CFA LEVEL 1

STUDY SESSION 01

ETHICAL & PROFESSIONAL STANDARDS
1. Code Of Ethics And Standards Of Professional Conduct

- All CFA Institute members and candidates are required to comply with the Code and Standards.

- The CFA Institute Bylaws are based on two primary principles:
  - Fair process to member and candidate
  - Confidentiality of proceedings

- The CFA Institute Board of Governors maintains oversight and responsibility through the Disciplinary Review Committee (DRC).

- The CFA Designated Officer directs Professional Conduct Staff, conducts professional conduct inquiries, and is responsible for the enforcement of the Code and Standards.

- Process for the enforcement of the Code and Standards:
  - When an inquiry is initiated, the Professional Conduct staff conducts an investigation that may include:
    - Requesting a written explanation from the member or candidate.
    - Interviewing the member or candidate, the member or candidate's employer, and third parties.
    - Collecting documents and records in support of the investigation.
    - Upon reviewing the material obtained during the investigation, the Designated Officer may:
      - Conclude the inquiry with no disciplinary sanction.
      - Issue a cautionary letter.
      - Continue proceedings to discipline the member or candidate.
      - If finding that a violation of the Code and Standards occurred, the Designated Officer proposes a disciplinary sanction.
      - Accepted by member, rejected by member, the matter is referred to a hearing by a panel of CFA Institute members.

- Six components of the Code of Ethics:
  - Act with integrity, competence, diligence, respect and in an ethical manner.
  - Integrity of investment profession & interest of clients above personal interest.
  - Care & judgment.
  - Practice ethics & encourage others to practice.
  - Integrity & rules of capital markets.
  - Professional competence.

- Seven Standards of Professional Conduct:
  - Professionalism.
  - Integrity of Capital markets.
  - Duties of Clients.
  - Duties to Employers.
  - Investment analysis, Recommendations & Actions.
  - Conflict of interest.
  - Responsibilities as a CFA Institute member or CFA Candidate.
2.2 Standard II
INTEGRITY OF CAPITAL MARKETS

A. Material nonpublic information (MNI)

- Definition of "Material nonpublic information"
  - Must be particularly aware of info selectively disclosed by corporations

- Guidance
  - Analysis of Public info + nonmaterial nonpublic info --> Investment conclusion
    - Analysts are free to act on this collection of info without risking violation
    - Analysts should save and document all their research

  - Make reasonable efforts to achieve public dissemination of material info
    - If public dissemination is not possible,
      - Must communicate the info only to the designated supervisory and compliance personnel within the firm
      - Must not take investment action on the basis of the info

  - RPC
    - Must not knowingly engage in conduct inducing insiders to privately disclose MNI
    - Encourage firms to adopt compliance procedures preventing misuse of MNI
    - Develop & follow disclosure policies to ensure proper dissemination
    - Use "firewall"
    - Prohibition of all proprietary trading while firm is in possession of MNI may be inappropriate

B. Market manipulation

- Definition
  - Transactions that deceive market participants
  - Transactions that artificially distort prices or volume
  - Securing a controlling, dominant position in a financial instrument to exploit and manipulate price of a related derivative/or underlying asset
  - Dissemination of false or misleading info
    - Including spreading false rumors to induce trading by others

- Standard II(B) not meant to
  - Prohibit legitimate trading strategies
  - Prohibit transactions done for tax purposes

The intent of action is critical to determining whether it is a violation of this Standard
2.3 Standard III

DUTIES TO CLIENTS

A. Loyalty, prudence, and care

- Duty of loyalty
- "Soft dollars*
- "Duty of prudence"
- Submit to clients at least quarterly itemized statements
- Submit to clients at least quarterly itemized statements
- Review investments periodically
- Establish policies & procedures with respect to proxy voting and the use of client brokerage
- Encourage firms to address some topics (p. )

B. Fair dealing

- "Fairly" vs "equally"
- Standard III(B) addresses the manner of disseminating investment recommendations or changes in prior recommendations to clients
- Ensure fair opportunity to act on
- Encourage firms to design equitable system to prevent selective, discriminatory disclosure
- Material changes should be communicated to all current clients
- Clients who don't know changes and therefore place orders contrary to a current recommendation should be advised of the changed recommendation before the order is accepted

C. Suitability

- In investment advisory relationships
- In case of unsolicited trade requests unsuitable for client
- Be sure to gather client info in the form of an IPS and make suitability analysis prior to making recommendation/taking investment action
- Inquiry should be repeated at least annually/prior to material changes
- If clients withhold info → suitability analysis must be done based on info provided
- Risk analysis
- Fund managers → Be sure investments are consistent with the stated mandate
- RPC Written IPS

- Investors' objectives and constraints should be maintained and reviewed periodically to reflect any changes in clients' circumstances

D. Performance presentation

- Guideline
- Research analysts promoting the success of accuracy of their recommendations
- If the presentation is brief, must make available to clients and prospects the detailed info upon request
- RPC GIPS

- Standard III(E) is applicable when members receive info
- Comply with applicable laws
- When in doubt → consult with compliance department/ outside counsel before disclosing

E. Preservation of confidentiality

- Standard III(E) does not prevent cooperating with an investigation by CFAI PCP

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2.4 Standard IV
DUTIES TO EMPLOYERS

**A. Loyalty**

- Employer-employee relationship
  - Guidance
    - In matters related to their employment, members and candidates must not engage in conduct that harms the interests of the employer
    - Comply with policies and procedures established by employers that govern employer-employee relationship
    - Standard IV(A) does not require to place employer interests ahead of personal interests in all matters
    - The relationship imposes duties and responsibilities on both parties

- Independent practice
  - Abstain from independent competitive activity that could conflict with employer's interests
  - Provide notification to employer, obtain consent from employer in advance

- Leaving an employer
  - Planning to leave, must continue to act in employer's best interest
  - Must
    - Firm records or work performed on behalf of firm stored on a home computer should be erased or returned to employer
    - Must not
      - engage in activities conflicting with duty until resignation effective
      - contact existing clients/potential clients prior to leaving for soliciting
      - take records of files to a new employer without written permission
    - Free to make arrangements/preparations provided that not breaching duty of loyalty
  - Applicable non-compete agreement

- Whistle blowing
  - Nature of employment
    - Obtain written consent from employer before accepting compensation or other benefits from third parties...

**B. Additional compensation arrangements**

- RPC
  - Should make an immediate written report to their employers

- Guidance
  - Must have in-depth knowledge of the Code & Standards
  - Apply knowledge in discharging supervisory responsibilities
  - Delegation of supervisory duties does not relieve members of supervisory responsibility
  - Instruct subordinates methods to prevent and detect violations
  - Make reasonable efforts to detect violation of laws, rules, regulations, and Code & Standards

- Guidance
  - Establish and implementing Compliance procedures
  - Must understand what constitutes an adequate compliance system
  - Make reasonable efforts to see that appropriate compliance procedures are established, documented, communicated to covered personnel and followed
  - Bring an inadequate compliance system to senior managers's attention & recommend corrective action
  - If clearly cannot discharge responsibilities 'cos of absence of compliance system,
    - -->decline in writing to accept responsibilities
    - promptly initiate investigation
    - take steps to ensure no repetition
  - In case of employee's violation,
    - promptly initiate investigation
    - take steps to ensure no repetition

**C. Responsibilities of supervisors**

- RPC
  - If there is a violation
    - Respond promptly
    - Conduct a thorough investigation
  - Recommend employer to adopt a code of ethics
2.5 Standard V INVESTMENT ANALYSIS, RECOMMENDATIONS & ACTIONS

A. Diligence and reasonable basis

- The application of Standard V(A) depends on investment philosophy followed by the member, role of member in the investment decision-making process, support and resources provided by employer.
- Must make reasonable efforts to cover all pertinent issues when arriving at recommendation.
- Provide or offer to provide supporting info to clients when making recommendations/changing recommendations.
- Using secondary or third-party research, must make reasonable and diligent efforts to determine whether 2nd/3rd party research is sound.
- Group research and decision making. If member does not agree with the independent and objective view of the group, must not necessarily have to decline to be identified if believing consensus opinion has reasonable & adequate basis. Should document member's difference of opinion with group.

B. Communication with clients and prospective clients

- Standard V(B) addresses conduct with respect to communicating with clients.
- Communication is not confined to written form but via any means of communication.
- Developing and maintaining clear, frequent, and thorough communication practices is critical.
- Must distinguish clearly between facts & opinions, present basic characteristics of the analyzed security in preparing research report, adequately illustrate to clients & prospective clients the manner of conducting investment decision-making process, keep them informed with respect to changes to the chosen investment process.
- Brief communications must be supported by background report or data on request.
- Capsule form recommendations should notify clients that additional info and analyses are available from the producer of the report.
- Investment advice based on quantitative research and analysis must be supported by readily available reference material in a manner consistent with previously applied methodology or with changes highlighted.
- Should outline known limitations, consider principal risks in investment analysis, report.

C. Record retention

- In hard copy or electric form, fulfilling regulatory requirements may satisfy the requirements of this Standard.
- Must explicitly determine whether it does.
- Absence of regulatory guidance indicates CFAI recommends maintaining records for at least 7 yrs.
### 2.6 Standard VI

**CONFLICTS OF INTEREST**

#### A. Disclosure of conflicts

- **Guidance**
  - Managing conflicts is a critical part of working in the investment industry. Best practice is to avoid conflicts of interest when possible. If not, disclosure is necessary.
  - Disclosures must be prominent and made in plain language, in a manner to effectively communicate the info to clients.
  - Relationships:
    - Investment banking
    - Underwriting and financial relationships
    - Broker/dealer market-making activities
    - Material beneficial ownership of stock
  - All matters may impair objectivity.
  - Investment personnel also serve as directors.
  - Material beneficial ownership of stock poses conflicts of interest.
  - Best practice is to avoid conflicts of interest when possible. If not, disclosure is necessary.

- **Disclosure to clients**
  - Relationships:
    - Investment banking
    - Underwriting and financial relationships
    - Investment personnel also serve as directors.
    - Material beneficial ownership of stock poses conflicts of interest.
  - Best practice is to avoid conflicts of interest when possible. If not, disclosure is necessary.
  - Disclosures must be prominent and made in plain language, in a manner to effectively communicate the info to clients.
  - Should disclose:
    - Material beneficial ownership interest in securities investment recommended.
    - Procedures for reporting requirements for personal transactions.
    - Interest in securities, investment recommended.
    - Procedures for reporting requirements for personal transactions.
  - What?
    - Same circumstances with clients.
    - Any potential conflict situation.
  - How?
    - Enough info.
    - Must disclose:
      - Special compensation arrangements with employer that might conflict with client interest.
      - Disclosure to clients info that fee based on a share of capital gains.
      - Disclose as a footnote to research report published if members have outstanding agent options to buy stocks as a part of compensation package.
  - Other requirements:
    - Must comply with employer’s restrictions regarding conflict of interest.
    - Must take reasonable steps to avoid conflicts.
    - If conflicts occur inadvertently, must report them promptly.

- **RPC**
  - Should disclose special compensation arrangements with employer that might conflict with client interest.
  - Document request & may consider dissociating from the activity if firm does not permit disclosure of special compensation arrangements.
  - Disclose to clients info that fee based on a share of capital gains.
  - Disclose as a footnote to research report published if members have outstanding agent options to buy stocks as a part of compensation package.

#### B. Priority of transactions

- **Guidance**
  - Clients & employers’ transactions have priority.
    - Personal investment positions or transactions should never adversely affect client investments.
    - May occur:
      - Client is not disadvantaged by the trade.
        - Investment professional does not benefit personally from trades undertaken for clients.
        - Investment professional complies with applicable regulatory requirements.
      - Make sure:
        - Must not convey such info.
        - Must not convey such info.
        - Must not convey such info.
    - Having knowledge of pending transactions, assess to info during normal preparation of research recommendations.
    - May undertake personal transactions after clients & employers have had adequate opportunity to act on recommendation.
    - Family accounts (that are client accounts) should be treated like other accounts if member has beneficial ownership.
    - May still be subject to pre-clearance or reporting requirements.

