A. Applicable Laws and Regulations

1. Governmental Institutions, Rules and Regulations
2. Securities and Exchange Commission and equivalent bodies in other countries
3. Rules and Procedures Regarding Corporate Transactions and Insider Trading
  - a. Initial Public Offerings
  - b. Mergers and Acquisitions
  - c. Definitions of “Insiders”
  - d. Disclosure of Insider Transactions
4. Regulation of Exchanges
5. Establishment of Company Financial Reporting Standards
6. Fiduciary Standards

### B. Professional Standards of Practice

1. The Code of Ethics
2. Standards of Professional Conduct
  - a. Standard I: Professionalism
    - (1) Knowledge of the Law
    - (2) Independence and objectivity
    - (3) Misrepresentation
    - (4) Misconduct
  - b. Standard II: Securities markets
    - (1) Material nonpublic information
    - (2) Market manipulation
  - c. Standard III: Duties to clients and prospective clients
    - (1) Loyalty, prudence, and care
    - (2) Fair dealing
    - (3) Suitability
    - (4) Investment guarantees
    - (5) Performance presentation
    - (6) Preservation of confidentiality
  - d. Standard IV: Duties to employers
    - (1) Loyalty
    - (2) Additional compensation arrangements
    - (3) Responsibilities of supervisors
  - e. Standard V: Investment analysis, recommendations, and actions
    - (1) Diligence and reasonable basis
    - (2) Communication with clients and prospective clients
    - (3) Record retention
  - f. Standard VI: Conflicts of interest
    - (1) Disclosure of conflicts
    - (2) Priority of transactions
    - (3) Referral fees
  - g. Standard VII: Responsibilities as CFA Institute member or CFA candidate
    - (1) Conduct as members and candidates in the CFA Program

# Global Body of Investment Knowledge

- (2) Obligation to inform employer of the Code and Standards
- (3) Reference to CFA Institute, the CFA designation, and the CFA Program
- 3. Disciplinary sanctions for violations
- C. Ethical Practices and Guidelines
  - 1. Corporate Governance
  - 2. Soft Dollar Standards
  - 3. Fiduciary Duty
  - 4. Insider Trading
    - a. Mosaic Theory
    - b. Selective Disclosure vs. Full Disclosure
  - 5. Personal Investing
  - 6. Research Objectivity Standards
  - 7. Trade Management Guidelines
  - 8. Analyst/Corporate Relations Guidelines

## II. QUANTITATIVE METHODS

- A. Time Value of Money
  - 1. Future Value of a Single Cash Flow
    - a. Calculating the Future Value of a Single Cash Flow
    - b. Frequency of Compounding
    - c. Continuous Compounding
    - d. Annual and Effective Interest Rates
  - 2. Future Value of a Series of Cash Flows
    - a. Equal Cash Flows
      - (1) Ordinary Annuity
      - (2) Annuity Due
    - b. Unequal Cash Flows
  - 3. Present Value of a Single Cash Flow
    - a. Calculating the Present Value of a Single Cash Flow
      - (1) Ordinary Annuity
      - (2) Annuity Due
    - b. Frequency of Compounding
  - 4. Present Value of a Series of Cash Flows
    - a. Calculating the Present Value of a Series of Equal Cash Flows
    - b. Present Value of a Series of Unequal Cash Flows
    - c. Present Value of an Infinite Series of Equal Cash Flows (Perpetuity)
  - 5. Equivalence of Present and Future Value
  - 6. Other Applications of the Time Value of Money
    - a. Solving for Interest Rates and Growth Rates
    - b. Solving for the Number of Periods
    - c. Solving for the Size of Annuity Payments
  - 7. Discounted Cash Flow Analysis
    - a. Net Present Value Rule
    - b. Internal Rate of Return Rule
    - c. Problems with the Internal Rate of Return Rule

# Global Body of Investment Knowledge

8. Simple Interest and Money-Market Conventions
  - a. Bank-Discount Yield
  - b. Periodic Yield
  - c. Bond-Equivalent Yield
  - d. Effective Annual Yield
  - e. CD-Equivalent Yield
9. Investment Measures of Return
  - a. Dollar-Weighted Rate of Return
  - b. Time-Weighted Rate of Return
- B. Basic Statistical and Probability Concepts
  1. Nature of Statistics
    - a. Populations and Samples
    - b. Types of Statistical Data
      - (1) Nominal data
      - (2) Ordinal data
      - (3) Interval data
      - (4) Ratio data
  2. Frequency Distributions
  3. Graphic Presentations
    - a. Histogram
    - b. Frequency Polygon and Cumulative Frequency Distribution
  4. Measures of Central Tendency
    - a. Population Mean
    - b. Sample Mean
      - (1) Properties of the Arithmetic Mean
    - c. Median
    - d. Mode
    - e. Quartiles, Quintiles, Deciles, and Percentiles
      - (1) Using Quartiles for Portfolio Formation
    - f. Weighted Mean
    - g. Geometric Mean
      - (1) Geometric Mean Return
      - (2) Relationship to Arithmetic Mean Return
  5. Measures of Dispersion
    - a. Absolute versus Relative Dispersion
    - b. Measures of Absolute Dispersion
      - (1) Range
      - (2) Mean Absolute Deviation
      - (3) Variance and Standard Deviation
        - (a) Population Variance and Standard Deviation
        - (b) Sample Variance and Standard Deviation
        - (c) Chebyshev's Inequality
    - c. Relative Dispersion
  6. Measures of Skewness
    - a. Nature of Skewness
    - b. Using the complete return distribution to Compute Skewness

# Global Body of Investment Knowledge

7. Measures of Kurtosis
8. Probability Concepts
  - a. Definitions, including Experiment, Outcome, Event, Sample Space, and Mutually Exclusive
  - b. Objective Probability
    - (1) Empirical Probability
    - (2) A Priori Probability
  - c. Subjective Probability
  - d. Probability Stated as Odds
  - e. Inconsistent Probability
  - f. Unconditional Probability
  - g. Marginal Probability
  - h. Conditional Probability
  - i. Joint Probability
9. Probability Theorems
  - a. Axioms of Probability
    - (1) The Complement Rule
    - (2) The Special Rule of Addition
    - (3) General Rule of Addition
    - (4) Rule of Multiplication
      - (a) Independent Events
      - (b) Dependent Events
    - (5) Total Probability Rule
10. Expected Value and Variance
  - a. Expected Value
    - (1) Random variable
    - (2) Constant times a random variable
    - (3) Sum of random variables
    - (4) Weighted sum
    - (5) Conditional Expected Value
  - b. Variance of
    - (1) Random Variable
    - (2) Constant times a random variable
    - (3) Random variable plus a constant
    - (4) Conditional Variance
11. Portfolio Expected Return and Variance
  - a. Covariance
    - (1) Between two random variables
    - (2) Constant times a random variable
  - b. Covariance among more than two random variables
  - c. Variance
    - (1) Sum of two Random Variables
    - (2) Weighted sum of random variables
    - (3) Sum of  $n$  assets
    - (4) Covariance Matrix
  - d. Correlation coefficient between two random variables

# Global Body of Investment Knowledge

- e. Joint Probability Function
- 12. Topics in Probability
  - a. Bayesian Analysis
    - (1) Bayes' Formula
    - (2) Bayesian probability calculus
    - (3) Justification of the Bayesian view
    - (4) Personal probabilities and objective methods for constructing priors
    - (5) Scientific method
  - b. Principles of Counting
    - (1) Multiplication Rule of Counting
    - (2) Multinomial Formula
    - (3) Combination Formula (The Binomial Formula)
    - (4) Permutation Formula
- 13. Game Theory
  - a. Cooperative vs. Non-cooperative games
  - b. Zero-sum vs. Non-zero sum games
  - c. Simultaneous vs. Sequential games
  - d. Perfect information vs. Imperfect information games.
  - e. Equilibrium
  - f. Nash equilibrium
- C. Probability Distributions
  - 1. Discrete Random Variables
    - a. Probability Function
    - b. Cumulative Distribution Function
    - c. Discrete Uniform Distribution
    - d. Binomial Distribution
    - e. Expected Value and Variance of a Binomial Random Variable
  - 2. Continuous Probability Distributions
    - a. Probability Density Function
    - b. Uniform Distribution
    - c. Normal Distribution
      - (1) Univariate distribution
      - (2) Multivariate distribution
    - d. Standard Normal Distribution
    - e. Standardizing a Random Variable
    - f. Cumulative Density for the Standard Normal Distribution
    - g. Finding Standard Normal Distribution Areas
    - h. Confidence Intervals
    - i. Mean-Variance Portfolio Selection
  - 3. Lognormal Distribution
    - a. A Model of Short Horizon and Long Horizon Returns
    - b. Short and Long Horizon Expected Value and Variance
    - c. Generating Lognormal Stock Prices
- D. Sampling and Estimation
  - 1. Random Samples
    - a. Sampling in Investment Analysis

# Global Body of Investment Knowledge

- b. Time Series and Cross-sectional data
- c. Data-snooping bias
- d. Sample Selection Bias
  - (1) Survivorship bias
  - (2) Look-ahead bias
  - (3) Time-period bias
- 2. Distribution of the Sample Mean
  - a. Central Limit Theorem
  - b. Point and Interval Estimates of the Population Mean
    - (1) Point Estimators
    - (2) Confidence Intervals when sampling from a Normal Distribution with Known Variance
    - (3) Confidence Intervals when Sampling from a Normal Distribution with Unknown Variance
    - (4) Reading  $t$ -Distribution Tables
    - (5) Confidence Intervals for large samples when sampling from a Non-normal Population
- E. Hypothesis Testing
  - 1. Establishing Hypotheses
    - a. Null hypothesis
    - b. Alternative hypothesis
  - 2. Testing Hypotheses
    - a. Test Criterion
    - b. Two-tail Tests
    - c. One-tail Tests
    - d. Type I Error (rejecting a true null hypothesis)
    - e. Type II Error (failing to reject a false null hypothesis)
    - f. Power of a test
    - g. P-values
  - 3. Steps in Hypothesis Testing
    - a. Testing the Mean of a Single Sample
      - (1) Population Standard Deviation is not known
    - b. Testing the Difference between the Population mean of two samples
      - (1) Population Variances are known
      - (2) Population Variances are not known but assumed equal
      - (3) Population Variances are not known and are unequal
      - (4) Dependent Samples: Paired Data
    - c. Significance Tests and Confidence Intervals for a single Variance
      - (1) Confidence Interval for the sample variance from a normal population
      - (2) Hypothesis Test about a Single Population Variance from a normal population
      - (3) Testing the Equality of Two Variances: The F-Distribution
    - d. Parametric versus Non-Parametric Tests
- F. Correlation Analysis and Regression
  - 1. Correlation Analysis

# Global Body of Investment Knowledge

- a. Scatter Plots and Correlation Analysis
- b. Computing the correlation coefficient
- c. Testing the Significance of the Correlation Coefficient
2. Linear Regression
  - a. Linear Regression with One Independent Variable
  - b. Assumptions of the Linear Regression Model
  - c. Standard Error of Estimate
  - d. Coefficient of Determination
  - e. Confidence Intervals and Testing Hypotheses
    - (1) Significance level
    - (2) Standard error of the estimated coefficient
    - (3) Critical value for rejecting the null hypothesis
  - f. Analysis of Variance (ANOVA) in a regression with one independent variable
  - g. Prediction Intervals
  - h. Limitations to Regression Analysis
3. Multiple Linear Regression
  - a. Assumptions of the Multiple Linear Regression Model
  - b. Standard Error of Estimate in Multiple Linear Regression
  - c. Predicting the Dependent Variable in a Multiple Regression Model
  - d. Testing Whether All the Regression Coefficients are Equal to Zero
  - e.  $R^2$ , adjusted  $R^2$  and statistical significance
4. Using Dummy Variables in Regressions
5. Heteroskedasticity
  - a. Types of Heteroskedasticity
  - b. Tests that Evaluate Heteroskedasticity
  - c. Correcting for Heteroskedasticity
6. Serial Correlation and Durbin-Watson Test
  - a. Consequences of Serial Correlation
  - b. Durbin-Watson statistic to test for serial correlation
  - c. Correcting for Serial Correlation
7. Multicollinearity
8. Models with Qualitative Dependent Variables
- G. Time Series Analysis
  1. Trends
  2. Limitations to Trends
  3. Fundamental Issues in Time Series
  4. Autoregressive Time Series Models
    - a. Autocorrelation
    - b. Mean Reversion
    - c. Multiperiod Forecasts
    - d. Comparing forecast model performance
    - e. Instability of Regression Coefficients
  5. Random Walks and Unit Roots
  6. Moving-Average Time Series Models
    - a. Smoothing past values with a moving average

# Global Body of Investment Knowledge

- b. Moving average models for forecasting
  - 7. Seasonality in Time-Series Models
  - 8. Autoregressive Moving-Average Models
  - 9. Autoregressive Conditional Heteroskedasticity
- H. Simulation Analysis
  - a. Monte Carlo Simulation
  - b. Real Option Valuation
- I. Scenario Analysis
- J. Sensitivity Analysis
- K. Technical analysis
  - 1. Definition and assumptions
    - a. Supply and demand
      - (1) Interaction determines price
      - (2) Influence of other variables
    - b. Persistent price trends
    - c. Turning points
  - 2. Comparison with fundamental analysis
    - a. Challenges to technical analysis
      - (1) Efficient Market Hypothesis
      - (2) Technical trading rules
    - b. Perceived advantages over fundamental analysis
      - (1) No dependence on financial accounting statements
      - (2) Requires only quick recognition of movement to new equilibrium price
      - (3) More likely to experience ideal timing
  - 3. Indicators, Rules, and Theories
    - a. Indicators
      - (1) Expectation or sentiment indicators
      - (2) Flow of funds indicators
    - b. Rules
    - c. Theories

## III. ECONOMICS

- A. Market Forces of Supply and Demand
  - 1. Determinants of Individual Demand
  - 2. Determinants of Individual Supply
  - 3. Equilibrium Price
  - 4. Analyzing Changes in Equilibrium
  - 5. How Prices Allocate Resources
  - 6. Elasticity
    - a. Determinants of Price Elasticity of Demand
    - b. Determinants of Price Elasticity of Supply
    - c. Microeconomic Government Policies
    - d. Analysis of Price Ceilings
    - e. Analysis of Price Floors
    - f. Tax Incidence

# Global Body of Investment Knowledge

- g. Market Efficiency
- 7. Supply and Demand for Productive Resources
  - a. Demand for Resources
    - (1) Marginal Productivity and the Firm's Hiring Decision
    - (2) Supply, Demand, and Resource Prices
  - b. Capital Markets
    - (1) Interest Rates
    - (2) Determination of Interest Rates
    - (3) Money Rate versus Real Rate of Interest
    - (4) Interest Rates and Risk
  - c. Investing in Human Capital
  - d. Natural Resources
    - (1) Natural Resource Markets
    - (2) Property Rights and Resource Conservation
    - (3) Property Rights and the Protection of Water Quality
    - (4) Government Regulation and the Environment
- B. The Firm and Industry Organization
  - 1. Organization of the Business Firm
    - a. Basic Types of Business Firms
    - b. The Principal-Agent Problem
  - 2. Costs of Production
    - a. Opportunity Cost, Explicit Cost, and Implicit Cost
    - b. Accounting Cost versus Opportunity Cost
    - c. The Production Function
    - d. Fixed and Variable Costs
    - e. Average and Marginal Cost
    - f. Cost Curves and Their Shapes
    - g. Diminishing Returns and Cost Curves
    - h. Output and Costs in the Long Run
    - i. Reasons for Economies and Diseconomies of Scale
  - 3. Firms in Competitive Markets
    - a. Definition of Competition
    - b. Revenue of a Competitive Firm
    - c. Profit Maximization for the Competitive Firm
    - d. Accounting Profit and Economic Profit
    - e. The Competitive Firm's Supply Curve
    - f. The Supply Curve in a Competitive Market
  - 4. Monopoly
    - a. Barriers to Entry
      - (1) Economies of Scale
      - (2) Government Licensing
      - (3) Patents
      - (4) Control of Essential Resources
    - b. How Monopolies Make Production and Pricing Decisions
    - c. Public Policy and Monopolies
    - d. Monopsony

# Global Body of Investment Knowledge

5. Oligopoly
    - a. Duopoly
    - b. Cartels, or Oligopoly Joint Decision Making
      - (1) Factors that Facilitate Formation of Cartels
      - (2) Enforcing a Cartel Agreement
      - (3) Cartels and Price Wars
    - c. Noncooperative Oligopoly
    - d. Equilibrium for an Oligopoly
    - e. Game Theory and the Economics of Cooperation
    - f. Public Policy toward Oligopolies
  6. Monopolistic Competition
    - a. Price and Output in Competitive Markets with Differentiated Products
    - b. Allocative Efficiency in Monopolistic Competition
    - c. Effectiveness of Advertising
- C. Measuring National Income and Growth
1. Gross Domestic Product (GDP)
  2. Components of GDP
  3. Real versus Nominal GDP
    - a. GDP Deflator
    - b. Using the GDP Deflator to Derive Real GDP
    - c. The Consumer Price Index and Producer Price Index
  4. Problems with GDP as a Measure of National Product
- D. Business Cycles
1. Descriptive Terms in Business Cycle Analysis
  2. Widely-used measures of economic activity
  3. Leading and Lagging Indicators
  4. Types of Unemployment
  5. Problems of Measuring Unemployment
- E. The Monetary System
1. Functions of Money
  2. Kinds of Money
  3. Banks and the Money Supply
    - a. Fractional Reserve Banking
    - b. The Money Multiplier
  4. Role of a Central Bank
    - a. Economic Activity
    - b. Price Level
    - c. Employment
    - d. Exchange rate Stabilization
  5. Tools of Monetary Control
    - a. Open-Market Operations
    - b. Reserve Requirements
    - c. Discount Rate
- F. Inflation
1. Causes of Inflation
  2. Quantity Theory of Money

# Global Body of Investment Knowledge

3. Deflation/Stagflation
- G. International Trade and Capital Flows
  1. Gains from Specialization and Trade
  2. Economics of Trade Restrictions
    - a. Economics of Tariffs
    - b. Economics of Quotas
    - c. Other Nontariff Barriers to Trade
    - d. Exchange-Rate Controls as a Trade Restriction
  3. Balance of Payments
    - a. Current Account Transactions
    - b. Financial Account Transactions
    - c. Official Reserve Account
    - d. Trade Accounts
- H. Currency Exchange Rates
  1. Foreign Exchange Market
    - a. Organization of the Foreign Exchange Market
    - b. The Spot Market
    - c. The Forward Market
    - d. Interest Rate Parity Theory
  2. Determination of Exchange Rate
    - a. Nominal Exchange Rates
    - b. Real Exchange Rates
    - c. Purchasing-Power Parity
- I. The Macroeconomics of an Open Economy
  1. Supply and Demand for Loanable Funds and for Foreign-Currency Exchange
    - a. The Market for Loanable Funds
    - b. The Market for Foreign-Currency Exchange
  2. Equilibrium in the Open Economy
    - a. Net Foreign Investment Flows
    - b. Government Budget Deficits
    - c. Trade Policy
    - d. Political Instability and Capital Flight
- J. Aggregate Demand and Aggregate Supply
  1. The Aggregate-Demand Curve
    - a. Reasons for Downward Sloping Aggregate-Demand Curve
    - b. Shifts in the Aggregate-Demand Curve
  2. The Aggregate-Supply Curve
    - a. Short-Run Aggregate-Supply Curve
    - b. Long-Run Aggregate-Supply Curve
    - c. Shifts in the Short-Run Aggregate-Supply Curve
  3. Monetary Policy
    - a. Money Supply and Money Demand
    - b. Transmission of Monetary Policy
    - c. Unanticipated Expansionary Monetary Policy
    - d. Unanticipated Restrictive Monetary Policy
    - e. Anticipated Monetary Policy

# Global Body of Investment Knowledge

4. Fiscal Policy
    - a. Fiscal Policy and the Crowding-Out Effect
    - b. Problems of Proper Timing of Fiscal Policy
    - c. Fiscal policy as a Stabilization Tool
    - d. Supply-Side Effects of Fiscal Policy
    - e. Political Cronyism
  5. Expectations and Economic Policy
    - a. Adaptive Expectations hypothesis
    - b. Rational Expectations hypothesis
    - c. The Implications of Adaptive and Rational Expectations
    - d. Activist versus Non-activist Stabilization Policy
- K. Economic Growth and Development
1. Physical Capital
  2. Human Capital
  3. Technological Progress
  4. Institutional Environment
    - a. Property Rights
    - b. Political Stability
    - c. Competitive Markets
    - d. Stable Money and Prices
    - e. International Trade and an Open Economy
    - f. Open Capital Market
    - g. Avoidance of High Marginal Tax Rates
  5. Corruption
- L. Government Regulation
1. Regulation of Business
    - a. Traditional Economic Regulation
    - b. Health and Safety Regulation of Business
  2. Political Economy of Regulation
    - a. Costs of Regulation
    - b. The Objectives of Regulators
      - (1) Market Inefficiencies
      - (2) Correcting Market Inefficiencies
      - (3) Capture Theory and Interest-Group Theory
      - (4) Public Choice Theory
  3. Antitrust Policy
    - a. Monopolization; Horizontal Anticompetitive Practices
    - b. Vertical Restraints; Resale Price Maintenance; Quantity Discounts
    - c. Legal Monopolies and Regulation or Deregulation
    - d. Antitrust Policy and Public Enterprise, Nonprofit Institutions, and Professional Organizations
- M. Relationship of Economic Activity to the Investment Process
1. Impact of Economic Factors on Valuations on Investment Markets
    - a. Growth Rates of GDPs
    - b. Inflation Forecasts
    - c. Political Risks

# Global Body of Investment Knowledge

- d. Relative Seasonality in Returns
- 2. Impact of Changes in Aggregate Domestic Economies on Valuations in Global Security Markets
  - a. Interest Rates
    - (1) Current Level
    - (2) Expected Change
    - (3) Central Bank Actions (e.g., Federal Reserve, European Central Bank)
  - b. Momentum of Domestic Economy and Impact on Inflation
  - c. Pace of Job Creation
  - d. Investor Expectations
  - e. Growth in Industrial Production
  - f. Liquidity-Driven vs Profit-Driven Markets
- 3. Effect of Country demographics on the investment opportunity set
- 4. Economic History
  - a. South Sea Bubble in United Kingdom
  - b. Law's Mississippi Scheme
  - c. Tulipmania
  - d. 1929 US Stock Market Crash
  - e. Principles of the Bretton Woods Agreement
  - f. Development of the European Monetary System
  - g. Japanese real estate boom of the 1980s
  - h. Asian financial crisis of 1997
  - i. The failure of Long Term Capital Management
  - j. Russian "Ruble" crisis of 1998
  - k. The Dotcom boom & bust
  - l. 2007 Sub-prime mortgage crisis

## IV. FINANCIAL REPORTING & ANALYSIS

### A. Financial Reporting System

- 1. Framework for the Preparation and Presentation of Financial Statements
  - a. Qualitative Characteristics of Financial Reporting
    - (1) Relevance
    - (2) Reliability
    - (3) Comparability
    - (4) Constraints
    - (5) True and Fair View/Fair Presentation
  - b. The Elements of Financial Statements (assets, liabilities, income, expense)
  - c. Recognition of the Elements of Financial Statements
- 2. International Financial Reporting Standards (IFRS)
  - a. Development of Globally Acceptable Accounting Principles
    - (1) Cultural, Economic and Political Differences
  - b. International Organization of Securities Commissions
  - c. International Accounting Standards Committee
    - (1) International Accounting Standards
    - (2) International Financial Reporting Standards
    - (3) Acceptance of IFRS

# Global Body of Investment Knowledge

- (a) European Union
    - (b) Specific Countries
  - 3. U.S. Generally Accepted Accounting Principles (GAAP)
    - a. Securities and Exchange Commission
      - (1) Registration requirements
      - (2) Required filings (e.g. 10-K, 10-Q, 8-K.)
    - b. Financial Accounting Standards Board
    - c. SEC Reporting Requirements for Non-U.S. Registrants
      - (1) Reconciliation
- B. Principal Financial Statements
- 1. Balance Sheet
    - a. Format and Classification
      - (1) Assets
      - (2) Liabilities
      - (3) Owners' Equity
      - (4) Classified versus Unclassified Balance Sheet
        - (a) Current Assets and Liabilities
      - (5) Industry Differences
    - b. Measurement of Assets and Liabilities
      - (1) Historical Cost versus Fair Value
        - (a) Tangible Assets
        - (b) Intangible Assets
          - (i) Financial Instruments
          - (ii) Specifically Identifiable Intangibles
          - (iii) Goodwill
      - (2) Fair Value Measurement and Disclosure
        - (a) Market Based Measurements
      - (3) Present Value Based Measurements
  - 2. Income Statement
    - a. Format and Classification
      - (1) Single versus multi-step
      - (2) Operating and non-operating
    - b. The Accrual Concept of Income
    - c. Revenue and Expense Recognition
      - (1) General Principles
      - (2) Specific Applications
        - (a) Barter
        - (b) Gross versus net reporting
        - (c) Percentage-of-Completion Method
        - (d) Completed Contract Method
        - (e) Installment Method
        - (f) Cost Recovery Method
        - (g) Commodities
        - (h) Unearned Revenue
        - (i) Doubtful Accounts
        - (j) Warranties

# Global Body of Investment Knowledge

- d. Nonrecurring Items
    - (1) Extraordinary items
    - (2) Unusual items
    - (3) Restructuring Charges
    - (4) Discontinued Operations
    - (5) Changes in Accounting Standards
      - (a) Comparability
      - (b) New Standard Transition
    - (6) Disclosure of nonrecurring items
    - (7) Analysis of nonrecurring items
  - e. Statement of Comprehensive Income
    - (1) Other Comprehensive Income
    - (2) Reconciliation
  - f. Earnings Per Share
    - (1) Basic
    - (2) Diluted
    - (3) Computation
    - (4) Components
    - (5) Interpretation
  - g. Alternative Measures of Income
- 3. Statement of Cash Flows
    - a. Direct and Indirect Method Cash Flow Statements
      - (1) Classification of Cash Flows
    - b. Preparing a Direct Method Statement of Cash Flows
      - (1) Cash Flow from Operations
      - (2) Investing Cash Flow
      - (3) Financing Cash Flow
      - (4) International differences in interest and dividends
      - (5) Securities sale classification
    - c. Indirect Method
      - (1) Reported Versus Observed Changes in Assets and Liabilities
        - (a) Acquisitions and Divestitures
        - (b) Translation of Foreign Subsidiaries
    - d. Analysis of Cash Flow Information
      - (1) Operating Versus Investing Versus Financing
      - (2) Free Cash Flows and Valuation
      - (3) Relationship of Income and Cash Flows
  - 4. Statement of Stockholders' Equity
    - a. Format, Classification, and Uses
    - b. Other Comprehensive Income
  - 5. Other Sources of Financial Information
    - a. Letter to Shareholders
    - b. Footnotes
      - (1) Accounting Policies
      - (2) Details of Financial Statement Items
      - (3) Contingencies

# Global Body of Investment Knowledge

- c. Management Discussion and Analysis
  - d. Segment/Disaggregated Information
    - (1) Business Segments
    - (2) Consolidating Statements
  - e. Operating and Performance Data
  - f. Forward Looking Information/Plans
    - (1) Strategic Plans
    - (2) Business Plans
    - (3) Projections
    - (4) Forecasts
  - g. Role of the Auditor
    - (1) Audit Opinions
    - (2) Auditor Independence
    - (3) Audit Effectiveness
    - (4) Materiality
    - (5) International Audit Timeliness
    - (6) International Audit Quality
    - (7) Board of Directors Audit Committee
      - (a) Independence
      - (b) Role
  - h. Annual Report to Regulators
    - (1) Business Description
    - (2) Facilities
    - (3) Risks
    - (4) Contingencies
  - i. Proxy Statement
    - (1) Management Compensation
  - j. Change in Material Status Report
  - k. Interim Reports
    - (1) Quarterly versus Semiannual
    - (2) Financial Statements
    - (3) Management's Discussion and Analysis
    - (4) Segment/Disaggregated Information
  - l. News Releases
  - m. Conference Calls and Webcasts
  - n. Forward Looking Information
  - o. Pro-forma Earnings and Reconciliation
  - p. Non-Financial Information (Key Customers, business cycles, etc)
  - q. Corporate Governance
- C. Financial Reporting Quality
- 1. Aggressive Financial Reporting Techniques
    - a. Aggressive Revenue Recognition
      - (1) Accelerating
      - (2) Barter/Swap Transactions
      - (3) Reporting Gross versus Net
      - (4) Classification of Non-Operating Gains

## Global Body of Investment Knowledge

- b. Aggressive Treatment of Expenses
    - (1) Deferral - Capitalization of costs
      - (a) Customer Acquisition Cost
      - (b) Normal Operating Expenses
    - (2) Failure to Accrue Expenses
      - (a) Insufficient Reserves
    - (3) Classification of Expenses
      - (a) Extraordinary or non-recurring.
      - (b) Cost of Goods Sold versus Operating
    - (4) Choice of Accounting Alternatives
      - (a) Share based payments (employee stock options)
  - c. Acquisition Accounting
    - (1) Allocation of Purchase Price (such as R&D)
  - d. Recognition of Deferred Tax Assets
  - e. Asset Impairment Charges
  - f. Less Conservative Estimates/Assumptions
  - g. Use of Reserves
  - h. Off Balance Sheet Assets and Liabilities
  - i. Related Party Transactions
  - j. Insufficient Disclosures
  - k. Classification of Cash Flows
    - (1) Operating versus Investing
- 2. Recognizing Level of Conservatism/Aggressiveness of Accounting Policies
    - a. Comparison to Peer Companies
  - 3. Detecting Financial Reporting Irregularities
- D. Analysis of Inventories
- 1. Inventoriable Costs
    - a. Costs to be capitalized
    - b. Costs which must be expensed
    - c. Marketing costs versus cost of good sold
  - 2. Relationship between Inventory and Cost of Goods Sold
    - a. Stable Prices
    - b. Rising Prices
  - 3. Inventory Methods
    - a. Specific Identification
    - b. First-In, First-Out (FIFO)
    - c. Average Cost
    - d. Last-In, First-Out (LIFO)
    - e. Adjustment from LIFO to FIFO
      - (1) Adjustment of inventory balances
      - (2) Adjustment of cost of goods sold
    - f. Adjustment of Income to Current Cost Income
    - g. Effect of LIFO/FIFO choice on financial ratios
      - (1) Profitability
      - (2) Liquidity
      - (3) Activity

# Global Body of Investment Knowledge

- (4) Solvency
  - h. Analysis Implications of Changes to and from LIFO
  - i. Comparison of Companies using Different Inventory Valuation Methods
  - j. International comparisons of inventory accounting methods
- E. Analysis of Long-Lived Assets
- 1. Capitalization versus Expensing
    - a. Financial statement effects of capitalization
      - (1) Income variability
      - (2) Profitability
      - (3) Cash flow from operations
      - (4) Leverage ratios
    - b. Capitalization of interest costs
    - c. Intangible assets
      - (1) Research and development
      - (2) Patents and copyrights
      - (3) Franchises and licenses
      - (4) Brands and trademarks
      - (5) Customer acquisition cost (including advertising costs)
      - (6) Goodwill
    - d. Asset revaluation
    - e. Regulated utilities
    - f. Computer software development costs
    - g. Oil and gas exploration costs
    - h. International Differences
    - i. Adjustments for Capitalization and Expensing
    - j. Need for analytic adjustments
  - 2. Depreciation and Amortization
    - a. Alternatives
      - (1) Annuity or Sinking Fund Depreciation
      - (2) Straight-Line Depreciation
      - (3) Accelerated Depreciation Methods
      - (4) Units-of-Production and Service Hours Methods
      - (5) Group and Composite Depreciation Methods
    - b. Depletion
    - c. Amortization
    - d. Depreciation method disclosures
    - e. Impact of depreciation methods on financial statements
    - f. Accelerated depreciation and taxes
    - g. Impact of inflation on depreciation
    - h. Changes in depreciation method
  - 3. Analysis of Fixed Asset Disclosures
    - a. Estimating relative age and useful lives
    - b. Estimating the age of assets
  - 4. Impairment of Long-Lived Assets
    - a. Financial reporting of impaired assets
    - b. Financial statement impact of impairments

# Global Body of Investment Knowledge

5. Disposition of Long Term Assets
    - a. Sales
    - b. Retirement
    - c. Exchanges
  6. Liabilities for closure, asset disposition and environmental costs
    - a. Asset Retirement Obligations
    - b. Assets Held for Sale and Discontinued Operations
- F. Analysis of Taxes
1. Issues in tax and financial reporting
    - a. Employee Stock Options
  2. Deferred Tax Assets and Liabilities
    - a. Accounting for deferred taxes
      - (1) Financial statement presentation and disclosure requirements for deferred taxes
    - b. Analysis of Deferred Tax Assets
      - (1) Factors influencing the level and trend of deferred taxes
        - (a) Changes in tax laws and accounting methods
        - (b) Growth rate of the firm
        - (c) Nonrecurring items and equity adjustments
      - (2) Treatment of deferred taxes in evaluating firm equity and solvency
      - (3) Analysis of the effective tax rate
      - (4) Analysis of deferred income tax expense
    - c. International Differences
- G. Analysis of Debt
1. Analysis of balance sheet debt
    - a. Analysis of current liabilities
      - (1) Operating activities
      - (2) Financing activities
    - b. Analysis of long-term debt
      - (1) Zero-coupon bonds
      - (2) Variable-rate debt
      - (3) Fixed- versus variable-rate debt
      - (4) Interest rate swaps
      - (5) Debt denominated in a foreign currency
      - (6) Debt to finance a single project
    - c. Analysis of debt with equity features
      - (1) Accounting Standards For Debt versus Equity and Compound Instruments
      - (2) Convertible bonds and warrants
      - (3) Commodity bonds
      - (4) Perpetual debt
      - (5) Preferred stock
    - d. Analysis of changes in interest rates
      - (1) Estimating the market value of a firm's debt
      - (2) Complexities in market value estimation
    - e. Analysis of the debt of firms in distress

# Global Body of Investment Knowledge

- f. Retirement of debt prior to maturity
  - (1) Accounting for debt retirement
  - (2) Callable bonds
  - (3) Defeasance
- 2. Bond covenants
  - a. Nature of covenants
  - b. Calculation of accounting-based constraints
- 3. International accounting and reporting practices for balance sheet debt
  - a. Amortization of Bond Discounts/Premia
  - b. Retirement of Long Term Debt
- H. Analysis of Off-Balance-Sheet Assets and Liabilities
  - 1. Disclosure of Off-Balance-Sheet Assets
  - 2. Disclosure of Off-Balance-Sheet Liabilities
  - 3. Analysis of Leases
    - a. Incentives for Leasing
    - b. Lease classification issues from lessee perspective
      - (1) Capital leases
      - (2) Operating leases
    - c. Financial reporting by lessees
      - (1) Capital versus operating leases
      - (2) Comparative analysis of capitalized and operating leases
        - (a) Effect on financial ratios
        - (b) Income statement effects
        - (c) Operating income effects
        - (d) Total expense and net income effects
        - (e) Cash flow effects of lease classification
      - (3) Analysis of lease disclosures
        - (a) Lease disclosure requirements
        - (b) Impact of operating lease adjustments
        - (c) Lease accounting outside the United States
    - d. Financial reporting by lessors
      - (1) Disclosure requirements
      - (2) Operating Leases
        - (a) Balance sheet effects
        - (b) Income Statement effects
        - (c) Cash flow effects
      - (3) Sales-type leases
        - (a) Balance sheet effects
        - (b) Income statement effects
        - (c) Cash flow effects
        - (d) Footnote disclosures
      - (4) Direct financing leases
    - e. Financial reporting for sales with leasebacks
      - (1) Minor leasebacks
      - (2) More than minor but less than “Substantially All” leasebacks
      - (3) Substantially all leasebacks

# Global Body of Investment Knowledge

- f. Other Long-Term Executory Contracts
  - (1) Employment Agreements
- 4. Take-or-Pay and Throughput Arrangements
  - a. Analysis of take-or-pay contracts
- 5. Sale of Receivables
  - a. Adjustments to balance sheet for sales of receivables
  - b. Adjusting cash from operations for sale of receivables
- 6. Finance Subsidiaries
  - a. Reporting requirements
  - b. Analysis of companies with finance subsidiaries
- 7. Variable Interest Entities (Special Purpose Entities)
- 8. Joint ventures and investment in affiliates
- 9. Other off-balance-sheet activities
  - a. Commodity-linked bonds
  - b. Bonds tied to investments
- 10. Guarantees
- I. Analysis of Pensions, Stock Compensation, and Other Employee Benefits
  - 1. Pension Plans
    - a. Defined Contribution contrasted with Defined Benefit Plans
  - 2. Pension Disclosures
    - a. Components of Pension Cost
    - b. Plan status
    - c. Reconciliation
    - d. Cash Flows
    - e. Assumptions used to calculate pension cost and obligations
  - 3. Analysis of Pension Costs and Liability
    - a. Importance of assumptions
      - (1) Factors Affecting Benefit Obligations
        - (a) Service cost
        - (b) Interest cost
        - (c) Actuarial gains and losses
        - (d) Prior service cost from plan amendments
        - (e) Benefits paid
      - (2) Factors affecting plan assets
        - (a) Employer contributions
        - (b) Return on assets
        - (c) Benefits paid
      - (3) Factors Affecting Pension Expense
        - (a) Service cost and interest cost
        - (b) Expected return on assets
        - (c) Amortization of gains or losses
        - (d) Amortization of prior service cost
        - (e) Amortization of transition asset or liability
    - b. Analysis of plan status, costs, and cash flows
      - (1) Funded status of pension plan
      - (2) Non-smoothed pension cost