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#### C. Referral fees

- **Inform whom**
  - Employer
  - Client
  - Prospective client
  - Compensation
  - Consideration
  - Benefit
  - Received from, or paid to, others
  - Before entry into any formal agreement
  - Nature of the consideration or benefit

- **How**
  - Must disclose:
    - Compensation received from, or paid to, others.
    - Before entry into any formal agreement.
    - Nature of the consideration or benefit.
    - Consideration.
    - Benefit.
    - Compensation received from, or paid to, others.
2.7 Standard VII
RESPONSIBILITIES
AS CFA MEMBER / CANDIDATE

A. Conduct as members and candidates in the CFA program

- Prohibiting any conduct that undermines the integrity of the CFA charter
  - Cheating on CFA exam or any exam
  - Not following rules and policies of the CFA program
  - Giving confidential info on the CFA Program to candidates or the public

- Not precluded from expressing opinion regarding the CFA Program or CFAI

B. Reference to CFA Institute, the CFA Designation and the CFA program

- Preventing promotional efforts that make promises or guarantees tied to the CFA designation
  - Over-promise the competence of an individual
  - Over-promise future investment results

- Applies to any form of communication

- To maintain CFAI membership

- Remit annually to CFAI a completed Professional Conduct Statement

- Pay applicable CFAI membership dues on an annual basis

- Using the CFA designation
  - (p. Curriculum)

- Referencing candidacy in the CFA program
  - (p. Curriculum)

- Proper using of the CFA marks
  - (p. Curriculum)
3. Introduction to Global Investment Performance Standards (GIPS)

a1. Why were the GIPS Standards created?

a2. Who can claim compliance?

a3. Who benefit from Compliance?

b. Construction & purpose of Composites

c. Verification

The Structure of the GIPS Standards

4a. Key characteristics of the GIPS standards & fundamentals of compliance

GIPS Objectives

Key characteristics

Fundamentals of compliance

Requirements

Recommendations

b. The scope of the GIPS

Investment firm definition

Historical performance record

c1. How are GIPS standards implemented in countries with existing standards for performance reporting

c2. Appropriate response when the GIPS standards & local regulations conflict

d. Major sections of GIPS standards
5. TIME VALUE OF MONEY

a. Interest rate, considered as
   - Required rate of return
   - Discount rate
   - Opportunity cost

b. Interest rate

c, d. EAR

e. CF calculations
   - FV=
   - PV=
   - Ordinary Annuity
   - Annuity Due
   - PV of a Perpetuity
   - Uneven CF

f1. Time index
   - Find PMT

f2. Loan payment and Amortization
   - Find N
   - Find I/Y
   - Amortization table

f3. Other applications
   - Rate of compound growth
   - Number of periods for specific growth
   - Funding a future obligation

f4. Connection between PV, FV & series of CF
6. DISCOUNTED CASH FLOW APPLICATIONS

a,b. Calculate, Interpret, Decision rule

NPV

Problems
Conflict with NPV due to
# Initial costs
# Timing

IRR

b. Calculate, Interpret, Decision rule

c. HPR

d. Portfolio rate of return

Money Weighted

IRR

Conflict with NPV due to
# Initial costs
# Timing

Time weighted

Compound growth
Geometric mean
Not affected by cash in/out
Preferred method

e. Yields of T-bills

Bank discount yield

Holding period yield

Effective annual yield

Money market yield

f1. Convert among these yields

f2. Bond equivalent yield
### 7. STATISTICAL CONCEPT & MARKET RETURNS

**Statistical methods**
- Descriptive statistics
  - Population vs. Sample
- Inferential statistics
  - Types of measurement scales
    - Nominal scales
    - Ordinal scales
    - Interval scales
    - Ratio scales

**Parameter vs. Sample statistic**
- Frequency distribution
  - Definition
  - Construction of a frequency distribution
    - 7 steps

**Absolute frequency**
- Relative frequency
- Cumulative absolute frequency
- Cumulative relative frequency

**Histogram**
- Frequency polygon

**Measures of central tendency**
- Mean
  - Population mean vs. Sample mean
    - Arithmetic mean
    - Weighted mean (portfolio return)
    - Geometric mean (compound growth)
- Median
  - Odd number of observations
  - Even number of observations
- Mode
  - No mode
  - Unimodal, bimodal, trimodal

**Quantile**
- Quartiles (4)
  - Quintile (5)
  - Decile (10)
  - Percentile (100)
  - \( L_y = (n+1)y/100 \)

**Dispersion (measure of risk)**
- Range
- MAD
- Variance & Standard deviation
  - Population
  - Sample (use n-1)

**Chebyshev's inequality**
- \( 1 - 1/(k^2) \)

**Relative dispersion**
- CV (Coefficient of Variation) = StdDev / Average
- Sharpe Ratio / Reward-to-variability ratio = Excess return/ StdDev

**Shape of distribution**
- Symmetrical
  - mean = median = mode
- Nonsymmetrical (Skewness)
  - Positively skewed (Sk>0) mode < median < mean
  - Negatively skewed (Sk<0) mean < median < mode

**Kurtosis**
- Calculate: Sample skewness = Types
  - Excess kurtosis = sample kurtosis - 3

**Compared with normal distribution**
- Leptokurtic: more peaked, fatter tails (excess kurtosis > 0) -> more risk
- Platykurtic: less peaked (excess kurtosis < 0)
- Mesokurtic: identical (excess kurtosis = 0)
8. PROBABILITY CONCEPTS

a. Random variable
   - Outcome
   - Event
   - Mutually exclusive events
   - Exhaustive events

2 defining properties of probability
- \( 0 \leq P(E) \leq 1 \)
- Sum of all \( P(E) = 1 \), if set of events is mutually exclusive & exhaustive

b. Determine probabilities
   - Empirical
     - Past data
   - Priori
     - Formal reasoning and inspection process
   - Subjective
     - Personal judgment

c. Odds for vs. odds against the event

d. Unconditional probabilities
   - Conditional probabilities

e. Probability rules
   - Multiplication rule
   - Addition rule
   - Total probability rule

f. Calculate
   - Joint Probability
     - Of 2 events
     - Of any number of independent events
     - Probability of at least one event will occur

g. Dependent events vs. Independent events

h. Total probability rule

i. Use of conditional expectation in investment applications

j. Tree diagram

k. Covariance and Correlation (-1 to 1)

l. Portfolio
   - Expected return
   - Variance and standard deviation

m. Calculate covariance given a joint probability function

n. Bayes' formula

o. Counting methods
   - Labeling
   - Factorial
   - Combination
   - Permutation
9. COMMON PROBABILITY DISTRIBUTIONS

a, b. Probability distribution
   - Random variables
     - Discrete
     - Continuous
   - Discrete distribution vs. continuous distribution

b. Probability function \( p(x) \) for discrete variable
   - PDF - Probability density function \( f(x) \)
   - CDF - Cumulative distribution function \( F(x) = P(X \leq x) \)

c, d. Functions
   - Discrete uniform
   - Bernoulli
   - Binomial

b. Continuous uniform distribution

ej, k. Normal distribution
   - Normal distribution
   - Univariate distribution vs.
   - Multivariate distribution (the role of correlation)

l. Confidence intervals (for normal distribution)
   - 1 --> 68%
   - 1.65 --> 90%
   - 1.96 or 2 --> 95%
   - 2.575 --> 99%

m. Standard normal distribution and standardize
   - \( Z = \)

n. Roy's safety-first criterion
   - Shortfall risk = Probability that (return < threshold)
   - SFRatio =
   - Compare to Sharpe

o. Lognormal distribution

p. Compounded rate of return
   - Discretely compounded
   - Continuously compounded
   - EAR =
   - From S:
   - HPR =

q, r. Simulation
   - Monte Carlo simulation
   - Historical simulation
10. SAMPLING & ESTIMATION

a. b. Sampling concepts
   - Simple random sampling
   - Sampling error
   - Sampling distribution

c. Sampling methods
   - Simple random sampling
   - Stratified random sampling

d. Set of data
   - Time-series
   - Cross-sectional

f. Standard error of the sample mean

h. Estimate a population parameter
   - Point estimation
   - Confidence interval estimation

g. Desirable properties of an estimator
   - Unbiased
   - Efficient
   - Consistent

i. Student's t-distribution
   - Used when:
     - Small samples (n<30), unknown variance
     - Normal (or approximately normal) distribution
   - Properties:
     - Symmetrical
     - Degrees of freedom df=n-1
     - Less peaked, fatter tails than normal
     - Higher n --> approach z
   - Non-Normal AND n<30 --> Not available

j. Calculate confidence interval
   - Other situations
     - Known variance --> z test
     - Unknown variance --> t test
     - if n >=30 --> t approach z --> both are ok

k. Selection of sample size
   - Sample size n (larger is better), but
   - Possibility: Observations from a different population may be included
   - Possible mistake: Observations from a different population may be included
   - Higher Cost
   - Bias
     - Data mining bias
     - Sample selection bias
     - Survivorship bias
     - Look-ahead bias
     - Time-period bias
11. HYPOTHESIS TESTING

Hypothesis

- Statement about population parameter
- Null hypothesis
- Alternative hypothesis
- One-tailed and two-tailed tests of hypotheses

Hypothesis testing steps

1. State the hypothesis
2. Identify the test statistic & probability distribution
   - b. Test statistic
   - May follow t, z, Chi-square, F distribution
3. Specifying significance level
   - b. Significance level and critical value
4. State decision rule
   - c. Decision rule
5. Collect data and calculate test statistic
6. Make statistical decision
   - d. Distinguish Statistical result
   - Economically meaningful result
7. Make economic/investment decision

b. Errors

- Type I (alpha) reject null when it's true
- Type II (beta) do not reject null when it's false

- c. The power of a test
  - = 1 - beta

c. The relation between confidence intervals and hypothesis tests

e. How to use p-value

f. Mean of a normally distributed population with
   - known variance
   - unknown variance

g. The equality of means of 2 normally distributed populations, based on independent random samples with
   - equal assumed variances
   - unequal assumed variances

h. The mean difference of 2 normally distributed populations (paired comparisons test)
i. Test variance

- Single population
  - Chi-square test
- Two independent populations
  - F-test

j. Parametric test
j. Nonparametric test
12. TECHNICAL ANALYSIS (part 1)

Overview: 3 views
- Fundamentalists
- Technicians
- EMH advocates

Technical analysis:

**Principles**
- TA is the study of collective market sentiment
- Prices are determined by the interaction of Supply & Demand

**Applications**
- Market price reflects both rational & irrational investor behavior (EMH does not hold)
- Trends & Patterns exist & tend to repeat, can be used to forecast

**Assumptions**
- Trends & Patterns exist & tend to repeat, can be used to forecast

**b. Charts**

- Line chart
- Bar chart
- Candlestick chart
- Point & figure chart

*Closing prices as a continuous line*

*Volume chart*

*Time intervals*

*Relative strength analysis*
d. Chart patterns

**Reversal patterns**

- Head & Shoulders
- Inverse head & shoulders

**Double tops & bottoms**

- Double top (negative indicator)
- Double bottom (positive indicator)

- Head & Shoulders

**Continuation patterns**

- Triangles
- Rectangle
- Flags & Pennants

**Definition:** A trend approaches a range of prices but fails to continue beyond that range.

- Head & Shoulders
- Inverse head & shoulders

**Definition:** A pause in a trend rather than a reversal.

- Triangles
- Rectangle
- Flags & Pennants

**Examples:**

- Ascending Triangle
- Horizontal Flag
- Pennant (continuation)
12. TECHNICAL ANALYSIS (part 3)

**a. Trends**
- Trend breakout vs. breakdown
- Support & Resistance lines
  - Change in polarity (Polarity: phân cực, đối lập)

**b. Common TA indicators**
- **Price-based**
  - **Moving average lines**
    - ST average line crosses LT average line
    - Golden cross vs. death cross (buy/sell signal)
  - **SMA (Simple Moving Average)** vs. **EMA (Exponential)**
    - Place more weights on recent data
  - **Bollinger bands**
    - Example: Bollinger band (20, 2) means 2 standard deviations above and below the 20-day moving average line.
  - **Oscillators**
    - **Momentum Oscillator** (Rate of Change Oscillator)
      - Formula: (today - past day) x 100
      - Oscillates around 0
    - **Relative Strength Index (RSI)**
      - Formula: (1 - 1/ (1 + RS)) x 100
      - RS = Total price increases / Total price decreases
      - Compare to 30 and 70
  - **Moving average convergence/divergence oscillator**
    - MACD line (e.g.: MACD (26,12): ExpMA(26)-ExpMA(12)
      - Signal line: ExpMA(9) of MACD
      - MACD line crossing above Signal line (or divergence histogram crosses up) --> buy signal
      - MACD line crossing below Signal line (or divergence histogram crosses down) --> sell signal
  - **Stochastic oscillator**
    - %K line: (latest price - recent low) / (recent high - recent low)
    - %D line: 3-period average of %K line
    - If %K line crosses up %D line --> buy signal
    - Fast stochastic oscillator
      - Fast %K = %K basic calculation
      - Fast %D = 3-period SMA of Fast %K
    - Slow stochastic oscillator
      - Slow %K = Fast %K smoothed with 3-period SMA
      - Slow %D = 3-period SMA of Slow %K

- **Non-price-based indicators**
  - **Sentiment indicators**
    - Opinion poll (survey)
      - Put/Call ratio
      - Viewed as contrarian indicator if very high --> investor sentiment over / bullish market --> we should be bullish
    - **CBOE Volatility Index (VIX)**
      - Volatility of options on S&P 500
      - High --> investors bearish / we should be bullish
      - Low --> investors bullish / we should be bearish
    - Margin debt
      - Increased --> investors bearish / we should be bullish
    - **Arms index**
      - Short-term Tendency Index
        - Short-term interest rate / average daily trading volume
      - Short-term interest / number of shares that investors have borrowed and sold
    - **Flow of funds indicators**
      - Mutual fund cash position
        - Mut of mutual fund cash / total assets
      - New equity issuance (IPO) and Secondary offerings
        - Number of new shares issued / number of shares held by investors / we should buy / we should sell

**c. Change in polarity**
- Mean of the last n closing prices (n=20,250...)
- If larger n --> more smoothing, trends are easier to see
- If overly long n --> may obscure price trend (obscure = hide)

**Floating Topic**
- Viewed as support or resistance level
12. TECHNICAL ANALYSIS (part 4)

f. Cycles

- Kondratieff Wave (40 to 60 years)
- 18-year cycle
- Decennial (10-year) pattern
- 4-year Presidential cycle