# Global Body of Investment Knowledge

- c. Impact of Pension Reporting on Corporate Earnings
    - d. International Differences
  - 4. Impact of discontinuities
    - a. Acquisitions and Divestitures
    - b. Curtailments and Settlements
      - (1) Conversion to a Cash Balance Plan
  - 5. Share-Based Payments
    - a. Employee Stock Compensation Plans
    - b. Disclosures
    - c. Employee Stock Purchase Plans
    - d. Accounting for Share-Based Payments
    - e. Analysis of Costs and Liability
  - 6. Other Post Employment Benefits
    - a. Estimating health care benefits
    - b. Computing postretirement benefit cost
    - c. Disclosure of plan status
    - d. Importance of assumptions
    - e. Sensitivity disclosures
    - f. Effects of transition methods
    - g. International Differences
- J. Analysis of Inter-Corporate Investments
  - 1. Accounting for Investments in Marketable Securities
    - a. Cost Method
    - b. Market Method
    - c. Lower of cost or market method
    - d. International and U.S. Accounting requirements
      - (1) Classification criteria
        - (a) Held to maturity
        - (b) Trading
        - (c) Available for sale
  - 2. Analysis of Marketable Securities
    - a. Separation of operating from investment results
    - b. Effects of classification of marketable securities
      - (1) Effect on reported performance
      - (2) Effect on investment and financing decisions
    - c. Analysis of investment performance
      - (1) Mark to market accounting
  - 3. Equity Method of Accounting
    - a. Conditions for use
    - b. Equity accounting and analysis
  - 4. Consolidations Policy and Procedures
    - a. Comparison of consolidation with the equity method
      - (1) Consolidation versus the equity method: Analytical considerations
        - (a) Non-homogeneous subsidiaries
        - (b) Joint ventures
      - (2) Proportionate consolidation

# Global Body of Investment Knowledge

- (a) Comparison of proportionate consolidation and the equity method
  - b. Analysis of minority interest
  - c. International Consolidation Practices
  - d. Variable Interest Entities
  - e. Analysis of segment data
    - (1) Uses and limitations of segment data
    - (2) Segment reporting outside the United States
- K. Analysis of Business Combinations
- 1. Accounting for Acquisitions
    - a. Purchase Method for accounting for acquisitions
  - 2. Historical Use of Pooling of Interests Method for accounting for acquisitions
  - 3. Effects of Business Combinations
    - a. Comparison of balance sheets
      - (1) Fixed Assets
      - (2) Intangible Assets
    - b. Comparison of income statements
      - (1) Sales and earnings of acquired company
      - (2) Depreciation and Amortization
    - c. Cash flow statement effects
      - (1) Deducting assets and liabilities acquired
      - (2) Distortion of cash from operations
      - (3) Impact on ratios
  - 4. Complicating factors in purchase method acquisitions
    - a. Contingent payments
    - b. In-process research and development
    - c. Allocation of costs to tangible and intangible assets
  - 5. Income tax effects of business combinations
  - 6. International differences in accounting for business combinations
    - a. Treatment of goodwill
    - b. Accounting methods
    - c. The merged balance sheet
      - (1) Comparison of stockholders' equity
    - d. Balance sheet restatement
    - e. Income statement effects
    - f. Income statement restatement
    - g. Financial ratio effects
  - 7. Analysis of goodwill
    - a. Goodwill Impairment versus Amortization
  - 8. Push-down accounting
    - a. Impact on the balance sheet
    - b. Impact on the income statement
    - c. Effect on cash flows
    - d. Effect on financial flows
  - 9. Spin-offs and Tracking Stocks

# Global Body of Investment Knowledge

- L. Analysis of Global Operations
  - 1. Effects of Exchange Rate Changes on a firm's actual and reported performance
    - a. Flow effect
    - b. Holding Gain/Loss effect
  - 2. Basic Accounting Issues
    - a. Choice of exchange rates
      - (1) Historical rate
      - (2) Current rate
    - b. Assets or liabilities to be adjusted for exchange rate changes
    - c. Treatment of translation gains and losses
  - 3. Prescribed foreign currency translation
    - a. Temporal method or the remeasurement process
    - b. All-current method or the translation process
    - c. Role of the functional currency
  - 4. Choice of the Functional Currency for a foreign subsidiary
  - 5. Comparison of Translation and Remeasurement
    - a. Income Statement Effects
      - (1) Gross profit margin
      - (2) Net income
    - b. Balance sheet effects
    - c. Impact on Financial ratios
      - (1) Comparison of ratios under translation and remeasurement
      - (2) Comparison of translated and local currency ratios
    - d. Impact on reported cash flows
  - 6. Analysis of foreign currency disclosures
    - a. Exchange rate changes: Exposure and effects
      - (1) Balance sheet
      - (2) Income statement
      - (3) Cash flow statement
  - 7. Hyperinflationary economies
    - a. Alternative accounting methods for hyperinflationary subsidiaries
    - b. Effects of debt denominated in hyperinflationary currencies
  - 8. Changes in functional currency
  - 9. Relationships among interest rates, inflation, exchange rates, and tax rates
  - 10. International Issues
- M. Analysis of Financial Instruments, Derivatives and Hedging Activities
  - 1. Financial Instruments in General
    - a. Accounting for Financial Instruments
  - 2. Accounting Definition of a Derivative
  - 3. Accounting Treatment
    - (1) Hedging versus Speculation
    - (2) Fair Value Hedges
    - (3) Cash Flow Hedges
    - (4) Net Investment Hedges
    - (5) Hedge Accounting
    - (6) Mark-to-Market Accounting

# Global Body of Investment Knowledge

## (7) Disclosures

### 4. Impact on Financial Statements and Ratios

## N. Financial Reporting in Specialized Industries and Economic Environments

1. Accounting For Government Grants
2. Banks and Similar Financial Institutions
3. Agriculture
4. Insurance Contracts
5. Hyperinflationary Economies

## O. Ratio and Financial Analysis

1. Purpose and use of ratio analysis
2. Limitations of Ratio Analysis
  - a. Economic limitations
  - b. Benchmarks
  - c. Timing and window dressing
  - d. Accounting methods used
3. Common-Size Statements
4. Activity Analysis and Turnover Ratios
  - a. Short-term and long-term activity ratios
  - b. Turnover ratios (e.g., inventory, receivables, payables, working capital, fixed asset, total asset)
5. Liquidity analysis
  - a. Length of Cash cycle
    - (1) Impact on cash budgeting
    - (2) Impact on project viability
  - b. Working capital ratios
    - (1) Current ratio
    - (2) Quick ratio
    - (3) Cash ratio
    - (4) Defensive interval
6. Long-term debt Analysis
  - a. Debt covenants
    - (1) Positive covenants
    - (2) Negative covenants
  - b. Debt ratios
  - c. Interest coverage ratios
7. Profitability Analysis
  - a. Return on sales (e.g., gross margin, operating margin, pretax margin, profit margin)
  - b. Return on investment
    - (1) Return on assets (ROA)
    - (2) Return on total capital
    - (3) Return on equity (ROE)
8. Earnings per share (EPS)
  - a. Basic EPS
  - b. Diluted EPS
  - c. Weighted-average number of common shares outstanding

# Global Body of Investment Knowledge

- d. Convertible securities
- e. Options and warrants
- f. Contingent shares
- 9. Other Ratios and Value Metrics
  - a. Cash flow per share
  - b. Earnings before interest, taxes, depreciation and amortization (EBITDA)
  - c. Book value per share
  - d. Price-to-Earnings (P/E), Price-to-Book Value (P/B), and Price-to-Sales (P/S)
  - e. Dividend payout ratio
- 10. Integrated ratio analysis
  - a. Disaggregation of ROA (DuPont analysis)
  - b. Disaggregation of ROE (DuPont analysis)
    - (1) Three-component disaggregation
    - (2) Five-component disaggregation
  - c. Relationship between ROA and ROE
  - d. Ratios over the product life cycle

## V. CORPORATE FINANCE

### A. Fundamental issues

- 1. Forms of business organization
  - a. Sole proprietorship
  - b. Partnership (LLP)
    - (1) Hybrids
  - c. Corporation (LLC)
    - (1) Hybrids
  - d. Special Purpose Vehicles, Special Purpose Entities
- 2. Financial Markets and the Corporation
  - a. Primary markets
    - (1) Entrepreneurship
  - b. Secondary markets
    - (1) Exchanges
    - (2) OTC
  - c. Corporate Strategy
    - (1) Vision, Core Values, Mission, Objectives, Strategies, Plans
      - (a) Impact on Organization
      - (b) Implementation Requirements
        - (i) HR requirements
        - (ii) ITC requirements
        - (iii) Financial requirements
        - (iv) Marketing
  - d. Financial planning models
    - (1) Sales forecast
    - (2) Pro forma statements
    - (3) Asset requirements
    - (4) Financial requirements

# Global Body of Investment Knowledge

- (5) Economic assumptions
  - (6) Percentage of sale approach
  - (7) Determinants of growth
  - (8) Weighted probability scenario method (Monte Carlo simulation)
- B. Corporate Governance
- 1. Agency relationships (i.e., stockholders, management, other stakeholders)
  - 2. Value vs. Earnings
  - 3. Managerial incentives to act in stockholders' interests
  - 4. Ethics in Business – Corporate Governance
    - a. Organizational Structure
    - b. Laws and regulations
- C. Capital investment decisions
- 1. Investment decision criteria
    - a. Net Present Value approach
    - b. Payback period rule
    - c. Discounted payback rule
    - d. Average accounting return
    - e. Internal rate of return (IRR) approach
    - f. Profitability index
    - g. Real Options
    - h. Economic Value Added or Residual Income
  - 2. Cash flow projections
    - a. Incremental
    - b. Common pitfalls
      - (1) Sunk costs
      - (2) Opportunity costs
      - (3) Side effects
      - (4) Net working capital
      - (5) Financing costs
    - c. Project Cash Flows and Alternative Definitions of Operating Cash Flows
    - d. Uses of discounted cash flow analysis
      - (1) Cost cutting proposals
      - (2) Setting a bid price
      - (3) Evaluation of equipment with different useful lives
  - 3. Project analysis and evaluation
    - a. Scenario analysis
    - b. Sensitivity analysis
    - c. Simulation analysis
  - 4. Managerial options and contingency planning
  - 5. Capital rationing
  - 6. International capital budgeting
    - a. Possible restrictions on foreign ownership
    - b. Possible restrictions on domestic borrowing for foreign companies
    - c. Home currency approach
    - d. Foreign currency approach

# Global Body of Investment Knowledge

- e. Unremitted cash flows
  - (1) Legal restrictions due to non liberalization of currency trading
- f. Foreign tax calculation and remittance
- g. Transfer pricing
- D. Business and Financial Risk
  - 1. Breakeven analysis
    - a. Fixed versus variable costs
    - b. Accounting break-even
  - 2. Operating leverage
    - a. Implications (e.g., forecasting risk)
    - b. Measurement (i.e., Degree of Operating Leverage)
  - 3. Financial Leverage
    - a. Implications (e.g., forecasting risk)
    - b. Measurement (i.e., Degree of Financial Leverage)
  - 4. Total Combined Leverage
- E. Long-term Financial Policy
  - 1. Cost of capital
    - a. Required Return and the Cost of Capital
    - b. Cost of Equity
      - (1) Dividend growth model approach
      - (2) Security market line approach
    - c. Cost of debt and preferred stock
    - d. Weighted average cost of capital
    - e. Marginal cost of capital
    - f. Divisional and project costs of capital
    - g. Flotation costs and the weighted average cost of capital
  - 2. The Effects of Financial Leverage
    - a. Capital Structure and the Cost of Equity Capital
    - b. Modigliani and Miller propositions
      - (1) Value of firm independent of capital structure (no taxes)
      - (2) Cost of equity as a function of capital structure
      - (3) Corporate and personal tax effects
    - c. Bankruptcy risk, agency costs, signaling costs, and other market imperfections
    - d. Optimal Capital Structure
- F. Dividend Policy
  - 1. Forms of dividends
    - a. Regular cash dividends
    - b. Extra dividends
    - c. Special dividends
    - d. Liquidating dividends
  - 2. Dividend payment chronology
  - 3. Factors affecting Dividend payout policy
    - a. Taxes
    - b. Flotation costs
    - c. Dividend restrictions

# Global Body of Investment Knowledge

- d. Investor preference for current income
  - e. Information content of dividends
  - f. Clientele effect
  - g. Trustee's Act – dividend history prior to pensions allowing purchase share
- 4. Dividend policies
    - a. Residual dividend approach
    - b. Dividend stability
    - c. Target payout ratio
    - d. Stock repurchase as an alternative to cash dividends
    - e. Stock dividends, stock splits and reverse splits
    - f. Forecasting dividends
    - g. Dividend accounting policy
  - 5. Dividend theory
    - a. Miller and Modigliani
    - b. Other dividend theories
- G. Short-term Financial Policy
- 1. Cash Planning: Cash Budgets
    - a. Evaluating cash budgets
  - 2. Net Working Capital Fundamentals
  - 3. Trade Finance
  - 4. Managing short-term assets and liabilities
    - a. Cash management
    - b. Receivables management
    - c. Inventory management
    - d. Short-term financing (trade and bank credit and commercial paper)
- H. Mergers and Acquisitions and Corporate Restructuring
- 1. Legal forms of acquisition
    - a. Merger or consolidation
    - b. Acquisition of stock
    - c. Acquisition of assets
    - d. Reverse Takeovers
  - 2. Classifications
    - a. Horizontal
    - b. Vertical
    - c. Conglomerate
  - 3. Rationales
    - a. Mergers
    - b. Leveraged buyouts (LBOs)
    - c. Divestitures
    - d. Strategic alliances
    - e. Tracking stocks
    - f. Joint ventures
    - g. Spin-offs
    - h. Holding company formation
  - 4. Gains from acquisition

# Global Body of Investment Knowledge

- a. Perceived synergy
- b. Brand building
- c. Revenue enhancement
- d. Cost reductions
- e. Lower taxes/accumulated tax losses
- f. Capital requirements
- g. Manager gain
- h. Market access – locally, regionally and internationally
  - (1) Regulatory impact
  - (2) Accounting policy differences
- 5. Financial Effects of Acquisitions
  - a. Appearance of EPS growth
  - b. Diversification
- 6. Defensive tactics
  - a. Supermajority clause in corporate charter
  - b. Repurchase/standstill agreements (e.g., greenmail)
  - c. Exclusionary self-tenders
  - d. Poison pills and share rights plans
  - e. Going private and leveraged buyouts
- 7. Restructuring
- 8. Merging Corporate Culture
- I. Valuation Implications of Corporate Finance
  - 1. Capital investment decisions
  - 2. Long term financial policy
  - 3. Mergers and acquisitions
  - 4. Pension Funding
  - 5. Health Care Schemes
- J. Introduction to Investment Banking
  - 1. Privatizations/Commercializations
  - 2. Going public
  - 3. Issuing equities, debt, warrants, or preferred
  - 4. IPOs and SEOs
    - a. Process leading up to with time frame
    - b. Service Providers required
    - c. Board responsibilities
    - d. Preparation of Information Memorandum
- K. Other Corporate Actions
  - 1. Bonuses
  - 2. Splits
  - 3. Treasury Stock
- VI. EQUITY INVESTMENTS**
- A. Types of Equity Securities and their Characteristics
  - 1. Common Stock (e.g., classes, voting rights, dividends)
  - 2. Preferred Stock (e.g., par value, dividends, cumulative dividends, convertibility, voting rights)
  - 3. Limited Partnership Units

# Global Body of Investment Knowledge

- B. Equity Markets: Characteristics, Institutions, and Benchmarks
  - 1. Organization and Functioning of Securities Markets
    - a. Functions of a Market
    - b. Primary Capital Markets
    - c. Secondary Financial Markets
      - (1) Exchange Markets
      - (2) Over-the-Counter (OTC) Market
      - (3) Electronic Markets/Exchanges
    - d. Types of Orders
    - e. Payment for Order Flow
    - f. Structural changes in the Securities Markets
    - g. Regulatory Framework
    - h. Importance of Global Capital Flows
    - i. Volatility in Equity Markets and an Assessment of Market Quality
    - j. Algorithmic Trading
  - 2. Security Market Indexes and Benchmarks
    - a. Broad Market versus Specialized Indexes
    - b. Uses of Security-Market Indexes
    - c. Differentiating Factors in Constructing Market Indexes
    - d. Stock Market Indicator Series
      - (1) Price-Weighted Series
      - (2) Value-Weighted Series
      - (3) Fundamentally-Weighted Series
      - (4) Unweighted Price Indicator Series
      - (5) Global Equity Indexes
- C. Equity Market Valuation and Return Analysis
  - 1. Historical record of equity risk and return performance
  - 2. Definition and types of risk
    - a. Definition
    - b. Types
      - (1) Statistical
      - (2) Economic
      - (3) Downside
      - (4) Currency
      - (5) Relative
      - (6) Absolute
        - (a) Geopolitical Political
        - (b) Regulatory
  - 3. International Equity Investing
    - a. Historical record of risk and return performance
    - b. Investing in emerging market equities
      - (1) Characteristics of Emerging Markets
      - (2) Diversification, Return and Volatility
      - (3) Efficiency in Emerging Markets
      - (4) Market Integration