18-year cycle

Decennial (10-year) pattern

4-year Presidential cycle

Uptrend

- Upward moves: 5 waves (1, 3, 5 = impulses; 2, 4 = corrective; 2 = pullback
- Downward moves: 3 waves (A, B, C) (A = bulltrap)

Size of waves correspond with Fibonacci ratios

Fibonacci numbers: 0, 1, 1, 2, 3, 5, 8, 13, 21, ...
Golden ratio: 1.618 or 0.618
Price target can be 1.618 of the previous high

Sub-Minuette (few minutes)

Different waves:
- Grand Supercycle (centuries)
- Supercycle
- Cycle
- Primary
- Intermediate
- Minor
- Minute
- Minuette

h. Intermarket analysis

interrelationships (relative strength ratios) among

Major asset classes: stocks, bonds, commodities, currencies
- Equity sectors/industries
- International markets

g. Elliott Wave Theory

- Uptrend
- Downward moves: downward moves (5 waves); upward moves (3 waves)
- Size of waves correspond with Fibonacci ratios
- Fibonacci numbers
- Golden ratio: 1.618 or 0.618
- Price target can be 1.618 of the previous high
CFA LEVEL 1

STUDY SESSION 04, 05 & 06

ECONOMICS
13. Demand And Supply Analysis: Introduction

a. Types of markets
   - Markets for factors of production
     - Markets for services and finished goods
     - Capital markets

b. Principles of demand and supply
   - Shifts
     - Movement along
     - Demand & Supply Curves
   - Stability
     - Stable
     - Unstable
   - d. Process of aggregating
   - e. Equilibria

f.g. Calculate and interpret
   - Individual and aggregate inverse demand and supply functions
   - Individual and aggregate demand and supply curves
   - Amount of excess demand
   - Amount of excess supply

h. Types of auctions
   - Winning price

i. Calculate and interpret
   - Consumer surplus
   - Producer surplus
   - Total surplus

i. Causes of demand or supply imbalance

j.k. Impact of govt regulation and intervention
   - Effect of introduction and removal of a mkt interference

m. Elasticity
   - Price elasticity of demand
     - Income elasticity
     - Cross-price elasticity
14. Demand And Supply Analysis: Consumer Demand

a. Consumer choice theory
   - Consumer utility theory

b.c. Use of
   - Indifference curves
   - Opportunity sets
   - Budget constraints

b. Calculate and interpret a budget constraint

d. Consumer's equilibrium bundle of goods

14. Demand And Supply Analysis: Consumer Demand

e. Compare
   - Substitution effects
   - Income effects

f. Distinguish
   - normal goods
   - Inferior goods

f. Explain
   - Giffen goods
   - Veblen goods
15. Demand and Supply Analysis: The Firm

a. Concepts
   - Accounting profit
   - Normal profit
   - Economic profit

b. Revenue
   - Total revenue
   - Average revenue
   - Marginal revenue

c. Factors of production
   - Total costs
   - Average costs
   - Marginal costs
   - Fixed costs
   - Variable costs

d. Costs
   - Total costs
   - Average costs
   - Marginal costs
   - Fixed costs
   - Variable costs

Shut down points

Economies of scale
- SR profit maximization
- LR profit maximization

Diseconomies of scale

Decreasing-cost industries

Constant-cost Industries

Increasing-cost industries

Total

Marginal

Average

Diminishing marginal returns

Profit-maximizing utilization level of an input

Optimal combination of resources → Minimize cost

g. Determine profit-maximizing level of output

h. Distinguish

i. Distinguish

j. Product of labor

k. l.
16. The Firm And Market Structures

PERFECT COMPETITION

MONOPOLISTIC COMPETITION

OLIGOPOLY

MONOPOLY

f. Concentration measures

Use

Limitations

g. Identify type of market structure
17. Aggregate Output, Price, And Economic Growth

- a. Calculate GDP using
  - Expenditure approach
  - Income approach

- b. Compare
  - Sum-of-value-added method
  - Value-of-final-output method

- GDP
  - Compare
    - Nominal GDP
    - Real GDP
    - GDP deflator

- GDP
  - Compare
    - National income
    - Personal income
    - Personal disposable income

- e. Fundamental relationship among
  - Saving
  - Investment
  - Fiscal balance
  - Trade balance

- f. IS curve
  - LM curve
  - Aggregate demand curve

- h. Shifts and movements along D & S curves
  - i. Fluctuations in aggregate D & S --> SR changes in econ & biz cycle

- Economic growth
  - Sources
    - Measurement
    - Sustainability
  - k. Production function approach
    - Input growth
    - Growth of total factor productivity
  - l. Components of economic growth
18. Understanding Business Cycles

a. Describe
   Biz Cycle
   Phases of Biz Cycle

b. Economy moving through biz Cycle -->
   Inventory levels
   Labor
   Physical capital utilization levels

c. Theories of Biz Cycle

d. Unemployment
   Types
   Measures

e. Explain
   Inflation
   Disinflation
   Deflation

f. Indices used to measure inflation

g. Inflation measures
   Uses
   Limitations

h. Factors --> affect price levels
   Cost push inflation
   Demand-pull inflation

i. Describe economic indicators
   Uses
   Limitations

j. Identify
   Past biz cycle
   Current biz cycle
   Expected future biz cycle
19. Monetary And Fiscal Policy

a. Compare Monetary policy and Fiscal policy

b. Definition, qualities and functions of money

Money creation process

c. Theories of Demand for money and Supply of money

d. Fisher effect

e. Central banks

Roles and Objectives

f. Implementation of monetary policy

g. Qualities of effective central banks

h. Relationships between monetary policy and economic growth, inflation, interest, and exchange rate

i. Expansionary monetary policy

Contractionary monetary policy

j. Limitations of monetary policy

k. Describe Fiscal policy

Roles and Objectives

l. Tools of fiscal policy

Spending tools

Revenue tools

m. Being concerned with Size of a fiscal debt

Arguments for and against

n. Explain implementation of fiscal policy

difficulties of implementation

o. Expansionary fiscal policy

Contractionary fiscal policy

p. Interaction of monetary and fiscal policy
20. International Trade And Capital Flows

- Warm-Up: International Trade
  - Benefits
  - Costs
  - a. International trade
  - b. Distinguish
    - Comparative advantage
    - Absolute advantage
  - c. Models of trade
    - Ricardian
    - Heckscher-Ohlin
  - d. Restrictions
    - Trade restrictions
    - Capital restrictions
  - e. Motivations for and Advantages of
    - Trading blocs
      - Common markets
      - Economic unions
    - f. Description
      - Components
      - Current account
      - Capital account
      - Financial account
    - g. Influenced by
      - Consumers
      - Firms
      - Govt
  - h. Functions and objectives of international organizations
    - World Bank
    - IMF
    - WTO
21. Currency Exchange Rates

a. Define an exchange rate
   - Nominal exchange rates
   - Real exchange rates
   - Spot exchange rates
   - Forward exchange rates

b. FOREX market
   - Functions
   - Participants

d. % change in a currency relative to another currency

e. Currency cross-rates

f. Forward quotations
   - Forward discount or premium
   - Forward rate consistent with spot rate and interest rate

i. Exchange rate regimes
   - Countries that do not have their own currency
   - Countries that have their own currency

j. Impact of exchange rates on countries’
   - International trade
   - Capital flows
CFA LEVEL 1

STUDY SESSION 7,8,9,10

FRA
22. FSA Introduction

a. Roles of FR and FSA

Roles of FSA
- Provide info about Fin position
- Use info in a company's Fin Statements
- To evaluate past, current, and prospective performance and fin position
- To make economic decisions. E.g.: Invest in securities
- Recommend to investors
- Whether to extend trade, bank credit
- Analysts: form opinions about company's ability to earn profits and generate CF

Roles of FR
- Use other relevant info
- Changes in fin position

b. Role of key FS

Income Statement (financial performance)
- Revenues
- Expenses
- Gains and Losses

Balance Sheet (financial position) \( A=L+OE \)
- Assets
- Liabilities
- Owners' equity

CF statement
- Operating CF
- Investing CF
- Financing CF

Statement of changes in Owners' equity

FS notes (footnotes)
- accounting methods, assumptions, estimates
- acquisitions or disposals
- legal actions
- employee benefit plans
- contingencies and commitments
- significant customers
- sales to related parties
- segments of firm

Additional items:
- not audited
- operating income or sales by region or business segments
- reserves for an oil and gas company
- info about hedging activities and financial instruments

Supplementary schedules
- are audited

MD&A
- assessment of financial performance and condition of a company from the perspective of its management
- Publicly held companies in US
- Results from operations, with trends in sales and expenses
- Capital resources and liquidity, with trends in CF
- General business overview
- discuss accounting policies that require significant judgements by management
- discuss significant effects of trends, events, uncertainties
- liquidity and capital resource issues, transactions or events with liquidity implications
- Discontinued operations, extraordinary items, unusual or infrequent events
- Extensive disclosures in interim financial statements
- disclosure of a segment's need for CF or its contribution to revenues or profit

= independent review of an entity's FS

objective: auditor's opinion on fairness and reliability of FS, "no material errors"

Standard auditor's opinion
- Independent review though FS prepared by mgmt and are its responsibility
- 3 parts
  - Reasonable assurance of no material errors (follow generally accepted auditing standards)
  - FS prepared in accordance with accepted accounting principles, reasonable accounting principles and estimates, consistency
  - Explanatory paragraph: when a material loss is probable but amount cannot be reasonably estimated. Uncertainties may relate to the going concern assumption \( \Rightarrow \) signal serious problems and need close examination by analyst
  - (under US GAAP): Opinion on internal controls
  - 3 types of Opinions
    - Unqualified opinion: auditor believes statements are free from material omissions and errors
    - Qualified opinion: if statements make any exceptions to accounting principles \( \Rightarrow \) explain these exceptions
    - Adverse opinion: if statements are not presented fairly or are materially nonconforming with accounting standards

Interim reports
- Quarterly or Semiannual reports (update FS and footnotes, but not audited)

SEC filings
- from EDGAR

Proxy statements
- to shareholders when there are matters that require a shareholder vote

Corporate reports and press releases
- Viewed as PR or sales materials

State the objective and context
Gather data
Process data
Analyze and interpret data
Report the conclusions or recommendations
Update the analysis
23. Financial Reporting Mechanics

a. Financial Statement elements and accounts
   - 5 Elements
     - Assets
     - Liabilities
     - Owners' equity
     - Revenue
     - Expenses

b. Accounting equation
   - Basic form: \( A = L + OW \)
   - Extended forms:
     - \( A = L + CC + \text{Ending Retained Earnings} \)
     - \( A = L + CC + \text{Beginning RE} + R - X - D \)

c. Recording process
   - Double entry accounting

b. Accruals and other adjustments
   - Accruals
   - Unearned revenue
   - Accrued revenue
   - Prepaid expenses
   - Accrued expenses
   - Other adjustments
     - Historical vs Current costs --> Valuation adjustments
     - --> income statement or in "other comprehensive income"

e. Relationship among IS, BS, CF, OE (p.23)

f. Flow of Info in Accounting system
   - General Journal (Journal entries)
   - General ledger (sort entries by account)
   - Initial trial balance --> adjusted trial balance
   - FSs

g. Use of results of accounting process in security analysis
24. Financial Reporting Standards

a. Objective of Fin statements
   Importance of reporting standards in security analysis and valuation

b. Role
   Of standard-setting bodies (establishing standards)
   - IASB (International Accounting Standards Board)
   - US FASB (Financial Accounting Standards Board)
   Of regulatory authorities (enforcing standards)
   - IOSCO (International Organization of Securities Commissions)
   - UK FSA: Financial Services Authority
   - US SEC: Securities and Exchange Commission

Status of global convergence of accounting standards
Barriers to developing one universally accepted set of financial reporting standards
- disagreeing standard setting bodies
- regulatory authorities
- political pressures from business groups and others

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   Of standard-setting bodies (establishing standards)
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c. Status of global convergence of accounting standards
   Barriers to developing one universally accepted set of financial reporting standards
   - disagreeing standard setting bodies
   - regulatory authorities
   - political pressures from business groups and others

d. IFRS framework
   Objective of financial statements
   - Understandability
   - Comparability
   - Relevance
   - Reliability
   Qualitative characteristics
   Measurement bases
   - Historical cost: amount originally paid for the asset
   - Current cost: would have to pay today for the same asset
   - Realizable value: amount for which firm could sell the asset
   - Present value: discounted future cash flows
   - Fair value: 2 parties in an arm's length transaction would exchange the asset
   Constraints
   - Intangible and non-quantifiable info
   Assumptions
   - Accrual basis
   - Going concern

Required financial statements
   BS, IS, CFS, OE, Explanatory notes (incl. accounting policies)
   Principles for PREPARING
   - Fair presentation
   - Going concern basis
   - Accrual basis
   - Consistency
   - Materiality
   Principles for PRESENTING
   - Aggregation
   - No offsetting
   - Classified balance sheet
   - Minimum information is required
   - Comparative information

Purpose of framework
   IASB requires mgmt to consider the framework if no explicit standard exists
   Objectives of financial statements
   - IASB same objective
   - FASB different objectives for biz and non-biz
   Assumptions
   - IASB emphasizes going concern
   Qualitative characteristics
   - Primary characteristics
   Performance
   - IASB: income+expenses
   - FASB: Revenues, Expenses, Gains, Losses, comprehensive income
   Asset definition
   - IASB: resource from which future economic benefit is expected
   - FASB: future economic benefit
   "Probable"
   - IASB: define criteria for recognition
   - FASB: define assets and liabilities
   Values of assets to be adjusted upward
   - IASB: allow
   - FASB: not allow

f. IFRS (by IASB) #
   US GAAP* (by FASB)
   Characteristics of a coherent financial reporting framework
   - Transparency
   - Comprehensiveness
   - Consistency
   - Valuation
   Barriers to creating a coherent financial reporting framework
   - Principles-based
   - Rules-based
   - Objectives oriented
   Measurement
   - IFRS
   - FASB in the past
   - specific guidance how to classify trx
   - FASB moving now
   - blend the other two
   Update
   - www.iasb.org
   - www.fasb.org

h. Importance of monitoring developments in financial reporting standards
   In the footnotes & in MD&A (management judgment)

i. Evaluate company disclosures of significant accounting policies & estimates
   New accounting standards
   - 3 statements
   - standard does not apply
   - will not affect the FS materially
   - are still evaluating the effects of the new standards
25. Understanding The Income Statement

a. IS
- Components
  - Revenues
  - Expenses
  - Gross profit

- Presentation formats

b.c. Revenue recognition
- General principles of Revenue recognition
  - IASB
  - FASB
  - SEC
  - Evidence of arrangement between buyer and seller
  - Product delivered or service rendered
  - Price is determined or determinable
  - Seller reasonably sure of collecting money

- Revenue recognition
  - Long-term contracts
    - Percentage-of-completion method
    - Completed-contract method
  - Installment sales
    - Certain collectibility -> normal method
    - Not reasonably estimated collectibility -> installment method
    - Highly uncertain collectibility -> cost recovery method
  - Barter transactions
    - Round trip transactions
  - Gross revenue reporting (vs. net revenue reporting)
    - Primary obligator
    - Bear inventory & credit risk
    - Ability to choose supplier
    - Reasonable latitude to establish prices

b. Expense recognition
- Matching principle
- Inventories
- Long-lived assets
- Depreciation
- Depletion
- Amortization
- Bad debt, warranty expenses estimation

- Period costs
- Admin

- Implications for Financial Analysis

- Nonrecurring items
  - Discontinued operations
  - Unusual or infrequent items
  - Extraordinary items

- Changes in accounting standards
  - Change in accounting principle
  - Change in accounting estimate
  - Prior-period adjustment

f. Distinguish
- Operating components
- Nonoperating components

- Capital structure
  - Simple
  - Complex

- Basic EPS
  - Formula:
    - Effect of: Stock dividends and Stock splits

- Diluted EPS
  - Formula:
    - Antidilutive securities
    - Treasury stock method

- Dilutive securities

h. EPS

i.j. Common size IS & financial ratios

- Items excluded from IS but affect OE
  - Other comprehensive income

- Comprehensive income: e.g., on page ___
26. Understanding The Balance Sheet

a. Elements
   - Assets
   - Liabilities
   - Equity

b1. Uses of BS in financial analysis

b2. Limitations of BS in financial analysis

b21. Two common formats
   - Account format
   - Report format

b22. Classified BS
   - Current vs. non-current
     - Current assets
     - Current liabilities
     - Non-current assets
     - Non-current liabilities

b3. Formats of BS
   - Classified BS
     - Liquidity-based presentation
     - Reporting noncontrolling/minority interest

b4. Classifying
   - Current vs. non-current
     - Current assets
     - Current liabilities
     - Non-current assets
     - Non-current liabilities

b5. Measurement bases
   - Historical cost
   - Fair value
   - Replacement cost
   - PV of future CF
   - Cash and cash equivalent
   - Account receivable
   - Inventories
     - Lower of cost or net realizable value
     - Standard costing
     - Retail method
   - Marketable securities
   - Prepaid expenses and others
   - Accounts payable
   - Note payables
   - Current portion of long term debt
   - Tax payables
   - Accrued liabilities
   - Unearned revenue/income

b6. Non-current assets
   - Tangible
     - Used in operations
     - Not used in operation -> investment assets
   - Intangible
     - Identifiable (finite period) -> amortized
     - Unidentifiable (infinite) -> not amortized, but tested for impairment at least annually
     - Internally produced -> not recorded, except legal costs

b7. Components of OE
   - Contributed capital
   - Minority (noncontrolling) interest
   - Retained earnings
   - Treasury stock
   - Accumulated other comprehensive income

b8. Analyse
   - BS
   - Statement of changes in OE

b9. Common-size balance sheet

b10. Liquidity & solvency ratios
27. Understanding The CF Statement

The CF statement

- CFO affect Net Income
- CFI affect Long term assets and certain investments
- CFF affect capital structure

b. Noncash investing, financing activities

Not reported
- Disclosed in footnote or supplemental schedule to CF statement

Noncash investing, financing activities
- dividends paid
  - US GAAP: CFF
  - IFRS: CFF or CFO
- interest paid
  - US GAAP: CFO
  - IFRS: CFO or CFF
- interest and dividend received
  - US GAAP: CFO
  - IFRS: CFO or CFI
- taxes paid
  - US GAAP: CFO
  - IFRS: CFO or CFF or CFI

c. IFRS vs. US GAAP

- dividends paid US GAAP: CFF
  - IFRS: CFF or CFO
- interest paid US GAAP: CFO
  - IFRS: CFO or CFF
- interest and dividend received US GAAP: CFO
  - IFRS: CFO or CFI
- taxes paid US GAAP: CFO
  - IFRS: CFO or CFF or CFI

d,e,f,g. CF methods

- Direct
- Indirect

h. Analyse and interpret

Total currency amounts
- Major sources and uses of cash
  - CFO
  - CFI
  - CFF

Common-size CF statement, divided by
- Revenue
- Total cash inflow (for inflows) and Total cash outflow (for outflows)

Free cash flow to Firm: FCFF = NI + NCC + Int*(1-t) - FCInv - WCInv = CFO + Int*(1-t) - FCInv

Free cash flow to Equity: FCFE = CFO - FCInv + NetBorrowing

CF ratios
- Debt coverage = CFO/Total debt
- Interest coverage = (CFO + Interest paid + taxes paid)/interest paid
- Reinvestment ratio = CFO/cash paid for long term assets
- Debt payment ratio = CFO/cash long term debt repayment
- Dividend payment = CFO/dividends paid
- Investing and financing ratio = CFO/cash outflows from investing and financing activities

Performance ratios
- CF to revenue = CFO/net revenue
- Cash return-on-asset = CFO/average total assets
- Cash return-on-equity = CFO/average total equity
- Cash-to-income = CFO/Operating income
- Cash flow per share = (CFO-preferred dividends)/ Weighted average number of common shares

Coverage ratios
- Debt coverage
- Interest coverage
- Reinvestment ratio
- Debt payment ratio
- Dividend payment
- Investing and financing ratio

available to
- Stockholders
- Debt holders
### EXAMPLE: CASH FLOW STATEMENT

#### Income Statement for 20X7

<table>
<thead>
<tr>
<th>Description</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales</td>
<td>$100,000</td>
</tr>
<tr>
<td><strong>Expense</strong></td>
<td></td>
</tr>
<tr>
<td>Cost of goods sold</td>
<td>40,000</td>
</tr>
<tr>
<td>Wages</td>
<td>5,000</td>
</tr>
<tr>
<td>Depreciation</td>
<td>7,000</td>
</tr>
<tr>
<td>Interest</td>
<td>500</td>
</tr>
<tr>
<td><strong>Total expenses</strong></td>
<td>$52,500</td>
</tr>
<tr>
<td>Income from continuing operations</td>
<td>$47,500</td>
</tr>
<tr>
<td>Gain from sale of land</td>
<td>10,000</td>
</tr>
<tr>
<td><strong>Pretax income</strong></td>
<td>57,500</td>
</tr>
<tr>
<td>Provision for taxes</td>
<td>20,000</td>
</tr>
<tr>
<td><strong>Net income</strong></td>
<td>$37,500</td>
</tr>
<tr>
<td>Common dividends declared</td>
<td>$8,500</td>
</tr>
</tbody>
</table>
Balance Sheets for 20X7 and 20X6

<table>
<thead>
<tr>
<th></th>
<th>20X7</th>
<th>20X6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Assets</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Current assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Cash</td>
<td>$33,000</td>
<td>$9,000</td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>10,000</td>
<td>9,000</td>
</tr>
<tr>
<td>Inventory</td>
<td>5,000</td>
<td>7,000</td>
</tr>
<tr>
<td>Noncurrent assets</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Land</td>
<td>$35,000</td>
<td>$40,000</td>
</tr>
<tr>
<td>Gross plant and equipment</td>
<td>85,000</td>
<td>60,000</td>
</tr>
<tr>
<td>less: Accumulated depreciation</td>
<td>(16,000)</td>
<td>(9,000)</td>
</tr>
<tr>
<td>Net plant and equipment</td>
<td>$69,000</td>
<td>$51,000</td>
</tr>
<tr>
<td>Goodwill</td>
<td>10,000</td>
<td>10,000</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td>$162,000</td>
<td>$126,000</td>
</tr>
</tbody>
</table>

| **Liabilities**      |         |         |
| Current liabilities  |         |         |
| Accounts payable     | $9,000  | $5,000  |
| Wages payable        | 4,500   | 8,000   |
| Interest payable     | 3,500   | 3,000   |
| Taxes payable        | 5,000   | 4,000   |
| Dividends payable    | 6,000   | 1,000   |
| **Total current liabilities** | 28,000 | 21,000 |
| Noncurrent liabilities|     |         |
| Bonds                | $15,000 | $10,000 |
| Deferred tax liability| 20,000 | 15,000 |
| **Total liabilities** | $63,000 | $46,000 |
| **Stockholders’ equity** |     |         |
| Common stock         | $40,000 | $50,000 |
| Retained earnings    | 59,000  | 30,000  |
| **Total equity**     | $99,000 | $80,000 |
| **Total liabilities and stockholders’ equity** | $162,000 | $126,000 |
28. Financial Analysis Techniques

a. Analyses

- Ratio analysis
  - Common size
  - Vertical
  - Balance sheet
  - Income statement
  - Charts: stacked column graph, line graph

b. Classes of ratios

- Activity
  - Receivables management
    - Receivables T.O = annual sales/average receivables
    - Days of sales outstanding or average collection period = 365/ receivables T.O
  - Inventory management
    - Inventory T.O = COGS/average inventory
    - Days of inventory on hand = 365/inventory T.O
  - Trade credit management
    - Payables T.O = purchases/average trade payables
    - Number of days of payables = 365/payables T.O
  - Total assets management
    - Total asset T.O = revenue/average total assets
  - Fixed assets management
    - Fixed asset T.O = revenue/average net fixed assets
  - Working capital management
    - Working capital T.O = revenue/average working capital
  - Current ratio = current assets/current liabilities
  - Quick ratio = (cash + marketable securities + receivables)/current liabilities
  - Cash ratio = (cash + marketable securities)/ current liabilities
  - Defensive interval = (cash + marketable securities + receivables)/ average daily expenditures
  - Cash conversion cycle = days sales outstanding + days of inventory on hand - number of days of payables

- Liquidity

- Profitability

- Solvency

- Use of debt financing
  - Debt-to-equity = D/E
  - Debt-to-capital = D/(D+E)
  - Debt-to-assets = D/A
  - Financial leverage = A/E
  - Interest coverage = EBIT/interest payments
  - Fixed charge coverage = (EBIT + lease payments) / (interest payments+lease payments)
  - Net profit margin = Net income/ Revenue
  - Operating profit margin = EBIT/ Revenue
  - Pretax margin = EBT/ Revenue

- Valuation

- Sales per share, EPS, P/CF ... (in Equity study section)

- d. DuPont analysis
  - Original approach
  - Extended (5-way) DuPont

- e. Ratios used in

  - Equity analysis
    - Net income per employee
    - Sales per employee
    - Industry-specific ratios
      - Growth in same-store sales
      - Sales per square foot
    - Business risk
      - Coefficients of variation of
        - Revenue
        - Operating income
        - Net income
      - Credit analysis
        - Capital adequacy
          - VaR
          - Reserve requirements
          - Liquid asset requirement
          - Net interest margin
        - Segment analysis
          - Business segment
          - Geographic segment
  - Credit analysis
    - Ratios: interest coverage ratios, return on capital, debt-to-assets, CF to total debt ...
    - Altman Z-score
  - Segment analysis
    - Business segment
    - Geographic segment

- f. Model and forecast earnings
  - Using ratio analysis
    - Using techniques: sensitivity analysis, scenario analysis, simulation
### 28. Financial analysis techniques