# Global Body of Investment Knowledge

- (5) Forms of Foreign Investment Liberalization and Risk in Emerging Stock Markets
  - (6) Valuation in Emerging Markets
  - (7) Frontier Markets
  - c. Investing in Other Developed markets
  - 4. Analysis of world security markets
    - a. Inflation/Deflation and exchange rates
    - b. Determining Index Fair value
    - c. Correlations among stock index returns
      - (1) Historical
      - (2) Current trends
      - (3) Diversification implications
    - d. Global Sector Indices
    - e. Correlation of risk in crisis (convergence of correlation)
    - f. Individual country macro-economic analysis
    - g. Individual country cross-sector analysis
  - 5. Valuation of stock market series (e.g., S&P 500, FT100)
    - a. Variables for estimation of future earnings multiplier
      - (1) Nominal GDP
      - (2) Operating profit margin for series
      - (3) Depreciation expense
      - (4) Interest expense
      - (5) Impact of Corporate tax rate on components of Equity Market Valuation Required rate of return
      - (6) Dividend growth rate
      - (7) Dividend payout ratio
      - (8) Real risk-free rate
      - (9) Risk premium for common stock
      - (10) Earnings retention rate
      - (11) Return on equity
    - b. Variables for estimation of future earnings multiplier
      - (1) Direction of change approach
      - (2) Specific estimate approach
      - (3) Historical trends in multiples
    - c. Methodology for estimating market series earnings multiplier
    - d. Expected rate of return on common stocks
- D. Fundamental Analysis (Sector, Industry, Company) and the Valuation of Individual Equity Securities
- 1. Theory of Valuation
    - a. Stream of Expected Returns
      - (1) Cash flows
      - (2) Dividends
      - (3) Earnings
    - b. Discount Rate Determination
      - (1) Required rate of return
      - (2) Real risk-free rate of return

# Global Body of Investment Knowledge

- (3) Expected rate of inflation
    - (4) Risk premium
  - c. Investment decision process
- 2. Misvaluation based on comparison of estimated values and market prices Sector Analysis and Valuation
  - a. Analysis of Global Trends
  - b. Impact of Business Cycle on Sectors
- 3. Industry analysis
  - a. Industry rates of return
    - (1) Cross-sectional across industries
    - (2) Cross-sectional within industry
    - (3) Time series performance of industry sector
  - b. Relative valuation analysis using the P/E approach
    - (1) Earnings per share forecast
      - (a) Sales forecast
        - (i) Analysis and classification of life cycle stages:
          - a. Pioneering
          - b. Rapidly accelerating growth
          - c. Mature growth
          - d. Stabilization
          - e. Deceleration and decline
        - (ii) Input-output analysis
        - (iii) Relationship of industry to general economy
      - (b) Profit margin forecast
        - (i) Gross margin
        - (ii) Depreciation
        - (iii) Interest
        - (iv) Tax rate
    - (2) Industry earnings multiplier
      - (a) Relationship of industry to market multiplier
      - (b) Comparison of dividend payout ratios
      - (c) Required rate of return
    - (3) Alternatives to earnings multiplier approaches
      - (a) Enterprise value
      - (b) Cash flow
      - (c) EBITDA
  - c. Business cycle analysis
    - (1) Defensive phases
    - (2) Cyclical phases
    - (3) Structural Changes
    - (4) Effect of structural environmental changes on various industries, e.g. ,demographics, lifestyles, technology, politics Demographics
    - (5) Lifestyles
    - (6) Technology, including Internet
    - (7) Politics and regulations
  - d. Analysis of competitive environment (Porter framework)

# Global Body of Investment Knowledge

- (1) Rivalry among existing competitors
  - (2) Threat of new entrants
  - (3) Threat of substitute products
  - (4) Bargaining power of buyers
  - (5) Bargaining power of suppliers
  - e. Analysis of regulatory environment
  - f. Global industry analysis
4. Company analysis
- a. Comparison of company versus stock characteristics
    - (1) Growth
    - (2) Defensive
    - (3) Cyclical
  - b. Growth analysis and measurement
    - (1) Approaches to estimating growth rates
      - (a) Time series models to predict earnings per share (EPS)
      - (b) Using analysts' forecasts of EPS
    - (2) Distinguishing sustainable and non-sustainable growth
    - (3) Growth duration analysis
    - (4) Franchise value and the growth process
      - (a) Sustainable returns from current businesses
      - (b) Prospects for growth through new investments
      - (c) Expected returns from new investments
    - (5) Analyzing Financial Services Operations
  - c. Corporate financial policy analysis
    - (1) Capital structure
    - (2) Dividend policy
  - d. Competitive strategy analysis for companies
    - (1) Specific strategy choice
      - (a) Low-cost strategy
      - (b) Differentiation strategy
    - (2) Focus
  - e. Approaches to modeling equity valuation
    - (1) Dividend discount models
      - (a) One-period model
      - (b) Single-stage (Gordon growth) model
      - (c) Two-stage model
      - (d) H-model: Modeling growth rate decay
      - (e) Three-stage model
    - (2) Free cash flow-to-equity and free cash flow-to-the firm approaches
      - (a) Issues in calculating and interpreting free cash flow
      - (b) Using free cash flows in alternative valuation models
        - (i) One-period model
        - (ii) Single-stage (Gordon growth) model
        - (iii) Two-stage model
        - (iv) H-model
        - (v) Three-stage model

# Global Body of Investment Knowledge

- (3) Measures of relative value
  - (a) Earnings multiplier (P/E)
    - (i) Use and misuse of P/E ratios in valuation
    - (ii) Estimating P/E ratios from fundamentals
    - (iii) Comparative P/E analysis
      - a. Across firms
      - b. Across Sectors/Industries
      - c. Across countries
      - d. Across emerging markets
      - e. Across time
    - (iv) Franchise value and P/E ratios
    - (v) Price/dividend ratios and dividend yields
    - (vi) P/E ratios and stock returns
  - (b) Sustainable multiples
  - (c) Fair value multiples
  - (d) Price/book (P/B) ratio
    - (i) Issues in estimating and using price/book ratios
    - (ii) Estimating P/B ratios from fundamentals
    - (iii) Estimating P/B ratios from comparables
    - (iv) Variants on P/B ratios
      - a. Tobin's Q
      - b. Estep's T-Model
      - c. Estep's Cash Flow T-Model
  - (e) Graham and Dodd Liquidation Model
  - (f) Price/sales (P/S) ratio
    - (i) Issues in using P/S ratios
    - (ii) Estimating P/S ratios from fundamentals
    - (iii) P/S ratios and cross-sectional data
    - (iv) Using P/S ratios in investment strategies
  - (g) Framework for Valuing Banks
  - (h) Shadow Banking System
- (4) Measures of value added
  - (a) Economic value added (EVA)
  - (b) Market value added (MVA)
  - (c) Cash flow return on investment (CFROI)
  - (d) Critical analysis of alternative measures of value added
- (5) Residual income valuation
  - (a) Residual income valuation model
  - (b) Accounting and international considerations
  - (c) Single-stage residual income valuation
  - (d) Multistage residual income valuation
- (6) Using option pricing methods to value flexibility
  - (a) Valuing corporate decisions as asset options
  - (b) Valuing equity as a call option on a company
  - (c) Valuing high-tech companies
- (7) Critical evaluation of alternative equity valuation approaches

## Global Body of Investment Knowledge

- (a) Assumptions
  - (b) Strengths and weaknesses
  - (c) Single- vs. multi-stage methods
  - (d) Circumstances for most appropriate application
  - (e) Applicability and limitation of alternative equity valuation approaches
  - (8) Effect of inflation/deflation on the valuation process
    - (a) Relationship among inflation flow-through, expected equity returns, and equity risk in a global context
    - (b) Valuation implications of the inflation flow-through capacity of a firm
  - (9) Model selection
- E. Special Applications of Fundamental Analysis
- 1. Valuation of corporate restructuring events
    - a. Rationales for mergers, leveraged buyouts (LBOs), divestitures, strategic alliances, tracking stocks, joint ventures, spin-offs, and holding company formation
  - 2. Valuation of preferred stock and convertible securities
  - 3. Valuing Equities with Extended Losses and Negative Cash Flow
    - a. Bankruptcy candidates
    - b. Technology start-ups
    - c. Other start-ups
  - 4. Privatizations: Valuation of government companies being sold to the public

## VII. FIXED INCOME

- A. Fixed Income Securities and their Characteristics
- 1. General Definition of a Debt Security
  - 2. Features of Debt Securities
    - a. Indenture and covenants
    - b. Maturity
    - c. Par Value
    - d. Interest Rate
      - (1) Coupon Rate
      - (2) Zero-Coupon Bonds
      - (3) Step-Up Notes
      - (4) Deferred Coupon Bonds
      - (5) Floating-Rate Securities
        - (a) Caps and Floors on Floating Rate Securities
        - (b) Types of Floating Rate Coupon Formulas
          - (i) Inverse Floaters
          - (ii) Other Floater Types
      - (6) Accrued Interest
    - e. Currency Denomination
    - f. Embedded Options
      - (1) Conversion Privilege
      - (2) Put Provision

# Global Body of Investment Knowledge

- (3) Callable Bonds
- g. Borrowing Funds to Purchase Bonds
  - (1) Margin Buying
  - (2) Repurchase Agreement (Repo)
- 3. Provisions for Paying off Bonds
  - a. Call and Refunding Provision
    - (1) Call Schedule
    - (2) Noncallable versus Nonrefundable Bonds
    - (3) Regular versus Special Redemption Prices
  - b. Amortizing Securities
  - c. Prepayments
  - d. Sinking Fund Provisions
  - e. Index Amortizing Notes
- 4. Debt Market Structure
  - a. Types of markets
    - (1) direct search or private placement markets
    - (2) brokered markets
    - (3) dealer markets
    - (4) auction markets
  - b. Electronic trading systems
- B. Fixed Income Markets: Characteristics, Institutions, and Benchmarks
  - 1. Sovereign Debt
    - a. Sovereign Markets
      - (1) Methods of Distribution of New Government Securities
        - (a) The Treasury Auction Process
        - (b) Auction Cycles
        - (c) Determination of the Results of an Auction
          - (i) Competitive and Noncompetitive Bids
          - (ii) Alternative auction arrangements
          - (iii) Discriminating price auction
          - (iv) Uniform price (or Dutch) auction
        - (d) Bid-cover ratio
        - (e) Tail of the auction
        - (f) When-issued trading for Treasuries
          - (i) Coupon roll-trade
          - (ii) Effect on Repo Market
      - (2) The Secondary Market
        - (a) On-the-run issues
        - (b) Off-the-run issues
        - (c) Role of Government Securities Dealers
      - (3) Sovereign Credit Ratings
      - (4) Tax Issues
      - (5) Pricing Conventions
    - b. Sovereign Issues
      - (1) U.S. Treasury Securities
        - (a) Types of Treasury Securities

# Global Body of Investment Knowledge

- (i) Treasury Bills
      - (ii) Treasury Notes and Bonds
      - (iii) Treasury Inflation Protection Securities
      - (iv) Treasury Strips
      - (v) Coupon Strips
      - (vi) Principal Strips
    - (2) Eurobonds
    - (3) UK Gilts
    - (4) Bundesbonds
    - (5) Japanese Bonds
    - (6) Emerging Market Bonds
  - c. Sovereign Benchmarks
2. Government Agency Debt
  - a. Debt issuing agencies
    - (1) Global Agencies
      - (a) IMF
      - (b) EU Agencies
      - (c) ADC
      - (d) Other global agencies
    - (2) U.S. Agencies
      - (a) FNMA and FHLMC
      - (b) GNMA
      - (c) FHLB
      - (d) FFCB
      - (e) TVA
  - b. Agency Debt Types
    - (1) Agency Debentures
    - (2) Agency Mortgage-Backed Securities
    - (3) Mortgage Loans
    - (4) Mortgage Passthrough Securities
    - (5) Collateralized Mortgage Obligations
3. Municipal and other Local Government Debt
  - a. Tax-Backed Debt
    - (1) General Obligation Debt
    - (2) Appropriation-Backed Obligation
    - (3) Debt Obligations Supported by Public Credit Enhancement Programs
  - b. Revenue Bonds
  - c. Special Bond Structures
    - (1) Insured Bonds
    - (2) Prerefunded Bonds
  - d. Municipal Derivative Securities
4. Corporate Debt
  - a. Corporate Structure
    - (1) Bankruptcy and Bondholder Rights
      - (a) Differences in principal international markets

# Global Body of Investment Knowledge

- (2) Credit Rating Agencies (NSROs)
- b. Corporate Debt Instruments
  - (1) Secured Debt
  - (2) Unsecured Debt
  - (3) Credit Enhancements
  - (4) Default Rates
  - (5) Recovery Rates
  - (6) Medium-Term Notes
  - (7) Bank Debt
  - (8) Structured Debt
    - (a) Limitations on types of structured notes
    - (b) Risks in the structured-note market
- 5. Money Market Securities
  - a. Structure of Money Markets
  - b. Market Participants
  - c. Money Market Instruments
  - d. Characteristics of Money Market Securities
- 6. Asset-Backed and Mortgage-Backed Securities
  - a. The Role of the Special Purpose Vehicle
  - b. Credit Enhancement Mechanisms
- 7. Debt Market Structure
  - a. Types of markets
    - (1) Direct search market
    - (2) Brokered markets
    - (3) Dealer markets
    - (4) Auction markets
- 8. Fixed Income Benchmarks
- C. Fixed Income Valuation and Return Analysis
  - 1. General Principles of Valuation
    - a. Estimating Cash Flows
    - b. Determining the Appropriate Rate or Rates
    - c. Discounting the Expected Cash Flows
      - (1) Present Value Properties
        - (a) Inverse Relationship between Time and Present Value
        - (b) Inverse Relationship between Discount Rate and Price
      - (2) Relationship between Coupon Rate, Discount rate, and Price Relative to Par Value
      - (3) Change in a Bond's Value as Bond Moves Toward Maturity
    - d. Valuation Using Multiple Discount Rates
    - e. Valuing Semiannual Cash Flows
    - f. Valuing a Zero-Coupon Bond
    - g. Valuing a Bond between Coupon Payments
      - (1) Computing the Full Price
      - (2) Computing the Accrued Interest and the Clean Price
      - (3) Day Count Conventions
  - 2. The Arbitrage-Free Valuation Approach

# Global Body of Investment Knowledge

- a. Valuation Using Treasury Spot Rates
- b. Reasons for Using Treasury Spot Rates
  - (1) Stripping and the Arbitrage-Free Valuation
  - (2) Reconstitution and Arbitrage-Free Valuation
- c. Credit Spreads and the Valuation of Non-Treasury Securities
- 3. Forward Rates
  - a. Deriving Forward Rates
  - b. Relationship between Spot Rates and Short-Term Forward Rates
    - (1) Relationship between Spot, Forward and On-the-Run Curves
  - c. Valuation Using Forward Rates
  - d. Computing Any Forward Rate
- 4. The Full Valuation Approach
  - a. Scenario analysis
  - b. Stress testing
    - (1) Definition of tracking error
    - (2) Ex ante tracking error
  - c. Total Return Assumptions
    - (1) Holding Period (Investment Horizon)
    - (2) Prepayment Function
    - (3) Scenario Probabilities
    - (4) Base Case
    - (5) Horizon Price
      - (a) Constant OAS Assumption
    - (6) Number of Scenarios
    - (7) Reinvestment Rate
  - d. Interpreting the Results
- 5. Price Volatility Characteristics of Bonds
  - a. Price Volatility Characteristics of Option-Free Bonds
    - (1) Convexity of the Price/Yield Relationship
  - b. Price Volatility Characteristics of Bonds with Embedded Options
    - (1) Bonds with Call and Prepay Options
      - (a) Effect of Embedded Call Option
      - (b) Negative Convexity
    - (2) Bonds with Embedded Put Options
- 6. Duration
  - a. Macauley's Duration
  - b. Modified Duration
  - c. Effective Duration
    - (1) Calculating Effective Duration
    - (2) Approximating the Percentage Price Change Using Effective Duration
    - (3) Size of Rate Changes and Duration Estimate
    - (4) Modified Duration versus Effective Duration
  - d. Interpretations of Duration
    - (1) Duration as the "First Derivative"
    - (2) Duration as Some Measure of Time

# Global Body of Investment Knowledge

- e. Duration of a Floating-Rate Note
  - (1) Duration of an Inverse Floater
- f. Portfolio Duration
  - (1) Contribution to Portfolio Duration
  - (2) Allowing for Leverage and Derivatives in Computing Duration
- g. Duration of a Market Index
- h. Spread Duration for Fixed-Rate Bonds
  - (1) Spread Duration Measures
    - (a) Nominal Spread
    - (b) Zero-Volatility Spread
    - (c) Option-Adjusted Spread
  - (2) Spread Duration for a Portfolio versus an Index
- i. Contribution to Duration of Foreign Bonds
  - (1) Country Beta
- 7. Convexity
  - a. Convexity Measure
  - b. Convexity Adjustment to Percentage Price Change
  - c. Scaling the Convexity Measure
  - d. Modified Convexity
  - e. Effective Convexity
- 8. Price Value of a Basis Point (i.e., DV01)
  - a. Relationship of DV01 to Duration
- D. Term Structure Determination and Yield Spreads
  - 1. U.S. Treasury Rates
    - a. Risks of Treasury Securities
    - b. The Treasury Yield Curve
      - (1) Definition
      - (2) Shape of the Yield Curve
      - (3) Interpolating Between On-the-Run Issues
      - (4) Yield Differences Between On- and Off-the-Run Issues
        - (a) Coupon Effect
        - (b) Liquidity Effect
  - 2. Theories of the Term Structure of Interest Rates
    - a. The Pure Expectations Theory
      - (1) Limitations of the Pure Expectations Theory
        - (a) Neglects bond price at the end of the investment horizon
        - (b) Neglects Reinvestment Risk.
        - (c) Bond Risk Premia
          - (i) Theories Explaining Bond Risk Premia
        - (d) Convexity bias
          - (i) Yield Advantage
          - (ii) Roll-Down Yield Change
      - (2) Interpretations of the Pure Expectations Theory
        - (a) Broadest Interpretations (Unbiased Expectations Theory)
        - (b) Local Expectations Form of the Pure Expectations Theory
        - (c) Empirical Evidence about the Pure Expectations Theory

# Global Body of Investment Knowledge

- (d) Forward Rates and Market Consensus
  - (i) Break-even rate
  - b. Biased Expectations Theories
    - (1) Liquidity Theory
    - (2) Preferred Habitat Theory
  - c. Market Segmentation Theory
- 3. Measuring Yield Spreads
  - a. Yield Spread Measures
    - (1) Absolute Yield Spread
    - (2) Relative Yield Spread
    - (3) Yield Ratio
  - b. Intermarket Sector Spreads and Intramarket Spreads
  - c. Credit Spreads
  - d. Effect of Embedded Options
- 4. Effect of Issue Size /Liquidity on Spreads
- 5. Taxability of Interest Income
  - a. After-Tax Yield and Taxable-Equivalent Yield
  - b. Intramarket Yield Spreads and Benchmark Issues
  - c. Impact of State and Local Taxes
- 6. Technical Factors causing misalignments of yield spreads
- 7. Non-U.S. Interest Rates
  - a. Factors affecting interest rate differentials
- 8. Yield Curve Shifts
  - a. Parallel shift
  - b. Nonparallel shift
  - c. Twist in the slope
  - d. Flattening
  - e. Butterfly shifts
    - (1) Positive butterfly
    - (2) Negative butterfly
- 9. Treasury Returns Resulting from Yield-Curve Movements
- 10. Constructing the Theoretical Spot Rate Curve for Treasuries
  - a. On-the-Run Treasury Issues (Par Yield Curve)
  - b. On-the-Run Treasury Issues and Selected Off-the-Run Treasury Issues
  - c. All Treasury Coupon Securities and Bills
  - d. Treasury Coupon Strips
- 11. Measuring Yield Curve Risk
  - a. Rate duration
  - b. Key rate duration
    - (1) Differences and similarities between modified duration and key rate duration
    - (2) Level, Slope, and Curvature Durations
- 12. Yield Volatility and Measurement
  - a. Measuring Historical Yield Volatility
    - (1) Determining the Number of Observations
    - (2) Annualizing the Standard Deviation