#### INCOME STATEMENT

<table>
<thead>
<tr>
<th>Description</th>
<th>VND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales: 1 laptop per day, P=10m</td>
<td>3,650</td>
</tr>
<tr>
<td>Cost of goods sold: Cost=5m</td>
<td></td>
</tr>
<tr>
<td>SG&amp;A</td>
<td>(210)</td>
</tr>
<tr>
<td><strong>EBIT</strong></td>
<td></td>
</tr>
<tr>
<td>Interest expense</td>
<td>(15 )</td>
</tr>
<tr>
<td><strong>EBT</strong></td>
<td></td>
</tr>
<tr>
<td>Income tax</td>
<td>25%</td>
</tr>
<tr>
<td><strong>Net income</strong></td>
<td></td>
</tr>
<tr>
<td>Dividends</td>
<td>100%</td>
</tr>
<tr>
<td>Increase/Decrease in Retained earnings</td>
<td>-</td>
</tr>
</tbody>
</table>

#### BALANCE SHEET

<table>
<thead>
<tr>
<th>Description</th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>105</td>
</tr>
<tr>
<td>Account receivable</td>
<td>7 days on credit</td>
</tr>
<tr>
<td>Inventory</td>
<td>5 days in store</td>
</tr>
<tr>
<td><strong>Total current assets</strong></td>
<td></td>
</tr>
<tr>
<td>Net PPE</td>
<td>300</td>
</tr>
<tr>
<td><strong>Total assets</strong></td>
<td></td>
</tr>
<tr>
<td>Account payable</td>
<td>10 days</td>
</tr>
<tr>
<td>Short-term debt</td>
<td>150</td>
</tr>
<tr>
<td>Long-term debt</td>
<td>-</td>
</tr>
<tr>
<td>Equity</td>
<td>300</td>
</tr>
<tr>
<td><strong>Total liabilities+equity</strong></td>
<td>500</td>
</tr>
</tbody>
</table>
29. Inventories

Inventory accounting
- Inventory cost flow methods
- Inventory valuation methods
  - IFRS -> Lower of cost or NRV
  - US GAAP -> LCM = lower of cost or market
  - ending = beginning + purchases - COGS

a. IFRS & GAAP rules for determining Inventory cost
- product cost -> capitalized
- period cost -> expensed

b, c. Computing ending inventory and COGS
- Specification Indication
  - FIFO
  - LIFO
  - Weighted average cost

d. Inventory systems
- Periodic
- Perpetual

e. Effects of different inventory accounting methods on
- COGS
- Inventory balances
- Other FS items: taxes, net income, working capital, cash flows

f. Inventory reporting
- IFRS
  - Lower of cost or NRV
- GAAP
  - Lower of cost or market
  - No write-up
  - Exception
    - Commodity-like products

f. FR presentation & disclosures of inventories

h. Effects of different inventory accounting methods on
- Profitability
- Liquidity
- Activity
- Solvency

Exception
- Commodity-like products
30.1. Long-lived Assets- Part1- Capitalization

**a1. Accounting standards**
- Capitalize
- Expense

**a2. Effects of capitalizing vs expensing on**
- NI
- Shareholders’ equity
- Financial ratios
  - Profitability
  - Interest coverage ratio
- Implications for analysis

**a3. Capitalized interest**
- Interest incurred during construction --> capitalize
- required by both US GAAP & IFRS
- What interest rate to use?
  - i/r on debt related to construction
  - if no construction debt outstanding --> based on existing unrelated borrowings
- Interest costs in excess of project construction --> expensed
- reported in FSs

**b. Intangible assets**
- Unidentifiable: Goodwill
  - GW = Purchase price - Fair value
  - Not amortized but impairment test
- Identified
  - Created internally --> EXPENSED except for
    - US GAAP: R&D software
    - Software for sale
      - Before technical feasibility: expense
      - After technical feasibility: capitalize
    - IFRS: R&D anything
      - R: Expense
      - D: Capitalise
  - Purchased externally --> CAPITALIZED (asset at cost)
  - Obtained in business acquisition
    - USGAAP --> expense
    - IFRS --> not expense
30.2. Long-lived Assets - Part 2 - Depreciation And Impairment

c1. Concepts

  Carrying Value (or Book value)
    Historical cost
    Economic depreciation

  SL (Straight Line)
  Accelerated depreciation
  DDB (Double Declining Balance)
  Units-of-production

d. Depreciation methods

  depre = \frac{2n}{n} \times \text{book value}
  \text{final year: depre} = \text{book value} - \text{salvage}

c2. Effect on net income

c3. Useful lives and Salvage Values

  Component depreciation

e, f. Amortization of intangible assets

  Cost model
  Revaluation model (land, buildings...)
  Reversal of previous loss --> gain in IS
  Above historical cost --> revaluation surplus in equity

  IFRS
  Recoverable amount = \text{max (value in use, fair value - selling cost)}
  Value in use = PV of future CF stream
  If carrying value > recoverable amount --> impair

  US GAAP
  Tangible assets
    Step 1: Recoverability test
  Intangible assets
    Step 2: Loss measurement

  Reversals of impairment loss
  Asset for sale
  Asset held for use

  g. IFRS

  Recoverable amount = \text{max (value in use, fair value - selling cost)}
  Value in use = PV of future CF stream

  h. Impairment

  US GAAP
  Tangible assets
    Step 1: Recoverability test
  Intangible assets
    Step 2: Loss measurement

  i. Derecognition of PPE & intangible assets

  Sales --> Gains/ Losses
  Abandoned --> no proceeds, loss=carrying value
  Exchange --> equivalent to sell and buy another

  j. FS presentation & disclosures of PPE & intangible assets

  IFRS
  US GAAP

  k. Financial reporting of investment property
a. Terminology

TAX RETURN

- Taxable income
- Taxes payable
- Income tax paid
- Tax loss carryforward
- Tax base = net amount of asset/liability used for tax reporting purposes

Accounting profit
- Income before tax
- Income tax expense
- Earnings before tax

DTL
- Income tax expense - Taxes payable
- Cause: depreciation

DTA
- Taxes payable - income tax expense
- Causes: Warranty expenses, Tax-loss carry forwards

Valuation allowance: contra account to DTA
- Carrying value = net balance sheet value of asset/liability
- Permanent difference
- vs. Temporary difference

DTL - Income tax exp. > Current tax exp.
- Revenues/Gains recognized in IS before in tax return
- Expenses/Losses tax deductible before recognized in IS (depreciation)

DTA - Income tax exp. < Current tax exp.
- Revenues/Gains taxable before recognized in IS
- Expenses/Losses recognized in IS before tax deductible (warranty expenses, post-employment benefits)
- Tax loss carryforwards

Treatment for analytical purpose: DTL not expected to reverse --> equity

c. Tax base of

- Assets
  - Definition
  - Examples
    - Depreciable equipment
    - R&D
    - AR

- Liabilities
  - Definition
  - Examples
    - Customer advance
    - Warranty liability
    - Note payable

d. Calculation

- Adjustment to FS = Taxes payable + change in DTL - change in DTA

- Impact on FS and ratios

  - Temporary differences between tax base and carrying value will reverse result in DTA or DTL
  - Permanent differences between taxable income and pretax income not reverse makes effective tax rate different from statutory tax rate

  - Effective tax rate = income tax expense / pretax income


g. Valuation allowance for DTA

- >50% probability

- Depreciation --> DTL (if reverse, if not --> equity)
- Impairments --> DTA
- Restructuring --> DTA
- LIFO, FIFO
- Post-employment benefits and deferred compensation --> DTA
- Unrealized gains/losses on available-for-sale marketable securities

h. Deferred tax items

- Analyze disclosures relating to deferred tax items
  - How disclosures affect FS and ratios
  - Effective tax rate reconciliation

i. IFRS vs. US GAAP (see table in Schweser)
32.1. Long-term Liabilities - Part1 - Financing Liabilities

- Bond terminology
  - a.b. Recognition & measurement
    - Par bond
    - Premium bond
    - Discount bond (incl. zero-coupon debt)
  - Amortization methods
    - IFRS: effective interest rate method
    - US GAAP: prefers: effective interest rate method
    - allows: straight line depreciation
  - Issuance costs
    - IFRS: increase liability \(\rightarrow\) increase effective \(i/r\)
    - US GAAP: capitalize as an asset (prepaid exp.)
  - Fair value reporting option
- c. Derecognition of debt
- d. Debt covenants
- e. Presentation and disclosures
32.2. Long-term Liabilities-
Part 2- Leases & Pension Plans

f. Motivations for leasing vs. purchasing

- Less costly financing
- Reduced risk of obsolescence
- Less restrictive provisions
- OBS financing
- Tax reporting advantages

Operating lease

Finance lease (capital lease)

Lessee

Transfer of title
Bargain purchase option
Lease period >=75% economic life
PV(lease pmts)>=90% fair value

IFRS: similar to US GAAP but less specific, with 1 additional criterion: leased asset is specialized

US GAAP: like lessee with added conditions:
collectability of lease payments is reasonably certain
lessee has substantially completed performance

Lessor

US GAAP: like lessee with added condition: substantially all rights & risks of ownership are transferred to lessee

IFRS: like lessee with added conditions:

US GAAP: If meets one of the criteria

Less restrictive provisions
OBS financing
Tax reporting advantages

32.2. Long-term Liabilities-
Part 2- Leases & Pension Plans

h1. Reporting by Lessee

Operating lease

Finance lease

FS & ratio effects of finance lease compared to operating lease

Balance sheet

Income statement

Cash flow

h2. Reporting by Lessor's

Finance lease

Sales-type lease

Direct financing lease

Operating lease

i. Disclosures of lease

Defined contribution
Service cost
Expected return on plan assets
Actuarial G/L
Prior service costs

Defined benefit
Interest cost

j. Two types

Pension Plans

k. Presentation & disclosure

l. Leverage & coverage ratios
33. Financial Reporting Quality: Red Flags And Accounting Warning Signs

### a. Incentives to
- Overreport earnings
  - Meet earnings expectations
  - Lending covenants
  - Incentive compensation
- Underreport earnings
  - Trade relief (quotas, tariffs)
  - Negotiable favorable terms from creditors
  - Negotiable favorable terms from labor contracts
- Manage the BS
  - More solvent
  - Less solvent
  - Enhance performance ratios

### b. Activities → Low quality of earnings
- Select acceptable accounting → misrepresent economics of transactions
- Structuring transactions → achieve desired outcomes
- Aggressive unrealistic assumptions, estimates
- Exploit intent of an accounting principle: apply narrow rule to broad range of transactions

### c. "Fraud triangle"
- Incentives or pressure
  - Motives to financial stability or profitability
  - Excessive third-party pressures
  - Personal net worth of mgmt or BOD is threatened
  - Excessive pressure to meet internal financial goals
- Opportunity
  - Weakness in internal control
  - Nature of the firm's industry or operations
  - Ineffective mgmt monitoring
  - Complex or unstable organizational structure
  - Deficient internal control
- Attitudes or rationalization
  - Mindset that fraudulent behavior is justified
  - Inappropriate ethical standards
  - Excessive participation by nonfinancial mgmt
  - in the selection of accounting standards
  - Known history of violations by mgmt or board members
  - Obsession with increasing firm's stock price or earnings trend
  - Commitments to third parties
  - Failing to correct known reportable conditions
  - Inappropriately minimizing earnings for tax purposes
  - Use of materiality as a basis to justify inappropriate or questionable accounting methods
  - Strained relationship between mgmt & auditor

### d. Common accounting warning signs & detecting methods
- Aggressive revenue recognition
- CFO growth rate ≠ Earnings growth rate
- Abnormal sales growth as compared to economy, industry or peers
- Abnormal inventory growth as compared to sales growth
- Boosting revenue with nonoperating income and nonrecurring gains
- Delaying expense recognition
- Abnormal use of operating leases by lessees
- Hiding expenses by classifying them as extraordinary or nonrecurring
- LIFO liquidations
- Abnormal gross margin & operating margin as compared to industry peers
- Extending the useful lives of LT assets
- Aggressive pension assumptions
- Year-end surprises
- Equity method investments & OBS special purpose entities
- Other OBS financing arrangements including debt guarantees
34. Accounting Shenanigans On The Cash Flow Statement

Ways to manipulate CFS

- Stretching Accounts Payables
- Financing Accounts Payables
- Securitizing Accounts Receivables
- Repurchasing stock to offset dilution
35. FSA: Applications

- a. Past financial performance of a company
  - Evaluating
    - Reflecting company's strategy
- b. Basic projection of future net income and CF
- c. FSA in assessing credit quality for DEBT investment
  - Three C's
    - Character
    - Collateral
    - Capacity
  - Credit rating agencies use formulas that include
    - Scale and diversification
    - Operational efficiency
    - Margin stability
    - Leverage
- d. FSA in screening for EQUITY investments
- e. Adjustments for comparing different companies
CFA LEVEL 1

STUDY SESSION 11

CORPORATE FINANCE
36. Capital Budgeting

a. Capital budgeting process
   - Step 1: Idea generation
   - Step 2: Analyzing project proposal
   - Step 3: Create firm-wide capital budget
   - Step 4: Monitoring decisions and conducting a post audit