# Global Body of Investment Knowledge

- (3) Interpreting the Standard Deviation
  - (4) Price-based versus Yield-based Volatility
  - (5) Empirical Evidence on Volatility
    - (a) Short versus Long Rates
  - b. Historical versus Implied Volatility
  - c. Forecasting Yield Volatility
    - (1) Monetary policy actions and long-term interest rates
- E. Analysis of Interest Rate Risk
- 1. Interest rate risk
    - a. Price/Yield Relationship
    - b. Impact of Bond Features on Interest Rate Risk
      - (1) Maturity
      - (2) Coupon Rate
      - (3) Embedded Options
    - c. The Impact of the Yield Level
    - d. Interest Rate Risk for Floating-Rate Securities
    - e. Measuring Interest Rate Risk
      - (1) Approximating Percentage Price Change
      - (2) Approximating Dollar Price Change
  - 2. Yield Curve Risk
  - 3. Call and Prepayment Risk
  - 4. Reinvestment Risk
  - 5. Sources of Return
    - a. Coupon Interest Payments
    - b. Capital Gain or Loss
    - c. Reinvestment Income
  - 6. Traditional Yield Measures
    - a. Current Yield
    - b. Yield to Maturity
      - (1) The Bond-Equivalent Yield Convention
      - (2) Limitations of Yield-to-Maturity Measure
      - (3) Factors Affecting Reinvestment Risk
      - (4) Comparing Semiannual-Pay and Annual-Pay Bonds
    - c. Yield to Call
    - d. Yield to Put
    - e. Yield to Worst
    - f. Cash Flow Yield
      - (1) Bond-Equivalent Yield
      - (2) Limitations of Cash Flow Yield
    - g. Yield Spread Measures for Floating-Rate Securities
    - h. Yield on Treasury Bills
  - 7. Theoretical Spot Rates
    - a. Bootstrapping Approach for Constructing the Theoretical Spot Rate Curve for Treasuries
    - b. Yield Spread Measures Relative to a Spot Rate Curve
      - (1) Zero-Volatility Spread (Z-Spread)

## Global Body of Investment Knowledge

- (a) Divergence Between Z-Spread and Nominal Spread
- (b) Z-Spread Relative to Any Benchmark
- (2) Option-Adjusted Spread (OAS)
  - (a) Option Cost
  - (b) Limitations of the Nominal Spread

### F. Analysis of Bond Risk

1. Liquidity Risk
  - a. Liquidity Risk and Marking Positions to Market
  - b. Changes in Liquidity Risk
2. Exchange Rate or Currency Risk
3. Inflation or Purchasing Power Risk
4. Volatility Risk
5. Event Risk
  - a. Natural Catastrophes
  - b. Corporate Takeover / Restructurings
  - c. Regulatory Risk
6. Political Risk
7. Credit Risk
  - a. Types of Credit Risk
    - (1) Default Risk
    - (2) Credit Spread Risk
    - (3) Downgrade Risk
8. Elements of Corporate Credit Analysis
  - a. Analysis of an Issuer's Character
  - b. Analysis of the Capacity to Pay
    - (1) Industry Analysis
    - (2) Traditional Ratios
      - (a) Profitability Ratios
      - (b) Debt and Coverage Analysis
        - (i) Short-Term Solvency Ratios
        - (ii) Capitalization Ratios
        - (iii) Coverage Tests
    - (3) Cash Flow Analysis
    - (4) Analysis of Collateral
  - c. Analysis of Bond Indentures
    - (1) Analysis of Covenants
    - (2) Parties
      - (a) Issuer
      - (b) Trustee
    - (3) Collateral
    - (4) Assets
    - (5) Terms & Conditions
  - d. Analysis of Management Quality
  - e. Quantitative Credit Analysis Using Models
  - f. Special Considerations for High-Yield Corporate Bonds
    - (1) Analysis of Debt Structure

## Global Body of Investment Knowledge

- (2) Analysis of Corporate Structure
- (3) Analysis of Covenants
- (4) Equity Analysis Approach
- (5) Default Rates on High Yield Securities
- 9. Credit Analysis of Non-Corporate Bonds
  - a. Asset-Backed Securities
    - (1) Factors Considered by Rating Agencies
      - (a) Credit Quality of the Collateral
      - (b) Quality of the Seller/Service
      - (c) Cash Flow Stress and Payment Structure
      - (d) Legal Structure
    - (2) Rating Agencies
      - (a) Rating Matrixes
      - (b) Rating Agencies
      - (c) Use and Consideration of ratings
    - (3) Corporate Bond versus Asset-Backed Securities Credit Analysis
  - b. Municipal Bonds
    - (1) Tax-Backed Debt
    - (2) Revenue Bonds
      - (a) Limits of the Basic Security
      - (b) Flow of Funds Structure for Revenue Bonds
      - (c) Rate or User-Change Covenants
      - (d) Priority-of-Revenue Claims
      - (e) Additional-Bonds Test
      - (f) Other Relevant Covenants
    - (3) Corporate Versus Municipal Bond Credit Analysis
  - c. Sovereign Bonds
    - (1) Factors Considered By Rating Agencies
    - (2) Corporate Versus Sovereign Bond Credit Analysis
- G. Valuing Bonds with Embedded Options
  - 1. Introduction to Valuation Models
    - a. Modeling Risk
  - 2. The Binomial Model
    - a. Binomial Interest Rate Tree
    - b. Determining the Value at a Node
    - c. Constructing the Binomial Interest Rate Tree
      - (1) Recombining versus Nonrecombining Tree
      - (2) Using an Assumed Interest Rate Volatility
      - (3) Using a Term Structure Model
        - (a) Ho-Lee Model
        - (b) Original Salomon Brothers Model
        - (c) Black-Derman-Toy Model
        - (d) Black-Karinski Model
    - d. Valuing an Option-Free Bond with the Tree
  - 3. Valuing and Analyzing a Callable Bond
    - a. Calculating the Value at a Node (Backward Induction)

# Global Body of Investment Knowledge

- (1) Importance of the Rule for Exercising the Embedded Call Option
  - (a) Analyzing the Call Rule from the Perspective of the Liability Manager
  - b. Determining the Call Option Value
  - c. Effect of Volatility on the Arbitrage-Free Value
  - d. Option-Adjusted Spread (OAS)
    - (1) Interpretation of OAS
      - (a) Importance of Benchmark Interest Rates
  - e. Effective Duration and Effective Convexity
    - (1) Process for Determining the Prices for Up and Down Rate Shifts
    - (2) Negative Convexity
  - f. Price/Yield Relationship of a Callable vs. Option-Free Bond
4. Valuing a Puttable Bond
  - a. Calculating the Value at a Node (Backward induction)
    - (1) Importance of the Rule for Exercising the Embedded Put Option
  - b. Determining the Put Option Value
  - c. Effect of Volatility on the Value
  - d. Price/Yield Relationship of a Puttable vs. Option-Free Bond
5. Valuing a Callable and Puttable Bond
  - a. Calculating the Value at a Node (Backward Induction)
    - (1) Importance of Rule for Determining if Embedded Call/Put Option is Exercised
6. Valuing a Step-Up Callable Note
7. Valuing a Capped Floater
8. Valuing a Sinking Fund Bond
  - a. Calculating the Value at a Node (Backward Induction)
    - (1) Valuing an Embedded European Call Option
  - b. Accumulated (Cornered) Issue
  - c. Partial Calls
9. Analysis of Convertible Bonds
  - a. Basic Features of Convertible Securities
  - b. Traditional Analysis of Convertible Securities
    - (1) Minimum Value of a Convertible Security
      - (a) Conversion Value of a Convertible Security
      - (b) Investment Value of a Convertible Security
    - (2) Market Conversion Price
      - (a) Market Conversion Premium Per Share
      - (b) Market Conversion Premium Ratio
    - (3) Current Income of Convertible Bond versus Common Stock
      - (a) Favorable Income Differential Per Share
      - (b) Premium Payback Period
    - (4) Downside Risk with a Convertible Bond
    - (5) Upside Potential of a Convertible Bond
  - c. Investment Characteristics of a Convertible Security
  - d. An Option-Based Valuation Approach for Convertible Securities
  - e. The Risk/Return Profile of a Convertible Security

# Global Body of Investment Knowledge

## H. Structured Products

### 1. Mortgage-Backed Securities (MBS)

#### a. Features

- (1) Mortgage Terminology
- (2) Fixed-Rate, Level-Payment Fully Amortized Mortgage
  - (a) Servicing Fee
  - (b) Prepayments and Cash Flow Uncertainty
- (3) Mortgage Passthrough Securities
  - (a) Securitization
  - (b) Cash Flow Characteristics
    - (i) Passthrough Coupon Rate
    - (ii) Cash Flow Timing
    - (iii) Weighted average coupon rate (WAC)
    - (iv) Weighted average maturity (WAM)
  - (c) Types of Mortgage Passthrough Securities
  - (d) Trading and Settlement Procedures
  - (e) Prepayment Conventions and Cash Flow
    - (i) Conditional Prepayment Rate (CPR)
    - (ii) Single-monthly Mortality Rate (SMM)
    - (iii) Public Securities Association (PSA) Prepayment Benchmark
    - (iv) Computing Monthly Cash Flow Construct
    - (v) Factors Affecting Prepayment Behavior
      - a. Prevailing Mortgage Rate
      - b. Characteristics of the Underlying Mortgage Loans
      - c. Seasonal Factors
      - d. General Economic Activity
      - e. Burnout
      - f. Yield Curve Effect
      - g. Models of factors affecting prepayment
      - h. Application of binomial option-pricing model to show value of mortgage prepayment option if exercised optimally
  - (f) Extension Risk and Contraction Risk
  - (g) Average Life
  - (h) Adjustable-Rate Mortgages (ARMs)
- (4) Collateralized Mortgage Obligations (CMOs)
  - (a) Rationale for Creation of a CMO
  - (b) Sequential-Pay Tranches
  - (c) Accrual Bonds, or accrual tranche, or Z bond
  - (d) Floating-Rate Tranches
  - (e) Structured Interest-Only Tranches
  - (f) Planned Amortization Class (PAC) Tranches
    - (i) Creating a Series of PAC Tranches
    - (ii) PAC Window
    - (iii) Effective Collars and Actual Prepayments

# Global Body of Investment Knowledge

- a. Actual Prepayments Greater than Initial Upper Collar
      - b. Actual Prepayments within Initial Collar
    - (g) Support Tranches
    - (h) Drawbacks to using duration and convexity methods for assessing potential price volatility and value of mortgaged-backed security
  - b. Stripped Mortgage-Backed Securities
    - (1) Principal-Only (PO) Strips
    - (2) Interest-Only (IO) Strips
      - (a) Principal Risk
      - (b) Cash Flow Average Life
    - (3) Trading and Settlement Procedures for Stripped Mortgage-Backed Securities
    - (4) Use in hedging
    - (5) Price change behavior of IOs and POs as interest rates change
    - (6) Duration and convexity characteristics of POs and IOs
      - (a) Changes in MBS duration and value relative to changes in prepayment behavior
      - (b) Risks peculiar to hedging of MBS
      - (c) Forecasts of MBS durations and option costs in context of option theory
      - (d) Whipsaw risk
      - (e) Cost effective hedging of MBS
  - c. Nonagency Mortgage-Backed Securities
    - (1) Underlying Mortgage Loans
    - (2) Differences Between Agency and Nonagency Securities
  - d. Commercial Mortgage-Backed Securities
    - (1) Underlying Property Types
  - e. International Mortgage-Backed Securities
2. Asset-Backed Securities
  - a. Features of an Asset-Backed Security
    - (1) Amortizing versus Nonamortizing Assets
    - (2) Fixed-Rate versus Floating-Rate
    - (3) Credit Enhancements
      - (a) External Credit Enhancements
      - (b) Internal Credit Enhancements
        - (i) Reserve Funds
        - (ii) Overcollateralization
        - (iii) Senior/Subordinated Structure
    - (4) Passthrough versus Pay Through Structures
    - (5) Optional Clean-Up Call Provisions
  - b. Home Equity Loans
    - (1) Securities Backed by Closed-End Home Equity Loans
      - (a) Prepayments
        - (i) Prospective Prepayment Curve (PPC)

# Global Body of Investment Knowledge

- (b) Payment Structure
      - (i) Available Funds Cap
      - (ii) Non-Accelerating Senior (NAS) Tranches
      - (iii) Planned Amortization Class (PAC) Tranche
    - (2) Securities Backed by Home Equity Lines of Credit
  - c. Manufactured Housing-Backed Securities
    - (1) Guaranteed (GNMA) versus Conventional Loans
    - (2) Cash Flow and Prepayments
    - (3) Payment Structure
  - d. Auto Loan-Backed Securities
    - (1) Types of Issuers
    - (2) Cash Flow
    - (3) Prepayments
      - (a) Absolute Prepayment Speed (APS)
      - (b) Conversion to monthly conditional prepayment rate
    - (4) Payment Structure
  - e. Student Loan-Backed Securities
    - (1) Types of Issuers
    - (2) Cash Flow
      - (a) Deferment Period
      - (b) Grace Period
    - (3) Prepayments
  - f. Small Business Administration (SBA) Loan-Backed Securities (U.S.)
  - g. Credit Card Receivable-Backed Securities
    - (1) Types of Issuers
    - (2) Master Trust Structure
    - (3) Cash Flow
      - (a) Lockout Period (Revolving Period)
      - (b) Principal-Amortization Period
    - (4) Payment Structure
      - (a) Controlled-amortization structure
      - (b) Bullet-payment structure (Soft bullet)
        - (i) Accumulation Period
    - (5) Performance of Receivables Portfolio
      - (a) Gross portfolio Yield
      - (b) Charge-offs
      - (c) Net Portfolio Yield
      - (d) Delinquencies
      - (e) Monthly Payment Rate
    - (6) Early Amortization (Rapid Amortization) Triggers
- 3. Collateralized Debt Obligations
  - a. Collateralized Bond Obligations
    - (1) Structure of a CDO and, specifically, a CBO
    - (2) Phases of a CBO
    - (3) Activities of the (CBO's) Asset Manager Synthetic Collateralized Debt Obligations

# Global Body of Investment Knowledge

- (4) Collateral coverage tests for a CDO
    - (a) Over-collateralization test
    - (b) Interest coverage test
  - b. Calculation of an arbitrage CDO
  - c. Synthetic CDOs
    - (1) Synthetic CDOs
    - (2) Credit default swaps
    - (3) Investment strategies using CDOs
- I. Valuing Structured Products
- 1. Cash Flow Yield Analysis (Static Cash Flow Yield)
    - a. Limitations of Cash Flow Yield Measure
    - b. Nominal Spread
  - 2. Zero-Volatility Spread (the Z-spread)
  - 3. Monte Carlo Simulation Model and Option-adjusted Spread (OAS)
    - a. Simulating Interest Rate Paths and Cash Flows
      - (1) Necessity of Interest Rate Paths to Evaluate MBS
      - (2) Model Inputs
        - (a) Term Structure of Interest Rates
        - (b) Volatility Assumption
      - (3) Adjusting the Model to Arbitrage-Free Values
      - (4) Prepayment Model
    - b. Calculating the Present Value for an Interest Rate Path
    - c. Determining the Theoretical Value
    - d. Option-Adjusted Spread
    - e. Option Cost
    - f. Selecting the Number of Interest Rate Paths
    - g. Planned Amortization (PAC)/Support Tranche Structure
  - 4. Measuring Interest Rate Risk of MBS
    - a. Duration Measures
      - (1) Effective Duration
      - (2) Other MBS Duration Measures
        - (a) Cash Flow Duration
        - (b) Coupon Curve Duration
        - (c) Empirical Duration (Implied Duration)
      - (3) Duration and Convexity Drift of CMOs
      - (4) Duration and Convexity Characteristics of IOs and POs
        - (a) Effect of Changes in Prepayment Behavior on MBS Duration
        - (b) Whipsaw Risk
  - 5. Valuing Asset-Backed Securities
    - a. Use of Z-Spread versus OAS
      - (1) ABS without Prepayments
      - (2) ABS with Interest-Sensitive Prepayments
      - (3) ABS with Interest-Insensitive Prepayments
    - b. Valuing Early-Payout Risk
    - c. Duration and Convexity Characteristics of ABS

# Global Body of Investment Knowledge

- J. Macroeconomic Effects on Fixed Income Yields
    - 1. The Role of the Central Bank in influencing interest rates
      - a. Policy Tools
      - b. Interest Rates over the Business Cycle
      - c. Use of Interest Rates to Support Currency Levels
    - 2. Inflation and Interest Rates
    - 3. Fiscal Deficits and Surpluses
    - 4. Expected Economic Growth Rate
    - 5. Balance of Trade Deficits and Surpluses
  - K. Trading Strategies and Their Assessment
    - 1. The Principle of Leverage
    - 2. Borrowing Funds via Repurchase Agreements (Repo)
      - a. Margin and Marking to Market
      - b. Delivery and Credit Risk
      - c. Repo Mechanics
        - (1) Repo versus Reverse Repo
        - (2) Collateral
        - (3) The haircut
      - d. Determinants of the Repo Rate
    - 3. Total Return Analysis
      - a. Computing the Expected Total Return
        - (1) OAS-Total Return
        - (2) Total Return for a Mortgage-Backed and Asset-Backed Security
        - (3) Scenario Analysis
      - b. Yield Curve Trades
        - (1) Decomposition of Total Expected Treasury Return
        - (2) Coupon income
        - (3) Roll-down return
        - (4) Convexity value
        - (5) Duration impact of the rate view
        - (6) Financing advantage (Specialness)
    - 4. Controlling for Interest Rate Risk in Assessing Trading Strategies
    - 5. Trading Strategies
      - a. Bullet Portfolio
      - b. Barbell Portfolio
    - 6. Fixed Income Strategies
      - a. Choosing a strategy based upon the objective
      - b. Passive strategies
      - c. Enhancement strategies (including “core plus”)
      - d. Active strategies
  - L. Influence of Equity Market Changes on Bond Pricing
    - 1. “Merton models”
  - M. Behavioral Issues
- VIII. DERIVATIVES**