   - Replacement: To maintain business
   - For cost reduction

b. Project Categories
   - Expansion
   - New product/market development
   - Mandatory
   - Other: pet project, high risk (R&D)

b. Basic principles
   - Base on incremental CF
   - # accounting income
   - sunk cost --> exclude!
   - externalities
   - Cannibalization --> include!
   - Opportunity cost --> include!
   - Timing of CF is important
   - After tax basis
   - Financing costs: Exclude! because reflected in required rate of return

b. Interactions
   - Independent vs. Mutually exclusive projects
   - Project sequencing
   - Unlimited funds vs. Capital Rationing

d. Methods
   - NPV
   - IRR
   - Payback period
   - Discounted payback period
   - PI

e. NPV profile
   - Advantage of NPV
   - Advantage of IRR
   - Conflicting project rankings
   - Problems with IRR: Multiple IRR and No IRR problems

f. Which methods are popular?
   - Location: Europe: PP more than IRR and NPV
   - Company Size: Larger: NPV, IRR
   - Public vs Private: Private: PP
   - Public: NPV, IRR
   - Management education: More educated -> NPV, IRR

g. Relationship between NPV, company value and stock price
37. Cost Of Capital

- a, b. Formula & tax effects:
  - c. Weights = Target capital structure (Market values)
    - If lack information --> use Current capital structure + Trend or use Industry average
  - f. Cost of fixed rate debt
    - Yield to maturity approach
    - Debt rating approach
  - g. Cost of preferred stocks (noncallable, nonconvertible)
  - h. Cost of equity capital --> 3 approaches
    - CAPM
      - i. Pure-play method to calculate beta of a project
      - j. Country equity risk premium
        - CRP = Sovereign yield spread \( \times \) (stddev equity/stddev bond)
        - g=retention rate \(*\) ROE
        - Bond yield plus risk premium approach
  - e. Role of MCC in NPV
    - Discount rate = WACC if project same risk level
    - Assumption: same capital structure over the life of project
  - k. MCC schedule
    - Upward sloping with additional capital
    - Breakpoints
  - d. Optimal capital budget
    - MCC & Investment opportunity schedule
  - l. Treatment of Flotation cost
    - Incorrect adjust cost of equity
    - Correct adjust initial project cost
38. Measures Of Leverage

a. Define
   - Leverage or Gearing
     - Business risk
     - Sales risk
     - Operating risk <-- operating leverage
     - Financial risk <-- financial leverage

b. Calculate
   - DOL
   - DFL
   - DTL

c. Effect of financial leverage on Net income & ROE

d,e. Breakeven quantity
39. Dividends and Share Repurchases: Basics

a. Explain

- Cash dividends
- Regular dividends
- Extra/ Irregular/ Special dividends
- Liquidating dividends
- Stock dividends
- Stock splits
- Reverse stock splits

b. Dividend payment chronology

- Declaration date
- Ex-dividend date
- Holder-of-record date
- Payment date

c. Share repurchase methods

- Buy in the open market
- Buy a fixed number of shares at a fixed price
- Repurchase by direct negotiation

d. Effects of share repurchase on EPS

- when the repurchase is financed with company's excess cash
- when the repurchase is financed with debt
  - if after-tax borrowing cost > earnings yield
  - if after-tax borrowing cost < earnings yield

e. Effect of share repurchase on BV per share

f. Why share repurchase is equivalent to Cash dividend
40. Working Capital Management

a. Sources of liquidity

Primary sources:
- Cash balances (selling goods, collecting receivables, from short term investments)
- Short term funding (trade credit from vendors, lines of credit from banks)
- Effective CF management

Secondary sources:
- Liquidating assets (short term or long lived)
- Renegotiating debt agreements
- Filing for bankruptcy
- Reorganizing company

Factors that influence company’s liquidity position:
- Drags on liquidity: delay/reduce cash inflows or increase borrowing cost
- Pulls on liquidity: accelerate cash outflows

b. Liquidity measures

Current ratio = CA/CL
Quick ratio = (Cash + ST marketable securities + Receivables) / CL
Receivables
- Receivables turnover = Credit sales/receivables
- Number of days of receivables = 365/receivable turnover
Inventory
- Inventory turnover = COGS/average inventory
- Number of days of inventory = 365/inventory turnover
Payables
- Payables turnover ratio = purchases/average trade payable
- Number of days of payables = 365/payables turnover

Operating cycle = turn raw materials into cash proceeds from sales
- =days of inventory + days of receivables
Cash conversion cycle
- turn cash investment in inventory back into cash collected
- = Operating cycle - days of payables

C. Working capital effectiveness

Cash conversion cycle
- turn raw materials into cash proceeds from sales
- = days of inventory + days of receivables

Cash conversion cycle
- turn cash investment in inventory back into cash collected
- = Operating cycle - days of payables

US T bills
- Short term federal agency securities
- Bank CD
- Banker’s acceptances
- Time deposits
- Repurchase agreements
- Commercial paper
- MM mutual funds
- Adjustable rate preferred stock

% discount
- Discount basis yield
- Money market yield
- Bond equivalent yield

Purpose and objective
Guidelines
- Who does that
- Responsibilities
- Steps to make investment
- Limitations and constraints

e1. Comparable yields
- (already in Quantitative)

e2. Cash Management Investment Policy

f. Evaluate performance of

Receivables
- Aging schedule
- Weighted average collection period

Inventory

Accounts payable
- Trade credit
- Cost of trade credit
- Number of days of payables
- Uncommitted line of credit
- Committed (regular) line of credit (overdraft)
- Revolving line of credit

From banks
- Short term bank loans, collateralized by
- Banker’s acceptances
- Factoring
- Non bank
- Commercial paper
- Fixed assets
- Inventory
- Account receivables
- Blanket lien

Nonbank finance companies
- Factoring
- Accounts receivable financing
- Factoring
- Commercial paper
- Direct placement through dealers
Steps to construct sales-driven pro forma FSs

See the example on the next page

41. FSA (Pro Forma IS & BS)

Estimating sales
- average compound growth rate of sales over 5-10 years
- regression analysis of GDP growth and sales growth
  - economic cycles
  - seasonality
  - specific events
    - new product introductions
    - changes in regulation
    - competing products

Reconcile IS and BS

L+E > A -> surplus
- reduce L+E
- pay down debt entirely
- pay down debt + buy back common stocks

L+E < A -> deficit
- increase A
- CAPEX
### 41. CONSTRUCTING PRO-FORMA FINANCIAL STATEMENTS

<table>
<thead>
<tr>
<th></th>
<th>Yr 2011</th>
<th>Proportional to sales</th>
<th>Yr 2012 (1st trial)</th>
<th>Yr 2012 (2nd trial)</th>
<th>Yr 2012 (final)</th>
</tr>
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<tbody>
<tr>
<td><strong>INCOME STATEMENT</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Sales</td>
<td>500</td>
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<td></td>
<td></td>
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<tr>
<td>Cost of goods sold</td>
<td>(200)</td>
<td></td>
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<tr>
<td>SG&amp;A</td>
<td>(100)</td>
<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Interest expense</td>
<td>10%</td>
<td>(50)</td>
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<td></td>
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<tr>
<td>Nonoperating income</td>
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<td>Income tax</td>
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<tr>
<td><strong>Net income</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dividends</td>
<td>0%</td>
<td>-</td>
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<td></td>
</tr>
<tr>
<td><strong>Increase/Decrease in Retained earnings</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### **BALANCE SHEET**

|                      |         |                       |                     |                     |                 |
| Current assets       | 100     |                       |                     |                     |                 |
| Net PPE              | 900     | (assume full capacity) |                     |                     |                 |
| **Total assets**     | 1,000   |                       |                     |                     |                 |
| Current liabilities  | 100     |                       |                     |                     |                 |
| Long-term debt       | 500     |                       |                     |                     |                 |
| Common stock         | 100     |                       |                     |                     |                 |
| Retained earnings    | 300     |                       |                     |                     |                 |
| **Total liabilities+equity** | 1,000  |                       |                     |                     |                 |
a. Corporate governance

Majority of BOD is independent
- Meets regularly outside the presence of management
- Chairman of BOD should not be CEO or former CEO
- Board members should not be closely aligned with supplier, customer, share-option plan, pension adviser
- Otherwise, independent board members should have a primary or leading board member
- Able to hire external consultants without management approval
- Firm & subsidiaries, former employees, executives & their families
- Individuals or groups with a controlling interest
- Executive management & their families
- Firm's advisers, auditors & their families
- Entity with a cross directorship with the firm

b. Independence

c. Define "independence"

- no material relationship with
  - firm & subsidiaries, former employees, executives & their families
  - Individuals or groups with a controlling interest
  - Executive management & their families
  - Firm's advisers, auditors & their families
  - Entity with a cross directorship with the firm

b. Frequency of Board Elections

- Annual, not 2-3 years, not staggered (classified)

d. Experience

- Skills, experience, qualifications
- Care & competence
- Ethical stances
- Other board experience
- Regularly attend meetings
- If served on the board for more than 10 years -> not very independent

e. Board committees

Audit Committee
- Financial information
- to shareholders

Remuneration / Compensation Committee
- set executive compensation, commensurate with responsibilities and performance
- make sure independence
- link compensation to firm performance and profitability

Nominations Committee
- recruit new independent board members

Other Board Committees

f1. Provisions of a strong corporate code of ethics

Consultancy contracts
Finder's fees for identifying M&A targets
Other compensation
Related party transactions
Personal use of company's assets

f2. Related party transactions and personal use of company assets

-> should discourage:

Voting Rules
- Confidential voting
- Cumulative voting
- Voting for other corporate changes

Shareowner-sponsored proposals
- Shareowner-sponsored board nominations
- Shareowner-sponsored resolutions
- Advisory or Binding Shareowner proposals

Common stock classes
- dual classes of common stock

Shareowner Legal Rights
- Golden parachutes
- Poison pills
- Greenmail

g. Evaluate policies
43. PM- An Overview

a. Portfolio approach to investing

- Individual investors
  - DC pension plans

- Institutional investors
  - DB pension plans
  - Endowment
  - Foundation
  - Bank
  - Insurance companies
  - Investment companies/Mutual funds
  - Sovereign wealth funds

b. Types of investors

- DC pension plans
- DB pension plans
- Endowment
- Foundation
- Bank
- Insurance companies
- Investment companies/Mutual funds
- Sovereign wealth funds

Training step
- Investment Policy Statement (IPS)

Execution step

Feedback step

c. Steps in PM process

- Planning step
- Execution step
- Feedback step

43. PM- An Overview

d1. Mutual funds

- What is it?
  - 2 categories
    - Open-end funds
    - Closed-end funds

- Types
  - Money market funds
  - Bond mutual funds
  - Stock mutual funds
  - Index funds
  - Actively managed funds
  - No-load funds
  - Load funds

- ETF
  - Separately managed account
    - Long/Short funds
    - Equity market-neutral funds
    - Event-driven funds
    - Long bias, Short bias
    - Fixed income arbitrage funds
    - Event-driven funds
    - Fixed income arbitrage funds
    - Convertible bond arbitrage funds
    - Global macro funds

- Hedge funds
  - Strategies
    - Long/Short funds
    - Equity market-neutral funds
    - Event-driven funds
    - Long bias, Short bias
    - Fixed income arbitrage funds
    - Convertible bond arbitrage funds
    - Global macro funds

- Buyout funds (Private equity funds)

- Venture capital funds
44. Portfolio Risk & Return - Part 1

a. Major return measures

- HPR
- Arithmetic mean return
- Geometric mean return
- Money weighted rate of return
- Gross return
- Pretax nominal return
- After tax nominal return
- Real return
- Leveraged return

b. Characteristics of major asset classes considered in Mean-Variance portfolio theory:

- Asset classes with greatest average return also have highest standard deviation
- Real return much more stable than nominal returns
- Returns distributions are negatively skewed greater kurtosis (fatter tails than normal distribution)
- Liquidity is a major concern in emerging markets & thinly-traded securities

c. Calculate

- Mean
- Variance
- Covariance
- Correlation

d. Risk aversion

- Risk averse investor
- Risk- seeking (risk-loving)
- Risk neutral

e. Portfolio standard deviation

f. If rho<1 --> Effect on portfolio's risk:

- Minimum variance frontier of risky assets
- Efficient frontier of risky assets
- Global minimum variance portfolio

g. Interpret

- Investor's utility
- Capital allocation line (CAL)

h. Selection of an optimal portfolio
45. Portfolio Risk & Return - Part 2

a. Risk free asset + Portfolio of risky assets -->
Return =
Standard deviation =

b. CAL (Capital Allocation Line)
CML (Capital Market Line)

c. Risks
Systematic
Nonsystematic

d. Return generating models
Multifactor models
Types of Factors
- Macroeconomic
- Fundamental
- Statistical

- Fama & French three-factor model
- Firm size, Firm B/P, Rm-Rf
- Carhart suggest 4th factor: prior period returns --> to measure price momentum

- Market model

f. Calculate Beta
Slope of regression of returns on market index
= covar / variance of market portfolio

e. CAPM & SML

- Sharpe ratio
- M-square
- Treynor measure
- Jensen's alpha
46. Basics Of Portfolio Planning & Construction

a. Reasons for a written IPS

b. Major components of an IPS

c. Investment objectives

(denied from communications with the client)

Risk objectives

Return objective

d. Risk tolerance

Ability
Willingness

Liquidity
Time horizon
Tax situation
Legal & regulatory
Unique circumstances

Investment guidelines (how the policy will be executed, asset types permitted, leverage)

Evaluation of performance (e.g., benchmark)

f. Asset classes

Definition & Specification

Correlations within a class should be very high
Correlations between classes should be low

Equities
Bonds
Cash
Real estate
Alternative
Hedge funds, PE funds, commodity funds, artwork, intellectual property rights

Tactical asset allocation (deviate from strategic asset allocation)

Rebalancing: how & when

Strategic (baseline) asset allocation

Identify investable asset classes
Risk, Return, Correlation
Efficient frontier

Identify portfolio which best meets risk & requirement of investor (based on IPS)

to take advantage of perceived short term opportunities
success depends on
manager's ability to identify short term opportunities
the existence of such short term opportunities
manager's skill
opportunities (mispricing or inefficiencies)

g. Principles of portfolio construction

Tactical asset allocation

Security selection
Risk budgeting

Role of asset allocation
CFA LEVEL 1

STUDY SESSION 13 & 14

EQUITY
47.1. Market Organization & Structure (part 1)

a. Main functions of financial system
- Saving
- Borrowing
- Issuing equity
- Risk management
- Exchanging assets
- Utilizing information

Supply & demand determine returns (i/r) = Equilibrium interest rate
Allocate capital to most efficient uses

b. Classification of assets

b1. Classification of assets

- Financial vs. Real assets
- Public vs. Private securities
- Debt vs. Equity vs. Derivative

c. Asset classes

- Securities
  - Common stock
  - Preferred stock
  - Warrants
  - Fixed income
  - Convertible debt
  - Mutual funds
  - ETFs and ETNs (depositories)
  - ABS
  - Hedge funds

- Pooled investment vehicles
  - Mutual funds
  - ETFs and ETNs (depositories)
  - ABS
  - Hedge funds

- Currencies
  - Forward, Futures, Swap, Option
  - Insurance
  - Credit default swap

- Contracts

- Commodities

- Real assets

Spot vs. Derivative markets

i. Primary vs. Secondary markets

- Primary market
- IPO vs. Secondary issues (or seasoned offerings)
- Public offerings vs Private placements & other transactions
- Secondary market -> importance: Securities trade after initial offerings provide liquidity

Money vs. Capital markets

Traditional investment market (debt, equity) vs.
Alternative market (hedge funds, commodities, real estate...)

b2. Classification of markets

j1. Distinguish

- Call market
  - Trades occur at specific times
  - All trades, bids, asks are declared, and then one negotiated price is set to clear the market for the stock
  - Traders/investors indicate their bids and asks
  - NOT a dealer or quote-driven market
  - used in smaller markets to set opening prices and prices after trading halts on major exchanges

- Continuous market
  - Trade occur any time the market is open
  - Price is set by auction process dealer bid-ask quote

- Quoted-driven markets (dealer markets, price-driven markets, OTC markets)
  - Order-driven markets (rules are used to match buyers & sellers)
  - Brokered markets
  - Order matching rules
  - Trade pricing rules

j2. Distinguish

j3. Market information

- Pre-trade transparent
- Post-trade transparent

- Brokers
- Block brokers
- Investment banks
- Dealers
- Exchanges
- Alternative trading systems (ATS)

- Securitizers
- Depository institutions
- Insurance companies
- Arbitrageurs
- Clearinghouses
- Custodians
47.2. Market Organization & Structure (part 2)

e. Positions
- Long position
- Short position
- Leveraged position

f. Margin transaction
- Leverage ratio
- Margin lending rate
- Margin requirement
  - The proportion of total transaction value that must be paid in cash
  - Initial margin (IM)
  - Maintenance margin (MM) → margin call
- Margin call price = \( P_0 \times \frac{(1 - IM)}{(1 - MM)} \)

Bid-ask
- Market order
- Limit order
- All-or-nothing order
- Hidden order
- Iceberg order

Execution instructions
- Stop order
  - Stop loss orders
  - Stop-buy & Stop-sell orders
- day order
- good-till-cancelled
- immediate or cancel order (fill or kill order)
- good-on-close order
- good-on-open order

Validity instructions
- market-on-close order

Clearing instructions

47.2.1. Characteristics of well-functioning financial system
- Operationally efficient
- Informationally efficient
- Allocationally efficient

k. Characteristics of well-functioning financial system
- low trading costs
- Prices that rapidly adjust to new info
- The prevailing price is fair since it reflects all available info regarding the asset
- Investors can save at fair rates of return
- Creditworthy borrowers can obtain funds
- Hedgers can manage risks
- Traders can obtain assets they need

l. Objectives of market regulation
- Without regulation → Problems
  - Fraud & theft
  - Insider trading
  - Costly information
  - Defaults
- Consequences
  - liquidity declines, firms shun risky projects, new ideas go unfunded, economic growth slows

Regulation can be provided by
- Governments
- Industry groups

Market regulation should
- Protect unsophisticated investors → preserve trust
- Require minimum standards of competency and make it easier for investors to evaluate performance
- Prevent insiders from exploiting other investors
- Financial reporting requirements
- Require minimum levels of capital
48.1. Security Market Indices (part 1)

- Describe a security market index
- Calculate for an index
  - Price return
  - Total return
- Index construction & management
  - Which target market
  - Which securities
  - Weighting
    - Rebalancing frequency
    - Re-examining selection & weighting
- Weighting methods
  - Price weighted index
    - Arithmetic average
    - DJIA
    - 30 stocks
    - 2 major indexes
    - Limited number of stock criticisms
    - Downward bias
    - Large growing firms --> splits --> lose weights
    - Nikkei Dow Jones Stock Average
      - 225 stocks
  - Equal weighted index
    - Arithmetic average return of the index stocks equivalent to a portfolio that has equal dollar amounts invested in each stock in the index
    - Examples
      - The Value Line (VL) Composite average
      - Financial Times Ordinary Share Index
        - 30 stocks on LSE
  - Market-cap weighted index (or value weighted index)
    - Criticism: large company has greater impact
    - Float-adjusted market cap-weighted index
    - Fundamental weighting (earnings, dividends, cash flow)
      - Example
48.2. Security Market Indices (part 2)

f. Rebalancing & reconstitution

g. Uses of security market indices
   - Reflection of market sentiment
   - Benchmark of manager performance
   - Measure of market return and risk
   - Measure of beta and risk-adjusted return
   - Model portfolio for index funds

h. Types of equity indices
   - Broad market index
   - Multi-market index
   - Multi-market index with fundamental weighting
   - Sector index
   - Style index

i. Types of fixed income indices
   - Characteristics: Large universe of securities, Dealer markets and infrequent trading
   - Sectors, geographic regions, levels of country economic development, type of issuers or collateral, coupon, maturity, default risk, inflation protection
   - Broad market indexes, sector indexes, style indexes & other specialized indexes

j. Indices representing alternative investments
   - Commodity indexes
   - Real estate indexes
   - Hedge fund indexes

k. Compare & contrast types of security market indices
49. Market Efficiency

a. Concepts

b. Distinguish

- Market value
- Intrinsic value

- Number of market participants
- Availability of information
- Impediments to trading
- Transaction and information costs

c. Factors affecting a market's efficiency

d. Forms of EMH
- Weak form
- Semi-strong form
- Strong-form

e. Implications of each form of EMH for
- Fundamental analysis
- Technical analysis
- Choosing between active and passive portfolio management

f. Market pricing anomalies
- Anomalies in time-series data
  - Calendar anomalies
  - Overreaction and momentum anomalies
- Anomalies in cross-sectional data
  - Size effect
  - Value effect
- Other anomalies
  - Closed-end investment funds
  - Earnings announcements
  - IPO
  - Economic fundamentals
- Implications for investors

- January effect (or turn-of-the-year effect)
- Turn-of-the-month effect
- Day-of-the-week effect
- Weekend effect
- Holiday effect

- Overreaction and momentum anomalies

- Loss aversion
- Investor overconfidence
- Representativeness
- Gambler's fallacy
- Conservatism
- Disposition effect
- Narrow framing
- Information cascades
- Herding behavior

g. Behavioral finance
50. Overview Of Equity Securities

a. Characteristics of equity securities
   - Common shares
   - Callable common shares
   - Putable common shares
   - Preference shares
   - Cumulative preference shares
   - Convertible preference shares

b. Equity classes
   - Public equity securities
   - Private equity securities

   Characteristics
   - Venture capital
   - Leveraged buyouts (LBO)
   - Private investment in public equity (PIPE)

   3 main types
   - Direct investing
     - Depositary receipts (DRs)
     - Global depositary receipts (GDRs)
     - American depositary receipts (ADRs)
     - Global registered shares (GRS)
     - Basket of listed depositary receipts (BLDR)

c. Distinguish
   - Public equity securities
   - Private equity securities

   Characteristics
   - Venture capital
   - Leveraged buyouts (LBO)
   - Private investment in public equity (PIPE)

   3 main types
   - Direct investing
     - Depositary receipts (DRs)
     - Global depositary receipts (GDRs)
     - American depositary receipts (ADRs)
     - Global registered shares (GRS)
     - Basket of listed depositary receipts (BLDR)

d. Methods for investing in non-domestic equity securities

   - Direct investing
     - Depositary receipts (DRs)
     - Global depositary receipts (GDRs)
     - American depositary receipts (ADRs)
     - Global registered shares (GRS)
     - Basket of listed depositary receipts (BLDR)

e. Risk and Return characteristics of various types of equity securities

f. Role of equity securities in financing company’s assets & creating company value

   - Market value of equity securities
   - Book value of equity securities

   Company’s accounting ROE =
   - Company’s cost of equity = rate of return required by investors

   Investors’ required rates of return = depends on estimates of firm’s future CF & risk

   - Distinguish
     - Market value of equity securities
     - Book value of equity securities

   Company’s accounting ROE =
   - Company’s cost of equity = rate of return required by investors

   Investors’ required rates of return = depends on estimates of firm’s future CF & risk
51.1. Introduction To Industry And Company Analysis (part 1)

a. Industry analysis
- Grouping companies by
  - Products & services
  - Sensitivity to business cycles
  - Statistical methods (cluster)
- Different sectors
  - Cyclical
  - Non-cyclical
- Firms with highly correlated returns: same group
- Limitations

b. Industry classification
- Industry classification systems
- Commercial classifications
- Government classifications
- Systems
- GICS
- RGS
- Industry Classification Benchmark by DJ & FTSE
- Classification
- Basic material and processing firms
- Consumer discretionary
- Consumer staples
- Energy
- Financial services
- Industrial and producer durables
- Technology
- Telecommunications
- Sectors
- Cyclical sectors
- Non-cyclical sectors
- Defensive (stable)
- Growth

C. Sensitivity to business cycle
- Firms
- Cyclical firms
- Non-cyclical firms

D. Peer group

E. Elements of an industry analysis

F. External influences on industry growth, profitability and risk
- Macroeconomic factors
- Technological factors
- Demographic factors
- Government policies
- Social influence
Introduction To Industry And Company Analysis (part 2)

51.2. Effects on return on invested capital and pricing power of industry concentration
   - Industry concentration
     - Ease of entry
     - Capacity
     - Market share stability

h. Effects on return on invested capital and pricing power of industry concentration

i. Principles of strategic industry analysis - Michael Porter’s five forces
   - Rivalry among existing competitors
   - Threat of new entrants
   - Threat of substitute products
   - Bargaining power of buyers
   - Bargaining power of suppliers

j. Example of the candy/confections industry

k. Elements of a company analysis
   - Analyze
     - Financial condition
     - Products and services
     - Competitive strategy
   - ROE (DuPont)
   - Defensive vs. Offensive
     - Cost leadership vs. Product differentiation
   - Firm overview, Industry characteristics, Product demand, Product costs, Pricing environment, Financial ratios, Projected financial statements and firm valuation
52. Equity Valuation: Concepts And Basic Tools

a. Factors to consider when exploiting mispricing
   - Size of differences between market price and intrinsic value
   - Confidence about valuation model
   - Confidence about the inputs
   - Why stock is mispriced
   - If market price will move toward intrinsic value

b. Equity valuation models
   - Discounted cash flow models
   - Dividend discount models
   - Free cash flow to equity models
   - Multiplier models (or market multiple models)
     - Types of models
     - Advantages
     - Disadvantages
   - Asset-based models
     - Explain
     - Advantages
     - Disadvantages

c. Rationale

   d. Preferred stock
      - Stable & mature
      - Non-cyclical
      - Dividend-paying

   e. Common stock
      - Appropriate for companies that are

   f. Appropriate for companies that are

   g. Rationale
      - Stock price / fundamentals
      - Enterprise value / EBITDA or revenue
      - Types of models
      - Advantages
      - Disadvantages

   h. Stock price / fundamentals
      - Enterprise value / EBITDA or revenue
      - Types of models
      - Advantages
      - Disadvantages

   i. Common stock
      - Appropriate for companies that are

   j. Asset-based models
      - Explain
      - Advantages
      - Disadvantages
53. Features Of Debt Securities

a. Bond’s indenture
   - Rights and obligations
     - Covenants
       - Negative
       - Affirmative

b. Basic features of a bond
   - Coupon rate structures
     - Zero coupon
     - Step-up notes
     - Deferred coupon bonds
   - Floating-rate securities
     - Coupon formula
     - Inverse floater
     - Inflation-indexed bonds
     - Caps and floors

c. Bond trades between coupon dates
   - Full (dirty) price = Clean Price + Accrued interest
     - Cum coupon vs. Ex-coupon
     - Trading flat

d. Provisions for redemption and retirement of bonds
   - Nonamortizing/ Bullet bond/ Bullet maturity
   - Amortizing securities
   - Prepayment options
     - Call provisions
   - Nonrefundable bonds
   - Sinking fund provisions
     - Cash payment
     - Delivery of securities
     - Accelerated sinking fund provision
     - Redemption price
       - Regular
       - Special

  e. Embedded options
     - Security owner (bondholders) options
       - Conversion option
       - Put provision
       - Floors
     - Security issuer (borrowers) options
       - Call provision
       - Prepayment options
       - Accelerated sinking fund provisions
       - Caps

e. Embedded options

f. Methods to finance the purchase of a security
   - Margin buying
   - Repo
54. Risks Associated With Investing In Bonds