# Global Body of Investment Knowledge

## A. Types of Derivative Instruments and their Characteristics

1. Basic Definitions of Markets and Instruments
2. Historical Development of Derivative Markets
3. The Structure of Broker and Dealer Derivative Markets
4. Market Size
5. Purposes of Derivative Markets
  - a. Price and volatility discovery
  - b. Risk management
    - (1) Hedging
    - (2) Speculation
  - c. Reduced transaction costs
  - d. Improved market efficiency
6. Benefits and Criticisms of Derivative Markets
7. Elementary Pricing Principles
  - a. Arbitrage and Risk Neutral Pricing
  - b. Fair Value
  - c. Storage and Carrying Costs
8. Sources of Risk
  - a. Interest Rates
  - b. Equity Prices
  - c. Commodity Prices
  - d. Exchange Rates
  - e. Credit Risk
  - f. Model Risk
  - g. Operational Risk
  - h. Legal Risk
  - i. Accounting Risk
  - j. Tax Risk
  - k. Regulatory Risk
  - l. Settlement Risk
  - m. Liquidity Risk
  - n. Systemic Risk
  - o. Macroeconomic risk
  - p. Other Risks

## B. Forward Markets and Instruments

1. Structure of Global Forward Markets
2. Basic Definitions and Illustrations of Forward Contracts
3. Credit Risk in Forward Contracting
4. Types and Characteristics of Forward Contracts
  - a. Equity
  - b. Interest Rate (Forward Rate Agreements (FRAs))
  - c. Commodity
  - d. Currency
  - e. Other (power, weather, etc.)
5. Valuing Forward Contracts
  - a. Contract Value at Expiration

# Global Body of Investment Knowledge

- b. Contract Value at Initiation
  - c. Contract Value During its Life
  - d. Pricing a Generic Forward Contract
  - e. Pricing an FRA
  - f. Pricing a Foreign Currency Forward: Interest Rate Parity
6. Forward Contract Strategies
- a. Hedging Long Exposure
  - b. Hedging Short Exposure
  - c. Speculating
- C. Futures Markets and Instruments
1. Structure of Global Futures Markets
  2. Role of Futures Exchanges
  3. Organized Markets
    - a. Types of Futures Exchanges
      - (1) Pit-trading Exchanges
      - (2) Electronic Exchanges
    - b. Structure and Operations of a Futures Exchange
  4. Futures Trading
    - a. Opening and Closing a Position
    - b. Expiration of a Contract
      - (1) Delivery
      - (2) Cash settlement
  5. The Role of the Clearinghouse
    - a. Performance Guarantee
    - b. Margins
    - c. Daily Settlement
    - d. Daily Price Limits
  6. Types of Futures Contracts
    - a. Commodity
    - b. Financial
    - c. Currency
    - d. Other
  7. The Role of Futures Markets
  8. The Regulation of Futures Markets
  9. Contract Types and Characteristics
    - a. Interest Rate Futures
    - b. Stock Index and Single Stock Futures
    - c. Foreign Exchange Futures
    - d. Commodity Futures
    - e. Other (e.g., power, weather)
  10. Valuing Futures Contracts
    - a. Price Convergence at Expiration
    - b. Value of a Contract Today
    - c. Value of a Contract During its Life
    - d. The Cost of Carry Pricing Model: General Concepts
      - (1) The General Case

# Global Body of Investment Knowledge

- (2) Interest Rate Futures
  - (3) Equity Futures
  - (4) Foreign Exchange Futures
  - e. Backwardation/Contango
  - f. Convenience Yield
  - g. The Basis and Spreads
  - h. Futures Prices and Expectations
  - i. Futures Prices Compared to Forward Prices
  - 11. Applications of Futures
    - a. Hedging Long Positions
    - b. Hedging Short Positions
    - c. Cross-Hedging
    - d. Calculating the Optimal Hedge Ratio
    - e. Arbitrage and Synthetic Instruments using Futures
    - f. Equitizing Cash
    - g. Asset Allocation
    - h. Portfolio Insurance and Dynamic Hedging
- D. Options Markets and Instruments
- 1. Structure of Global Options Markets
  - 2. Role of Options Exchanges
  - 3. Organized Markets
    - a. Types of Options Exchanges
      - (1) Pit-trading Exchanges
      - (2) Electronic Exchanges
    - b. Structure and Operations of an Options Exchange
  - 4. Options Trading
    - a. Opening and Closing a Position
    - b. Expiration of a Contract
      - (1) Delivery
      - (2) Cash Settlement
    - c. Over-the-Counter Options Trading
      - (1) Structure of the Market
      - (2) Trading options over-the-counter
      - (3) Credit risk in over-the-counter options
  - 5. Basic Definitions and Characteristics of Options Contracts
    - a. Call vs. Put
    - b. Exercise Price
    - c. Expiration
    - d. Exercise Style (American vs. European)
    - e. Moneyness
    - f. Standardization vs. Customization
  - 6. Underlying instruments
    - a. Bonds
    - b. Interest Rates
    - c. Stocks
    - d. Indexes

# Global Body of Investment Knowledge

- e. Commodities
- f. Futures
- g. Currencies
  - (1) Individual currency options
  - (2) Currency baskets
- h. Other (i.e., power, weather)
- 7. The Role of Options Markets
- 8. The Regulation of Options Markets
- 9. Valuing Options
  - a. Minimum Values
  - b. Maximum Values
  - c. Expiration/Exercise Values
  - d. Lower Bounds (adjusted exercise value)
  - e. Time Value Effect
  - f. Effect of Exercise Prices
  - g. Early Exercise of American Options
  - h. Effect of Interest Rates
  - i. Effect of Volatility
  - j. Put-Call Parity
  - k. Put-Call-Forward Parity
  - l. Effect of Dividends on Option Prices
- 10. Option pricing (valuation) models
  - a. Binomial model
    - (1) One-period binomial model
      - (a) Construction of a risk-free portfolio
      - (b) Binomial pricing formula
      - (c) Executing an arbitrage
    - (2) Multiperiod binomial model
      - (a) Dynamic construction of a risk-free portfolio
      - (b) Multiperiod pricing formula
      - (c) Executing an arbitrage
      - (d) Limiting cases
    - (3) Incorporating Dividends into the Binomial Model
    - (4) Exercising an Option Early in the Binomial Model
  - b. Black-Scholes Model
    - (1) The Mathematical Structure
      - (a) Lognormal Distribution
      - (b) Brownian Motion/Wiener Processes
      - (c) Martingales
      - (d) Stochastic Calculus
      - (e) Itô's Lemma
      - (f) Stochastic Differential Equations
    - (2) Constructing and Dynamically Adjusting a Risk-Free Portfolio
      - (a) The Self-Financing Property
      - (b) Dynamic Adjustment of Portfolio
    - (3) Solving the Option Pricing Problem: The Black-Scholes Formula

## Global Body of Investment Knowledge

- (a) The Martingale Approach
- (b) The Partial Differential Equation Approach
- (c) Numerical Solutions: The Binomial Revisited
- (d) Numerical Solutions: Finite Difference Method
- (e) Monte Carlo Simulation
- (4) The Black-Scholes Formula
  - (a) Properties of the Formula
  - (b) Calculation using the Formula
- (5) Sensitivity of the Formula to the Inputs: The Option Greeks
  - (a) Stock Price: Delta and Gamma
  - (b) Exercise Price
  - (c) Risk-Free Rate: Rho
  - (d) Time to Expiration: Theta
  - (e) Volatility: Vega (Kappa)
  - (f) Dividends: Dividend Rho
  - (g) Omega: Elasticity
  - (h) Fugit: Expected time to exercise
- (6) Incorporating Dividends into the Formula
  - (a) Discrete
  - (b) Continuous
- 11. Volatility Issues
  - a. Estimation of Historical Volatility
  - b. Estimation of Implied Volatility
  - c. Implied Volatility Smile
  - d. Implied Binomial Trees
  - e. Term Structure of Implied Volatility
  - f. Jump Risk
  - g. Stochastic Volatility
  - h. Implied Risk Neutral Probability Distribution
- 12. The Black Model for Pricing Options on Forwards/Futures
- 13. Managing an Option Portfolio
  - a. Delta Hedging
  - b. Gamma Hedging
  - c. Vega Hedging
  - d. Dynamic Portfolio Insurance
- 14. Option Trading Strategies
  - a. Basic Long and Short Call Transactions
  - b. Basic Long and Short Put Transactions
  - c. Covered Calls
  - d. Protective Puts
  - e. Synthetic Puts and Calls
  - f. Spreads
    - (1) Money
    - (2) Time
    - (3) Collars
    - (4) Butterfly

## Global Body of Investment Knowledge

- (5) Bull
- (6) Bear
- (7) Ratio
- (8) Condors
- (9) Back
- g. Interest Rate Risk Management Strategies
  - (1) Use of Caps in Managing the Risk of Borrowing at a Floating Rate
  - (2) Use of Floors in Managing the Risk of Lending at a Floating Rate
  - (3) Use of Collars in Managing the Risk of Borrowing or Lending at a Floating Rate
- h. Put-Call Combinations
  - (1) Straddles
  - (2) Straps and Strips
  - (3) Diagonal Spreads
  - (4) Box Spreads
- 15. Advanced Topics in Option Pricing
  - a. American Option Pricing
    - (1) Binomial and Numerical Methods
    - (2) Closed-Form Solutions for Special Cases
    - (3) Closed-Form Approximations
  - b. Term Structure Modeling and Interest Rate Option Pricing
    - (1) Spot vs. Forward Rate Models
    - (2) The Local Expectations Hypothesis
    - (3) Vasicek Model
    - (4) Cox-Ingersoll-Ross Model
    - (5) Longstaff-Schwartz Model
    - (6) Ho-Lee Model
    - (7) Hull-White Models
    - (8) Black-Derman-Toy Model
    - (9) Black-Karazinski Model
    - (10) Heath-Jarrow-Morton Model
    - (11) Brace-Gatarek-Musiela (LIBOR Market) Model
    - (12) Spot vs. Forward-Rate Models
    - (13) Interest Rate Option Pricing with the Black Model
    - (14) Closed-Form Solutions
    - (15) Numerical/Binomial Methods
  - c. Exotic Options
    - (1) Path-Independent vs. Path-Dependent Exotics
    - (2) Digital Options
    - (3) Paylater and Contingent Options
    - (4) Compound and Installment Options
    - (5) Min-Max Options
    - (6) Exchange Options
    - (7) Forward Start Options
    - (8) Quantos
    - (9) Deferred Pay and Contingent Options

# Global Body of Investment Knowledge

- (10) Chooser Options
  - (11) Barrier Options
  - (12) Lookback Options
  - (13) Asian Options
  - (14) Shout/Cliquet/Ladder/Lock-in Options
  - (15) Volatility Options
  - (16) Low-Exercise Price Options (LEPOs)
  - (17) Occupation Time Options
  - (18) Power Options
  - (19) Capital Protection and Guaranteed Return Structures
  - d. Other Types of Options
    - (1) Equity as an Option
    - (2) Corporate Debt as an Option
    - (3) Callable Bonds
    - (4) Convertible Bonds
    - (5) Equity-linked Debt
    - (6) Warrants
    - (7) Real Options
    - (8) Employee Options
    - (9) Synthetics
  - e. The Role of Options in Understanding Credit Risk
    - (1) Default as an Option and the Risk Structure of Interest Rates
    - (2) Senior and Subordinated Debt
  - f. Option Prices and State Prices
- E. Swaps Markets and Instruments
- 1. Structure of Global Swaps Markets
  - 2. Basic Definitions of Swaps
  - 3. Types and Characteristics of Swaps
    - a. Currency
    - b. Interest Rate
    - c. Equity
    - d. Commodity
    - e. Other (e.g., power, weather)
  - 4. Relationships Between Swaps and Other Instruments
    - a. Swaps vs. Forward Contracts
    - b. Swaps vs. Futures Contracts
    - c. Swaps vs. Options
  - 5. Valuing Swaps
    - a. Payments at Settlement Dates and Payment Conventions
    - b. Valuation
      - (1) At Initiation
      - (2) During its life
      - (3) As a Series of Forward Contracts
      - (4) As a Combination of Bonds
      - (5) Valuing Interest Rate Swaps
      - (6) Valuing Currency Swaps

# Global Body of Investment Knowledge

- (7) Valuing Equity Swaps
- (8) Valuing Commodity Swaps
- 6. Swap Strategies
  - a. Currency Swaps
    - (1) Converting a Loan in One Currency to a Loan in Another
    - (2) Synthesizing a Dual Currency Bond
    - (3) Converting Foreign Cash Receipts into Domestic Cash Receipts
  - b. Interest Rate Swaps
    - (1) Converting a Fixed-Rate Loan to a Floating-Rate Loan and vice versa
    - (2) Adjusting the Duration of a Fixed-Income Portfolio
    - (3) Synthesizing Structured Notes
  - c. Equity Swaps
    - (1) Executing Asset Class Changes
    - (2) Diversifying a Concentrated Portfolio
    - (3) Achieving International Diversification
    - (4) Reducing Overexposure to a Stock
  - d. Commodity Swaps
    - (1) Hedging Future Revenues or Costs
    - (2) Reducing the Credit Risk on a Loan
- 7. Managing Swap Credit Risk
  - a. Identifying Types of Credit Risk
  - b. Measuring Swap Credit Risk
  - c. Credit Enhancements
    - (1) Netting
    - (2) Limiting Exposure
    - (3) Collateral
    - (4) Marking to Market
- 8. Variations of Basic Swap Instruments
  - a. Basis Swaps
  - b. Diff Swaps
  - c. Off-Market Swaps
  - d. Arrears Swaps
  - e. Constant Maturity Swaps
  - f. Capped Swaps
  - g. Barrier Swaps
  - h. Volatility and Variance Swaps
  - i. Mark-to-Market Swaps
  - j. Average Payoff Swaps
  - k. Amortizing and Accreting Swaps
- 9. Forward Swaps and Swaptions
  - a. Basic Definitions
  - b. Payoffs
  - c. Valuation and Replication
  - d. Applications
    - (1) In Anticipation of a Future Swap

## Global Body of Investment Knowledge

- (2) Termination a Swap
- (3) Speculating
- (4) Converting Callable to Non-Callable Debt
- (5) Converting Putable to Non-Putable Debt

### F. Credit Derivatives Markets and Instruments

- 1. Types of Underlyings
  - a. Single-credit Derivatives
  - b. Basket-credit Derivatives
- 2. Types of Credit Derivatives
  - a. Credit Swaps
  - b. Credit Spread Options
  - c. Total Return Swaps
  - d. Credit-Linked Securities
  - e. Securitized and Synthetic Securitized Obligations
- 3. Modeling and Pricing Credit Derivatives

### G. Other Derivatives Issues

- 1. Accounting, Taxation, and Disclosure of Derivatives Transactions
  - a. Hedge Accounting
  - b. Mark-to-Market Accounting
  - c. Accounting Principles
    - (1) Cash flow Hedges
    - (2) Market value Hedges
    - (3) Foreign Investment Hedges
    - (4) Speculation
  - d. Regulations
  - e. Disclosure Rules
  - f. Identifying Derivatives Use and Risk Management Disclosure in Financial Statements
  - g. Taxation of Derivatives Transactions
- 2. Regulation of Global Derivative Markets
  - a. Regulatory Structure in Countries
  - b. Regulation of Exchange-Listed vs. OTC Derivatives
  - c. Global Capital Regulation and the Basle II Capital Adequacy Initiative
  - d. Capital Regulation of Credit Risk and Credit Derivatives
  - e. Industry Self Regulation (ISDA, NYSE, NASDAQ)
  - f. Legal and Ethical Issues in Global Derivative Markets
  - g. Legal Status of Derivatives
  - h. Contract Enforcement
  - i. Appropriateness of Derivatives for Certain Clients

## **IX. ALTERNATIVE INVESTMENTS**

### A. Types of Alternative Investment and their characteristics

### B. Real Estate

- 1. Forms of commercial/multi-family real estate investment
  - a. Free and clear equity (fee simple)
  - b. Leveraged equity

# Global Body of Investment Knowledge

- c. Real estate options
  - d. Mortgages
  - e. Hybrid debt (i.e., mortgage plus option)
  - f. Senior ground leases/leasehold
  - g. Aggregation vehicles (e.g., limited partnership, open and closed end commingled funds, separate accounts, and real estate investment trusts (REITS))
2. Analysis requirements
- a. Cash flow and pro forma statements
  - b. Liquidity
  - c. Control
  - d. Risks
    - (1) Property-type risk
    - (2) Geography and location risk
    - (3) Life cycle stage (development and physical obsolescence/deterioration risk)
    - (4) Tenant credit risk
    - (5) Tax risk
    - (6) Inflation risk
    - (7) Reinvestment risk
    - (8) Degree of leverage (loan to value ratio and debt coverage)
    - (9) Type of leverage (fixed/floating and conventional vs. participating)
    - (10) Additional risks in international investment (e.g., lack of local knowledge, political, currency, small-scale market)
    - (11) Systematic versus unsystematic risks
  - e. Return
    - (1) Type of investment vehicle (aggregation vehicle)
    - (2) Historical return series comparisons and index difficulties (appraisal vs. transaction based, levered vs. unlevered, property type mix, geographic mix and life cycle mix)
3. Valuation approaches
- a. Real estate appraisal concepts
    - (1) Market value
      - (a) Typical buyer and seller
      - (b) Consummation of sale as of specific date
      - (c) Exposure to market for reasonable time
      - (d) Not affected by special financing
    - (2) Investment value
  - b. Cost approach
  - c. Sales comparison approach
  - d. Income approach
    - (1) Capitalization rate derived from comparable sales
    - (2) Capitalization rate formula
    - (3) Constant growth rate rentals
    - (4) Constant growth rate rentals coupled with long term leases
  - e. Discounted cash flow approach

# Global Body of Investment Knowledge

- C. Investment Companies
  - 1. The Structure and Evolution of the Asset Management Industry
  - 2. Private Management and Advisory Firms
  - 3. Management of Investment Companies
  - 4. Valuing Investment Company Shares
  - 5. Characteristics of Closed-End Investment Companies
  - 6. Characteristics of Open-End Investment Companies
    - a. Sales Fee Structures
      - (1) Load
      - (2) No-load
  - 7. Characteristics of Exchange Traded Funds
  - 8. Fund management fees
  - 9. Investment Strategies
    - a. Style
    - b. Sector
    - c. Index
    - d. Global
    - e. Stable Value
  - 10. Principal Securities Laws for the Asset Management Industry
  - 11. Performance of Investment Companies
    - a. Analysis of Overall Performance
    - b. Impact of Fund Objectives
    - c. Consistency of Performance
    - d. Implication of Fund Performance
- D. Private Equity
- E. Venture Capital
  - 1. Stages of venture capital investing
    - a. Seed
    - b. Start-up
    - c. Early stage
    - d. Expansion
    - e. Later stage/bridge
    - f. Liquidation
  - 2. Risk
    - a. Management risk
    - b. Product risk
    - c. Market risk
    - d. Operations risk
    - e. Country Risk
    - f. Custody Issues
  - 3. Investment characteristics
    - a. Long-term process
    - b. Change in management/product configurations
    - c. Rounds of financing
  - 4. Types of liquidation
    - a. IPO

# Global Body of Investment Knowledge

- b. Acquisition
- 5. Performance measurement
  - a. Portfolio performance
  - b. Partnership performance
  - c. Return to limited partners
- F. Hedge Funds
  - 1. Characteristics
  - 2. Fee Structure
  - 3. Leverage
  - 4. Strategy categories
    - a. Equity Market Neutral
    - b. Convertible Arbitrage
    - c. Dedicated Short bias
    - d. Event Driven
    - e. Fixed Income Arbitrage
    - f. Fund of Funds
    - g. Global Macro
    - h. Currency Funds
    - i. Long Only
    - j. Long/Short Equity
    - k. Managed Futures
    - l. Multistrategy
- G. Closely-held companies and inactively traded securities
  - 1. Legal environment
    - a. Estate- and gift-tax laws
    - b. ESOP regulations
    - c. Fair value concept
  - 2. Valuation alternatives
    - a. Comparable company method
    - b. Capital asset pricing Model
    - c. Discounted cash flow model
    - d. Adjusted book-value method
  - 3. Bases for discounts/premiums
    - a. Freely marketable minority value
    - b. Enterprise value
    - c. Third party sale value
    - d. Book value
    - e. Adjusted book value
- H. Distressed Securities/Bankruptcies
- I. Commodities
  - 1. Types of commodity derivatives
    - a. Agricultural futures
      - (1) Livestock
      - (2) Soft commodities
    - b. Energy futures
    - c. Metals

# Global Body of Investment Knowledge

- (1) Precious
  - (2) Industrial
  - 2. Fundamental concepts
    - a. Convenience yield
    - b. Seasonal patterns
    - c. Relationships
      - (1) Cost of Carry
      - (2) Backwardation
  - 3. Analysis issues
    - a. Trading and growth of market
    - b. Contract specifications and delivery
    - c. Invoice price and delivery differentials
    - d. Cash and futures price quotations
  - 4. Spreads
    - a. Agricultural
      - (1) Intercrop spread
      - (2) Crush spread
    - b. Energy: crack spread
    - c. Precious metals: Gold/silver ratio
- J. Tangible assets with low liquidity

## **X. PORTFOLIO MANAGEMENT AND WEALTH PLANNING**

- A. Portfolio Concepts from Capital Market Theory
  - 1. Markowitz Portfolio Theory
    - a. Assumptions
      - (1) Multi-period models
    - b. Inputs
    - c. Efficient Frontier
      - (1) Estimating expected return
      - (2) Optimal portfolio
      - (3) Conditional distribution
    - d. Implementing portfolio theory
  - 2. Asset Pricing Models
    - a. Single factor models (e.g., Capital Asset Pricing Model (CAPM))
      - (1) Measurement of the risk premium
        - (a) Alternative methods of deriving the risk premia
      - (2) Variants on the risk-free rate of return
      - (3) Estimating the CAPM parameters
        - (a) Limitations of estimates
    - b. Multi-factor models
      - (1) Fundamental multi-factor model (e.g., BARRA)
      - (2) Arbitrage Pricing Theory (APT)
        - (a) Nature and estimation of risk parameters
        - (b) Applying the APT
      - (3) Problems of source data
  - 3. Efficient Market Hypothesis

# Global Body of Investment Knowledge

- a. Assumptions for informationally efficient markets
  - b. Alternative Efficient Market Hypotheses: weak form, semi-strong form, strong form
- B. Management of Individual/Family Investor Portfolios
- 1. The Private Client Marketplace and Firm Management
    - a. Global trends in wealth management and private banking
      - (1) Market
      - (2) Clients
      - (3) Products
      - (4) Competitors
      - (5) Adoption of an institution-like investment approach
      - (6) Strategic asset allocation
      - (7) Alternative investments
      - (8) Open architecture
    - 2. Collaboration and investment teams
    - 3. Employee management and remuneration
      - a. Attracting, motivating, and retaining desirable employees
    - 4. Service delivery platforms
      - a. Discretionary portfolio management
        - (1) Characteristics of mandate
          - (a) Relative return
          - (b) Absolute return
        - (2) Suitable client profiles
        - (3) Fee structures
      - b. Nondiscretionary portfolio management
        - (1) Characteristics of mandate
        - (2) Suitable client profiles
        - (3) Fee structures
    - 5. Institutions serving the private client
      - a. Family office
      - b. Private bank
      - c. Investment advisers
      - d. Brokers
      - e. Other
    - 6. Communicating with a team of professionals
    - 7. Attracting and retaining desirable clients
      - a. Developing a client retention strategy
      - b. Client referrals
      - c. Using intermediaries to build a wealth management business
    - 8. Analysis of the Client
      - a. Relationship management
        - (1) Personal characteristics of clients
        - (2) Understanding client needs
        - (3) Preparing for a client meeting
        - (4) Conducting client meetings
      - b. Fact gathering and analysis

# Global Body of Investment Knowledge

- (1) The information-gathering process
- (2) The extended client/family balance sheet
  - (a) Asset identification
    - (i) Financial
    - (ii) Nonfinancial
    - (iii) Closely-held
    - (iv) Location
      - a. Taxable
      - b. Tax-deferred
    - (v) Current arrangements for management
  - (b) Liability identification
    - (i) Location
    - (ii) Current arrangements for management
  - (c) Contingent assets and liabilities
  - (d) Analysis of net worth
- (3) Analysis of income, expenses, and saving
  - (a) Cash budgets
  - (b) Employee benefits
- (4) Lifestyle requirements and sources of income, wealth
- (5) Sources of risk
  - (a) Lifestyle/Income
  - (b) Property
  - (c) Longevity
  - (d) Personal
  - (e) Aspirational
- (6) Analysis of tax situation for individual/family
- (7) Analysis of liquidity requirements
- (8) Analysis of special circumstances
- (9) Analysis of family dynamics
  - (a) Family members and other persons of concern
  - (b) Bequest motives
  - (c) Succession
    - (i) Closely held businesses
    - (ii) Family leadership
    - (iii) Cultural and religious factors
  - (d) Behavioral concerns
    - (i) children
    - (ii) wealth
  - (e) Analysis of philanthropic interests
    - (i) Types of philanthropy
  - (f) Ethical sensitivities
    - (i) Socially responsible investing (SRI)
    - (ii) Environment, social, and governance investing (ESG)
  - (g) Religious sensitivities
    - (i) Islamic Finance
      - a. History And Growth Of Islamic Finance

## Global Body of Investment Knowledge

- b. Sources of Islamic Law
  - c. Principles Of Shari Governing Islamic Finance
  - d. The Ban on Interest & Financial Penalty For Late Payments
  - e. Participatory Finance
  - f. Mudarabah Investment Deposit
  - g. Salam (Forward Contract)
  - h. Sukuk Securities
  - i. Islamic Funds
  - j. Islamic Takaful Insurance
  - k. Managing Risk through Shari Compliant Solutions
  - l. Financial Reporting For Islamic Financial Institutions
  - m. Major Trends in Islamic Finance
- (10) Application of Behavioral Finance to Wealth Management
- (a) Definition and themes
  - (b) Psychological insights and foundations
  - (c) Loss aversion and mental accounting
  - (d) Behavioral finance insights into retirement plan design
  - (e) Limits to Arbitrage
  - (f) Neuro-economics
- (11) Analysis of Investor Psychology
- (a) Factors
    - (i) Personal
    - (ii) Cultural
    - (iii) Family
    - (iv) Emotional
    - (v) Life cycle
  - (b) Lifestyle security
9. Goal setting Objectives
- a. Establishing return requirements
    - (1) Lifestyle security
    - (2) Retirement
    - (3) Education Planning
      - (a) Tax advantages
        - (i) Planning for beneficiaries *inter vivos*
        - (ii) *Inter vivos* asset transfer
      - (b) Time horizon
      - (c) Understanding the needs of clients' children
      - (d) Current generation
      - (e) Next generations
      - (f) Impact on financial aid
      - (g) Education funding alternatives
    - (4) Support of family members
  - b. Bequest motives Risk tolerance
    - (1) Ability

# Global Body of Investment Knowledge

- (2) Willingness
- c. Factors affecting objectives
- d. Creating client risk profile
  - (1) Monte Carlo simulation
  - (2) Questionnaires
  - (3) Personality typing
- 10. Constraints
  - a. Liquidity
  - b. Time horizon
  - c. Tax exposure
    - (1) Types of tax
    - (2) Tax bracket
  - d. Legal and Regulatory
  - e. Unique circumstances
- 11. Investment Policy Statement
  - a. Client education
- 12. Investment Strategy and Asset Allocation
  - a. Portfolio Construction
  - b. Influence of Taxes on Investment Strategy
  - c. Tax managed asset strategies
    - (1) Fundamental concepts
    - (2) Tax systems
    - (3) Representative strategy types
    - (4) Impact of new legislation
    - (5) Onshore versus offshore centers
    - (6) Benefits and risks
    - (7) Regulatory considerations
    - (8) Role of tax timing in tax planning
    - (9) Tax-saving structures
    - (10) Identifying suitable and appropriate tax-efficient investments
      - (a) Criteria for identification and selection
      - (b) Determining the feasibility and practicality of implementing identified tax-efficient investments
    - (11) Factors affecting tax efficiency
      - (a) Portfolio turnover
      - (b) Inflows versus withdrawals
      - (c) Dividend yield versus capital gains
      - (d) Influence of portfolio size on investment vehicles
- 13. Investment Vehicles and Asset Class Exposures
  - a. Equities
  - b. Debt
  - c. Alternative assets
  - d. Tax-deferred or tax-exempt savings vehicles
  - e. Influence of risk and taxes in retirement products
  - f. Comparison of retirement savings vehicles
  - g. Using derivatives to improve tax efficiency

# Global Body of Investment Knowledge

14. Management of Personal Trusts
    - a. Choice of Trustee
    - b. Spending Rules
    - c. Managing with conflicting needs of income beneficiaries and remaindermen
  15. Wealth Transfer and Estate Planning
    - a. Wealth Management Process
    - b. Components of a financial plan
    - c. Compensation relationships
    - d. Defining the annual review process
    - e. Importance of a well-defined wealth transfer strategy
      - (1) Primary objectives
      - (2) Disposition of client assets
      - (3) Tax and expense minimization
    - f. Multicountry probate
    - g. Considerations of multiple passports and citizenships
    - h. Identifying and addressing tax and estate planning issues
    - i. Types of trust and insurance structures
    - j. Degrees of control
    - k. Levels of transfer cost reduction
    - l. Liquidation of retirement savings
    - m. Structure and elements of a will
    - n. Living trusts vs. the will
    - o. Design and use of trusts for inheritance
      - (1) Defective trusts
      - (2) Disclaimer
    - p. Duties and powers of trustees and other fiduciaries
    - q. Business succession planning
    - r. Using life insurance policies
    - s. Role of estate planning in the asset allocation decision
    - t. Administration of the estate
- C. Management of Institutional Investor Portfolios
1. Objectives
    - a. Return targets
      - (1) Differentiating accounting from funding measures
      - (2) Compounded v. arithmetic returns
    - b. Risk tolerance
      - (1) Ability
      - (2) Willingness
      - (3) Funding status of plan
      - (4) Enterprise risk
  2. Constraints
    - a. Liquidity
    - b. Time Horizon
      - (1) Importance of using multiple horizons
    - c. Tax Exposure

# Global Body of Investment Knowledge

- d. Legal and regulatory
- e. Unique Circumstances
- 3. Investment Policy Statement
  - a. Significance and importance
  - b. Restrictive guidelines
  - c. Dealing with investment committees
- 4. Governance Issues
  - a. Monitoring vs. Advisory
  - b. Governance Models
    - (1) Balancing corporate and investment fiduciary roles
- 5. Fiduciary Responsibility
- D. Pension Plans and Employee Benefit Funds
  - 1. Plan type selection
  - 2. Geographical structural differences
    - a. Japanese pension Plans
    - b. European pension Plans
    - c. Work-out Strategies by Country
  - 3. Investment policy design
    - a. Asset/Liability Modeling
    - b. Structuring Fund Risk
  - 4. Defined benefit Plans
    - a. Legal principles
    - b. Four interactive policies
      - (1) Benefits policy
      - (2) Funding policy
    - c. Investment Policy
      - (1) Accounting policy
    - d. Alternative management approaches
      - (1) Individual investor approach
      - (2) Institutional investor approach
      - (3) Funding ratio and asset/liability approach
        - (a) Accounting v. funding measures
    - e. Asset Allocation for defined benefit pension Plans
      - (1) Risk Capacity
      - (2) Shortfall Risk
      - (3) Liability Uncertainty
      - (4) Dedication strategies
      - (5) Return Targets and Shortfall Risks
    - f. Investment Programs
      - (1) Framework for implementation
      - (2) Internal vs. External Management
      - (3) Acquiring active managers
      - (4) Organizing Internal Management
    - g. Corporate finance implications
  - 5. Defined contribution plans
    - a. Investment policy development

# Global Body of Investment Knowledge

- b. Participant education
- c. Legal responsibilities
- d. Investment Strategies
  - (1) Indexing
  - (2) Active Management
  - (3) Investment options
    - (a) Mutual fund analysis and selection
  - (4) Manager selection and termination
  - (5) Implementation
- 6. Other Employee Benefit Plans
  - a. Money purchase
  - b. Cafeteria plans
  - c. Cash Balance Plans
  - d. Employee Stock Ownership Plans (ESOPs)
- 7. Investment policy statement
- E. Endowment Funds and Foundations
  - 1. Types
  - 2. Structure and organization
  - 3. Legal responsibilities of Board of Trustees
  - 4. Sponsor influence on investment policy and strategy
  - 5. Creative tension anomaly (i.e., maximizing income vs. growing principal)
  - 6. Spending policy
  - 7. Investment policy statement
  - 8. Selection of investment advisers
  - 9. Fiduciary responsibilities for risk management
  - 10. Liquidity and structure to meet spending/gifting requirements
  - 11. Diversifying concentrated holdings
- F. Insurance companies
  - 1. Types of institution
    - a. Life insurance companies
      - (1) Investment policies
      - (2) Strategies
    - b. Property and Casualty Insurance
    - c. Other insurance companies
  - 2. Investment Policy Approaches
    - a. Asset/liability approach
    - b. Spread management
    - c. Effects of disintermediation
    - d. Mark to Market
    - e. Tax Efficiencies
- G. Mutual Funds, Pooled Funds, and ETFs
- H. Other Institutional Investors
  - 1. Banks (e.g., spread management)
  - 2. Non-financial corporations (e.g., cash management)
- I. Investment Manager Selection
  - 1. Issues in multiple manager environment

# Global Body of Investment Knowledge

- a. Manager selection
  - b. Management of managers
    - (1) Optimizing manager structure
    - (2) Global multi-manager portfolio
    - (3) Multiple manager misfit control
    - (4) Manager termination
    - (5) Control/Performance
    - (6) Role of overlay manager
- J. Economic Analysis and Capital Market Expectations
- 1. Key macroeconomic factors affecting asset returns
    - a. Sources of data and analysis
    - b. Real (non-financial) economy role in security returns
    - c. Economic variables relevant to security prices
    - d. Global capital flows
    - e. Speculative Bubbles
    - f. Contagion
    - g. Central bank role in asset returns
      - (1) Role of zero inflation policies
      - (2) Impact of monetary policy
    - h. Impact of fiscal policy
  - 2. Macro valuation model
    - a. Forecasting basics
    - b. Assessing accuracy
    - c. Measurement error correction
    - d. Determination and forecasting of exchange rates
      - (1) Fundamental issues
      - (2) Forward rate bias
      - (3) Forecasting accuracy
  - 3. Developing macroeconomic expectations
    - a. For a global portfolio
    - b. Industrialized economies
    - c. Emerging markets
      - (1) Market Integration
  - 4. Macroeconomic forecasts in determining asset class/security return expectations
    - a. Using economic forecasts for asset allocation
    - b. Using market forecasts for sector rotation
    - c. Using forecasts for country allocation
  - 5. Tax Efficiency
    - a. Establishing after-tax risk and return assumptions
    - b. Tax-efficiency and return characteristics of various asset classes
- K. Asset Allocation
- 1. Impact on portfolio returns
  - 2. Portfolio theory foundations
    - a. Asset class return distribution assumptions
      - (1) Standard deviation of class returns

# Global Body of Investment Knowledge

- (2) Asset class correlations
- b. Constraints (e.g., no use of derivatives)
- c. Investment horizon
  - (1) Portfolio composition
  - (2) Utility approach
- 3. Determination of asset mix
  - a. Strategic
  - b. Tactical
    - (1) Tactical asset allocation in stable and unstable markets
  - c. Optimization
    - (1) Using constraints
    - (2) Optimization errors
  - d. Impact of volatility
- 4. Assessment of opportunities
  - a. Framework for allocating assets globally
    - (1) Steps
    - (2) Techniques: countries vs. sectors/industries
    - (3) Multi-risk considerations
    - (4) Tactical global allocation
  - b. Global asset allocation strategy
    - (1) Philosophy and process
    - (2) Global model
    - (3) Role of currencies
    - (4) Market integration consequences
    - (5) Role of monetary conditions
- 5. Selection of asset classes
  - a. Benchmark relative asset allocation
  - b. Quantified Objective
- 6. Specific Asset Allocation Investor Issues
  - a. Individual Investors
    - (1) Human capital as asset class
    - (2) Mechanized models (e.g., Financial Engines)
    - (3) Tax Aware Asset Allocation
      - (a) Efficient frontier analysis in a taxable environment
      - (b) Establishing after-tax risk and return assumptions
      - (c) Tax-efficiency and return characteristics of various asset classes
      - (d) After-tax mean-variance optimization (MVO)
        - (i) Asset allocation and behavioral finance
        - (ii) Absolute return strategies
        - (iii) Issues in classical finance relating to markets
        - (iv) Modern portfolio theory beyond its sell-by date
    - (4) Asset location, protection and transfer
      - (a) Location: ownership, access to property, taxation
      - (b) Choice of favorable locations
      - (c) Tax qualified accounts

## Global Body of Investment Knowledge

- (i) Credit shelter trusts
        - (ii) Marital trusts
        - (iii) Generation-skipping tax trusts
        - (iv) Retirement accounts
      - (d) Dynamic location issues
      - (e) Changes in withdrawal strategy and optimal asset location
    - (5) Integrating nonfinancial and nontraditional assets into the asset allocation process
    - (6) Non-discretionary assets and their effects on asset allocation
      - (a) Personal residence
      - (b) Employee stock and stock options
  - b. Institutional Investors
    - (1) Endowments
      - (a) Protecting spending
    - (2) Elements of an effective asset allocation policy
    - (3) Country of origin influence
- L. Portfolio Construction and Revision
  - 1. Inputs to portfolio construction and revision
    - a. Mean variance and scenario based
    - b. Investment Policy and Guidelines
    - c. Using quantitative inputs
    - d. Simulation methods
  - 2. Diversification issues
    - a. International
      - (1) Benefits
      - (2) Sources of returns
      - (3) Method of country selection
      - (4) Impact of country of origin
      - (5) Impact of liquidity
    - b. Diversification types
      - (1) Asset
      - (2) Time
      - (3) Other
        - (a) Alternative risk drivers and return sources
    - c. Sector and Industry Selection
    - d. Role of inflation protected securities
    - e. Market correlations
    - f. Impact of imperfect diversification
  - 3. Implementation issues
    - a. Global Custody
    - b. Transactions costs
      - (1) Measuring trading costs
      - (2) Impact
      - (3) Trading efficiency
      - (4) Trading bias
      - (5) Foreign exchange translation

# Global Body of Investment Knowledge

- c. Sources of implementation inefficiency (“leakage”) Constraints
  - 4. Portfolio monitoring and rebalancing
    - a. Approaches to portfolio rebalancing
    - b. Issues in portfolio rebalancing
      - (1) Frequency
      - (2) Extensiveness
      - (3) Transaction costs
    - c. Uses of index and futures funds
- M. Equity Portfolio Management Strategies
  - 1. Active management
    - a. Dimensions
    - b. Optimal residual risk
    - c. Benchmark selection
    - d. Style
      - (1) Types
        - (a) Value
        - (b) Growth
        - (c) Size
      - (2) Management
      - (3) Rotation
      - (4) Returns
        - (a) Inconsistency
      - (5) Style weights
      - (6) Style drift
      - (7) Limitations
    - e. Long-short strategies
    - f. The Treynor-Black Optimizing Model
    - g. Factor models
    - h. Contrarian strategies
      - (1) Within industries
    - i. Specialized managers (e.g., REIT managers)
    - j. Scope of active managers
    - k. Alpha sources
    - l. Portfolio segmentation techniques
    - m. Tracking error optimization
      - (1) Setting tactical ranges
    - n. Market cap issues
      - (1) Small cap portfolios
      - (2) Quantitative management
    - o. Tax aware equity investing
    - p. Costs vs. Benefits of active management
    - q. Law Constrained active management
    - r. Effect of portfolio size
  - 2. Passive management
    - a. Motivation
    - b. Economic impact

# Global Body of Investment Knowledge

- c. Small- and Mid-cap Indexing
  - (1) Replication vs. Representation
- d. Index mutual funds
  - (1) Challenges to indexing
- e. Exchange traded funds or shares
- f. Emerging markets
- g. Derivatives based
- 3. Semi-active strategies
  - a. Enhanced indexing
  - b. Core plus active
  - c. Allocating between active and passive
  - d. Integrating active and passive
- 4. Cross-border strategies
  - a. Fundamentals
  - b. Country vs. sector/industry vs. security
  - c. Country vs. sector/industry influences
  - d. National vs. Global influences
  - e. Global industry based strategy
  - f. Cross country correlations
  - g. Determination of the degree of international exposure
  - h. Correlations among markets
  - i. Impact of volatility
  - j. Stock selection
  - k. Global long-short
  - l. Global value style
  - m. Global sector rotation
  - n. Market cap considerations/issues
  - o. Global equity indices
    - (1) Benchmark error
    - (2) Investability and weighting
  - p. Market integration
  - q. Country baskets (WEBs)
  - r. Emerging market indices
  - s. Liquidity consolidations
- 5. Derivatives enabled strategies
  - a. Role and uses
  - b. Using futures and swaps
    - (1) Equitization of cash
  - c. Alpha transport (i.e., portable alpha)
  - d. Use in international portfolios
  - e. Using to alter returns
- 6. Socially conscious investing
  - a. Costs
  - b. Performance Effects
  - c. Global considerations
  - d. Issues for endowments

# Global Body of Investment Knowledge

- e. Legal aspects
  - f. Diversification issues
  - 7. Tax management strategies
    - a. Tax-efficient equity strategies
    - b. Structuring capital gains and losses as a long-term tax management strategy
    - c. Turnover minimization
    - d. Tax loss harvesting and warehousing
    - e. Tax deferral of unrealized gains
    - f. Step-up in basis
    - g. Donating appreciated assets
    - h. Income shifting
    - i. Income splitting
    - j. Avoiding wash sales
  - 8. Structuring tax-efficient portfolios
    - a. Structures
    - b. Construction models
    - c. Optimizing asset allocation among various entities
    - d. The use of derivatives
    - e. Portfolio implications of fundamental market shifts
    - f. Costs of rebalancing/not rebalancing
    - g. Tax efficiency of alternative investments included in portfolios
- N. Fixed Income Portfolio Management Strategies
- 1. Active management
    - a. Benchmark selection
    - b. Yield curve positioning
    - c. Duration altering strategies based on level, slope and curvature of yield curves
    - d. Riding the Yield curve
    - e. Optimizing the Sharpe ratio
    - f. Fundamental analysis
    - g. Corporate bond strategies
      - (1) Return components
      - (2) Investment grade
      - (3) High yield bonds
      - (4) Emerging market bonds
    - h. Municipal securities
      - (1) Distressed debt
      - (2) Default risk correlation
    - i. Mortgage backed securities
    - j. Collateralized debt obligation
    - k. Asset-backed securities
    - l. Trading strategies and constraints
    - m. Implementation
      - (1) Handling Liquidity Issues
  - 2. Passive management

# Global Body of Investment Knowledge

- a. Mean variance analysis
- b. Impact of non-normality and regime changes
- c. Performance relative to active
- d. Reasons and procedures for indexing
- e. Bond indexing parameters
  - (1) Duration
  - (2) Sector
  - (3) Quality Spreads
  - (4) Issuer exposure
3. Semi-active strategies
  - a. Enhanced indexing
  - b. Bond mutual funds
  - c. Core plus
4. Immunization Strategies
  - a. Liability funding strategies
  - b. Contingent immunization
  - c. Single liability immunization
  - d. Multiple liability immunization
  - e. Cash flow matching
  - f. Spread Immunization
  - g. Shortfall probability minimization
  - h. Immunization and yield curve shifts
  - i. Scenario hedging
5. Derivatives enabled strategies
  - a. Concepts
  - b. Tools
  - c. Role and uses of derivatives enabled strategies
  - d. Porting alpha
  - e. Controlling yield curve risks
  - f. Controlling interest rate risks
  - g. Controlling credit risk
  - h. Inverse floaters
  - i. Credit derivatives
  - j. Methods for improving hedging effectiveness
  - k. Currency hedged portfolios
6. Cross-border issues
  - a. Theory
  - b. Currency risk management
  - c. Country risk analysis
  - d. Developing country credit risk analysis
  - e. Volatility
  - f. Implications of market integration
  - g. Accounting differences
7. Tax management strategies
  - a. Tax-efficient fixed income strategies

## Global Body of Investment Knowledge

- b. Structuring capital gains and losses as a long-term tax management strategy
  - c. Shifting a percentage of funds into municipal bonds (For U.S. residents)
  - d. Turnover minimization
  - e. Tax loss harvesting and warehousing
  - f. Tax deferral of unrealized gains
  - g. Step-up in basis
  - h. Donating appreciated assets
  - i. Income shifting
  - j. Income splitting
  - k. Avoiding wash sales
8. Structuring tax-efficient portfolios
- a. Structures
  - b. Construction models
  - c. Optimizing asset allocation among various entities
  - d. The use of derivatives
  - e. Portfolio implications of fundamental market shifts
  - f. Costs of rebalancing/not rebalancing
  - g. Tax efficiency of alternative investments included in portfolios
- O. Alternative Investment Portfolio Management Strategies
- 1. Real Estate
  - 2. Appropriate allocation framework
  - 3. Traditional diversification in real estate portfolios
    - a. Systematic and unsystematic risk in real estate
    - b. Justification for inclusion
    - c. Within real estate strategies
    - d. Use and comparison of Direct Investment Portfolios (DIPs), Stock Investment Portfolios (SIPs), and various forms of Real Estate Investment Trusts (e.g., REITs, EREITs, MREITs, hybrid REITs)
    - e. Effect of leverage on diversification
    - f. Relationship to other asset classes
  - 4. Analysis of critical attributes
    - a. Systematic factors analysis
    - b. Transaction costs and clientele effects
    - c. Number and size of properties
  - 5. Factors influencing real estate returns
    - a. Leverage
      - (1) Uses for tax exempt investors
    - b. Type of vehicle, e.g. commercial vs. apartments
  - 6. Real Estate in a multiple asset class portfolio
    - a. Contribution to portfolio diversification
    - b. Inflation hedging attributes
    - c. Limitations of real estate data
    - d. Biases in simplistic mean-variance analysis
    - e. Real estate portfolios vs. REITS
    - f. REITs in International Portfolios

# Global Body of Investment Knowledge

- g. Real estate allocation and “optimal” real estate exposure
- 7. International real estate
  - a. Property types and geographical benefits and correlations
  - b. Role in mixed-asset portfolio diversification
  - c. Effect of international real estate
  - d. Inflation hedging characteristics
  - e. Emerging markets real estate
- 8. Portfolio restructuring
- 9. Specific investor issues
  - a. Institutional investors
    - (1) Using consultants
    - (2) Structuring of the real estate department
    - (3) Due diligence
    - (4) Behavioral Finance Issues
      - (a) Limits to Arbitrage
      - (b) Neuro-economics
  - b. Individual investors
    - (1) Real estate as an asset class
    - (2) Influence of home mortgage on risk tolerance
- 10. Other Alternative investments
  - a. funds
  - b. Venture Capital
- 11. Private Equity capital portfolios
  - a. Strategies and techniques
- 12. Private Equity
- 13. Hedge funds
  - a. Asset class
  - b. Diversification benefits
  - c. Structure
  - d. Benchmarks
  - e. Performance measurement
  - f. Role in individual portfolios
  - g. Selecting hedge funds
- P. Risk Management
  - 1. Firmwide Risk Management
    - a. Fundamental framework
      - (1) Investment vs. Operational
      - (2) Model Risk vs. Input Risk
      - (3) Potential Inputs
    - b. Developing risk management policy and programs
      - (1) Analysis
      - (2) Fiduciary duties
      - (3) Plan sponsor role
      - (4) Behavioral factors
      - (5) Operational and Systems Aspects
    - c. Risk Budgeting

# Global Body of Investment Knowledge

- (1) Portable alpha
- d. Sources of risk
  - (1) Sovereign and political risks
    - (a) Emerging markets
  - (2) Economic and financial risks
  - (3) Regulatory and fiscal risks
  - (4) Currency risk
  - (5) Factor risks
  - (6) Option positions
  - (7) Credit risk
  - (8) Risk governance and the role of the Board of Directors
- e. Managing market, credit, and other risks
  - (1) Structure of risk management systems
  - (2) Managing market risk
  - (3) Managing credit risk
  - (4) Managing other risks
  - (5) Best practice
- f. Value at Risk (VAR) and Other Approaches to Risk Measurement and Management
  - (1) Basic Concepts
  - (2) Analytical/Variance-Covariance/Delta-Normal Method
  - (3) Historical Method
  - (4) Monte Carlo Simulation
  - (5) Uses and Limitations of VAR
  - (6) Application in Bond Portfolios
  - (7) Stress Testing
  - (8) Scenario Analysis
  - (9) Extreme Value Theory and Analysis
  - (10) Sources of Information (e.g., RiskMetrics)
  - (11) Incremental VAR
  - (12) Marginal VAR
  - (13) Condition Value at Risk (CVAR)
  - (14) Impact of Fat Tails/Extreme Events (Black Swan Event)
- g. Capital adequacy
- 2. Portfolio risk management
  - a. Mechanics of hedging
    - (1) Estimating the hedge ratio
    - (2) Results of the hedge
    - (3) Managing the hedge
    - (4) Accounting issues
    - (5) Tax considerations
    - (6) Hedging option positions
    - (7) Asset-liability vs. asset only
  - b. Managing interest rate risk with derivatives
    - (1) Managing to a Target Duration
      - (a) Determining the Number of Contracts

## Global Body of Investment Knowledge

- (b) Dollar Duration per Futures Contract
  - (c) Dollar Duration for a Futures Position
- (2) Hedging with interest rate futures
  - (a) Determining the appropriate hedging instrument
  - (b) Determining the target for the hedge risk and expected return in a hedge
    - (i) Target for hedges held to delivery
    - (ii) Target for hedges with short holding periods
    - (iii) Basis risk
- (3) Determining the number of futures contracts
  - (a) Refining for changing yield spread
- (4) Monitoring and evaluating the hedge
- c. Managing Interest Rate Risk with Swaps
  - (1) Dollar Duration of a Swap
  - (2) Applications
    - (a) Asset/Liability Management
    - (b) Structured Finance Applications
    - (c) Corporate Finance Applications
    - (d) Creating Synthetic Securities
- d. Managing Interest Rate Risk with Options
  - (1) Basic Hedging Strategies
    - (a) Protective Put Buying Strategy
    - (b) Covered Call Writing Strategy
    - (c) Collar Strategy
    - (d) Selecting the “Best” Strategy
  - (2) Protective Put Buying Strategy Using Futures Options
    - (a) Selecting the Strike Price
    - (b) Calculating the Number of Options Contracts
    - (c) Outcome of the Hedge
  - (3) Covered Call Writing Strategy with Futures Options
  - (4) Hedging with Options on Cash Instruments
- e. Managing risk for embedded-risk securities (e.g., hedging mortgage-backed securities (MBS))
  - (1) Hedging MBS with Futures and Options
  - (2) Mortgage Hedge Ratios
    - (a) Model-Based versus Market-Based (Empirical) Hedge Ratios
  - (3) Creating Synthetic MBS
- f. Managing currency risk
  - (1) The hedging decision
    - (a) Investment policy implications
  - (2) Strategies
    - (a) Active management
    - (b) Overlay management
      - (i) Strategy
      - (ii) Scenario based
      - (iii) Implementation

# Global Body of Investment Knowledge

- (iv) Overlay managers
    - (v) Utility
  - (3) Time horizon
  - (4) Market integration implications
  - (5) Emerging market currencies
    - (a) Impact on real returns
    - (b) Cross hedging
  - g. Risk management strategies
    - (1) Using factor models
    - (2) Framework for complex organizations
    - (3) Protective strategies with options and futures
    - (4) Portfolio Insurance
  - h. Alternative assets risk management
- Q. Execution of Portfolio Decisions (Trading)
- R. Performance Measurement, Attribution and Appraisal
  - 1. Return measures (arithmetic, geometric, time weighted, dollar weighted)
    - a. Return measurement of derivatives enhanced positions
    - b. Rates-of-Return for Real Estate investments
    - c. Rates-of-Return for Private Equity
    - d. Rates-of-Return for Portfolios Containing Futures and Options
    - e. Rates-of-Return reflecting Prior-Period Adjustments
  - 2. Risk adjusted measures
    - a. Sharpe Ratio
    - b. Treynor Ratio
    - c. Jensen's Alpha
    - d. Appraisal Ratio (i.e., alpha/residual risk)
    - e.  $M^2$  Measure
      - (1) Style/Risk-adjusted Performance
    - f. Information Ratio
      - (1) Calculation and interpretation
      - (2) Prediction capability
    - g. Performance consistency
    - h. Tracking error
    - i. Sortino ratio
    - j. Ex-Post Hedge Fund Risk Assessment
    - k. Calmar Ratio
    - l. Sterling Ratios
    - m. Qualitative Factor Approach to Hedge Fund Risk Assessment
    - n. Relationship between measures
    - o. Effect of expenses
    - p. Selection of the right measure
    - q. Real estate benchmarks
      - (1) Characteristics
    - r. Role in benchmark selection
      - (1) Alternative assets
    - s. Effect of random events

# Global Body of Investment Knowledge

- t. Downside risk-adjusted measures
- u. Effect of long horizons
- v. After-tax/pre-tax
- 3. Benchmark selection
  - a. Definition/construction
  - b. Properties/interpretation
  - c. Quality
  - d. Types
  - e. Taxability
  - f. Role in style analysis
  - g. Comparison pitfalls
  - h. Assumptions and conditions necessary for measure to be valid
  - i. Custom benchmarks
  - j. Selection of Liability-Based Benchmarks
  - k. Selection of Strategic Benchmarks
- 4. Performance attribution
  - a. Asset class analysis
    - (1) Equities
      - (a) Valuing security analysis
    - (2) Debt
      - (a) Multiple currency attribution
    - (3) Real estate and alternative investments
      - (a) Performance attribution
      - (b) Commingled fund performance
      - (c) Risk and Return Measurement Problems
    - (4) Global
      - (a) Constraints and practical issues in implementation
      - (b) Role and importance of currency
  - b. Style analysis
    - (1) Style beta
    - (2) Relative returns
    - (3) Role in mutual fund performance evaluation
  - c. Measuring manager skill
    - (1) Appraising Value Added
    - (2) Investment Philosophy
    - (3) Manager Continuation Policies
    - (4) Quality Control Charts
  - d. Multi-Period Smoothing
  - e. Total-Fund Level
  - f. Multicurrency
  - g. Long–Short and Market-Neutral Strategies
  - h. Zero-Weight Sectors
  - i. Multifactor Models
- 5. Peer group comparisons (i.e., distinguished from benchmark comparisons)
  - a. Universe construction
  - b. Issue of non-investability

# Global Body of Investment Knowledge

- c. Tactical asset allocation performance
- d. Survivorship Bias
- 6. Specific Investor Issues
  - a. Individual Investors
    - (1) Benchmark Selection
    - (2) Benchmark Modification
  - b. Institutional Investors
    - (1) Non-traditional strategies
- 7. Using VAR for performance evaluation
- S. Presentation of Performance Results
  - 1. Global Investment Performance Standards™ (GIPS™)
  - 2. CFA Institute Local regulations
    - a. Government
    - b. Self-regulatory Organizations
    - c. Interaction of local and GIPS regulations