- **Risks:**
  - Interest rate risk
  - Yield curve risk
  - Call risk
  - Prepayment risk
  - Reinvestment risk
  - Credit risk
    - **Forms:**
    - Default risk
    - Credit spread risk
    - Downgrade risk
    - **Factors affecting reinvestment risk:**
    - Coupon
    - Call feature
    - Amortizing
    - Prepayment option
  - Liquidity risk
    - **Why important even hold to maturity:**
  - Exchange-rate risk
  - Inflation risk
  - Volatility risk
  - Event risk
    - Disaster
    - Corporate restructuring
    - Regulatory issues
  - Sovereign risk

- **Relations among:**
  - **Coupon rate**
  - **Market yield**
  - **Bond's price relative to par value:**
    - Discount
    - Premium
    - Equal to par

- **Effect on interest rate risk of:**
  - Maturity
  - Coupon
  - Embedded options
  - Call
  - Put
  - Yield

- **Value =**
  - Value of option-free bond
  - Minus
  - Value of embedded call

- ** Callable bond:**
  - Less certain CF - call risk/prepayment risk
  - Reinvestment risk
  - Potential price appreciation < option free securities

- **Floating rate security:**
  - Interest rate risk
  - Reasons Price # Par
  - Cap risk
  - Margin

- **Duration =**
  - **Dollar duration =**
  - **Duration and Yield curve risk for a portfolio of bonds**
55.1 Overview Of Bond Sectors And Instruments

**TREASURIES**

- a. Government securities (sovereign debt)
  - Features
    - Credit risk characteristics
  - Distribution methods
    - Regular cycle auction - single price
    - Regular cycle auction - multiple price
    - Ad hoc auction system
    - Tap system

- **Instruments**
  - T-bills
  - T-notes
  - T-bonds
  - TIPS

- b.c. Treasury securities (Treasuries)
  - Two categories (vintage)
    - On-the-run
    - Off-the-run
  - c. Stripped Treasury securities
    - Coupon strips
    - Principal strips
    - STRIPS

- **Agency Bonds**
  - d. Types of US Fed agencies
    - Federally related institutions (owned by US Gov.)
      - Ginnie Mae (Government National Mortgage Association)
      - TVA (Tennessee Valley Authority)
    - GSEs (Government Sponsored Enterprises) (privately owned, publicly chartered)
      - (commonly issue debentures)
      - Federal Farm Credit System
      - Federal Home Loan Bank System
      - Federal National Mortgage Association (Fannie Mae)
      - Federal Home Loan Bank Corporation (Freddie Mac)
      - Student Loan Marketing Association (Sallie Mae)
  - Debentures (unsecured, not backed by collateral)
    - Characteristics
      - Periodic interest
      - Scheduled repayments of principal
      - Principal repayments in excess of scheduled principal payments
    - Mortgage passsthrough security
      - 3 tranches
        - Tranche I
        - Tranche II
        - Tranche III
  - e.f. MBS (Mortgage-backed securities)
    - Types
      - CMOs (Collateralized mortgage obligations)
      - Stripped mortgage-backed securities
    - f. Motivation for creating CMO
55.2 Overview Of Bond Sectors And Instruments (cont.)

- **Instruments**
  - Tax exempt
  - Taxable
  - Tax- backed bonds or GO (General Obligation) bonds
    - Limited tax GO debt
    - Unlimited tax GO debt
    - Double-barreled bonds
    - Appropriation-backed obligations (or Moral obligation bonds)
  - Revenue bonds
  - Insured bonds
  - Prerefunded bonds

- **Rating agencies and Credit ratings**
- **Secured vs. Unsecured Debt**
- **Credit enhancements**
  - Medium term notes
    - Shelf registration (sold over time)
    - Maturity ranges
    - Best effort underwriting
  - Structured notes
    - = typical bond + derivative
    - Purpose: get around restrictions
  - Structured medium term notes
    - Step-up notes
    - Inverse floaters
    - Deleveraged floaters
    - Dual-indexed floaters
    - Range notes
    - Index amortizing notes

- **CORPORATE ISSUES**
  - Instruments
    - Commercial paper
      - Directly placed
      - Dealer placed
    - Negotiable CDs
    - Bankers Acceptances
      - Role of a SPV
        - Motivation
        - External credit enhancements
          - Corporate guarantees
          - LC
          - Bond insurance
  - i. Asset-backed securities
  - j. CDO (Collateralized debt obligation)
  - k. Bonds
    - Primary market
      - Mechanism for placing bonds
    - Secondary market
56. Understanding Yield Spread

a. Interest rate policy tools
- Discount rate: Banks borrow reserves from Fed
- OMO: Buy/Sell Treasuries by Fed (Most commonly used)
- Bank reserve requirement: % of deposits banks must retain
- Persuading banks to tighten/loosen credit policies

b. Yield curve / Term structure of interest rate
- Normal / Upward
- Inverted / Downward
- Flat
- Humped

c. Basic theories of term structure of interest rate
- Pure expectation
- Liquidity preference
- Market segmentation theory

d. Define a spot rate

Yield spread
- Absolute yield spread =
- Relative yield spread =
- Yield ratio =
  - = yield difference b/c of credit rating
  - Relation with the well-being of the economy

f. Credit (quality) spread
- Relation with the well-being of the economy

g. Effect of embedded options

h. Liquidity spread
- Issue size

Maturity spread

i. Tax
- After tax yield of a taxable security
- Tax equivalent yield of a tax-exempt security

j. LIBOR
57. Introduction To The Valuation Of Debt Securities

a. Steps in bond valuation process
   1. Estimate CFs Coupons Principal
   2. Determine appropriate discount rate
   3. Calculate present value

b. Difficulties in estimating CFs
   Defaults and potential credit problems
   Embedded options -> uncertain principal repayment
   Floating rate securities -> uncertain coupons
  Convertible or Exchangeable bonds

c. Compute value of bonds
   Value of zero coupon bonds

d. Time and value of bond

e. Yield and value of bond
   Price-yield profile

f. Arbitrage free valuation approach
58. Yield Measures, Spot Rates And Forward Rates

a. Sources of return from investing in bond
   - Coupons: Principal + Capital gain/loss
   - Reinvestment income

b,c,d. Traditional yield measures
   - Current yield
   - BEY and EAY
   - YTM
   - Limitations: CF will be reinvested at YTM, Bond will be held till maturity
   - Reinvestment income: Reinvestment risk increases with Higher coupons, Longer maturities

b,c,d. Calculate BEY and EAY
   - Assumptions: CF will be reinvested at YTM, Bond will be held till maturity

b,c,d. Reinvestment
   - Limitations: Realized yield can be different from YTM

b,c,d,e. Theoretical Treasury spot rate curve-BOOTSTRAPPING
   - Nominal spread
   - Zero-volatility spread (Z-spread)
   - Option-adjusted spread (OAS): \( OAS = Z\text{ spread} - \text{Option cost} \)

f. Spreads
   - Zero-volatility spread (Z-spread)
   - Option-adjusted spread (OAS)

58. Yield Measures, Spot Rates And Forward Rates
   - Current yield
   - BEY and EAY
   - YTM
   - Limitations: CF will be reinvested at YTM, Bond will be held till maturity
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   - Nominal spread
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f. Spreads
   - Zero-volatility spread (Z-spread)
   - Option-adjusted spread (OAS)
59. Introduction To The Measurement Of Interest Rate Risk

a. Measuring interest rate
   - Full valuation approach (scenario analysis)
   - Duration/convexity approach

b. Price volatility characteristics for
   - Option-free bonds
     - Callable bonds
     - Prepayable bonds
     - Putable bonds

- d,e. Types of duration
  - Effective duration
  - Macaulay duration
  - Modified duration

f. Interpreting duration

g. Portfolio duration = Limitations

j. PVBP = Relationship to duration

- c,h,i. Convexity
  - What is it?
    - Can be positive
    - Can be negative

  - Relation to bond price and yield

- h. Calculation

  - i. Types
    - Modified convexity
    - Effective convexity

k. Impact of yield volatility on i/r risk of bonds
CFA LEVEL 1

STUDY SESSION 17

DERIVATIVES
60. Derivatives
Markets And Instruments

a. Derivative
Exchange-traded vs. OTC

b. Forward commitment
- Forward contracts
- Futures contracts
- Swaps

b. Contingent claim
- Options
  - Calls
  - Puts
-Convertible, callable bonds

c. Derivative markets

Law of one price
- 2 securities/portfolios with identical cash flows

2 securities with uncertain returns combined in a portfolio
61. Forward

a. Positions
   - Long position
   - Short position

b. Settling
   - Deliverable forward contracts
   - Cash settlement
   - Terminating a position prior to expiration
     - with same party (offsetting)
     - with other party

Banks/Financial institutions
   - Bid-ask prices

Dealer

End user
   - Corporations
   - Gov. units
   - Non-profit

c. Parties

1. Equity forward (LOS d)
   - Single stocks
   - Portfolio of stocks
   - Stock index
   - With or without dividends

2. Bond Forward (LOS d)
   - Zero-coupon bonds (T-bills)
     - Quote: annualized % discount from FACE
   - Coupon bonds
     - Quote: yield to maturity
     - Exclusive of accrued interest
     - Include provisions for default, embedded options
     - Can be on individual or portfolio of bonds
   - Types
     - Large banks outside of US
     - Denominated in U$
     - Eurodollar time deposit
       - Published daily by British Banker’s Association
       - Complied from quotes from large banks
       - Annualized 360-day/year
       - Add-on rate (# T-bill)
       - = reference/benchmark rate
     - Euribor
       - Euro lending rate, established in Frankfurt, published by ECB

3. Loan forward (FRA)
   - Settle in cash
   - No actual loan
   - Long=borrower

   e. Rates
     - Eurodollar time deposit
     - Published daily by British Banker’s Association
     - Complied from quotes from large banks
     - Annualized 360-day/year
     - Add-on rate (# T-bill)
     - = reference/benchmark rate
     - E.g.: LIBOR
     - Euribor
     - Euro lending rate, established in Frankfurt, published by ECB

f. Features
   - No actual loan
   - Long=borrower

   g. Payoff of an FRA
     - Formula:
       - Term of FRA # Term of loan
       - E.g.: 2x5 FRA
       - Off-the-run FRA

4. Currency Forward (LOS h)
a. Characteristics of futures (vs. Forward)

- Similar to forward: Deliverable or cash settlement, Zero value at beginning
- Differ from forward:
  - Futures: exchange-traded, Futures are private, do NOT trade
  - Futures are highly standardized, Forwards are customized
  - Futures: clearinghouse as counterparty, reduce credit risk
  - Futures market regulated by government

b. Quality, Quantity, Delivery time, manner, minimum price fluctuation

Long vs. Short

Hedger vs. Speculator

c. Margins

- # margins in securities markets
- Types of margins:
  - Initial margin
  - Maintenance margin
  - Variation margin

Settlement price

How a futures trade takes place

- Price limits:
  - Limit move
  - Limit up
  - Limit down
  - Locked limit

- Marking to market: adjust margin balance on daily basis (or more frequent in chaotic situations)

d. 4 ways

- Delivery
- Cash settlement
- Reverse/Offsetting/Closing out
- Ex-pit transactions

- Delivery options in futures contracts:
  - For short position: What (T-bonds), where (gold, corn), when to deliver

62. Futures

e. Terminate a futures

f. T-bill futures

- Eurodollar futures

- T-bond futures

- Stock Index futures

- Currency futures
63.1. Option (part 1)

a. Options characteristics
   - Call vs. Put
   - Long vs. Short
   - Option premium

b. American vs. European options

c. Moneyness
   - In-the-money
   - Out-of-the-money
   - At-the-money

d. Exchange-traded vs. OTC options

e. Underlying instruments
   - Financial options
     - Equity
     - Stock indices
     - Bond
     - Interest rate
     - Currencies
     - Options on futures
     - Commodity options

f. Compare
   - interest rate options
     - FRAs
     - Cap
     - Floor
     - Collar
63.2. Option (part 2)

h. Option payoffs
   - for a stock option
   - for interest rate options

i. Option value = Intrinsic value + Time value

j,k. Rules for minimum values and lower bounds
   - European call
   - European put
   - American call
   - American put

l,o. Option price affected by
   - Exercise price
   - Time to expiration
   - Interest rate
   - Volatility

m. Put-Call parity

n. CF on the underlying asset affect
   - Put-Call parity
   - Lower bounds
64. Swap

Characteristics

a. How swaps are terminated
   - Mutual termination
   - Offsetting contract
   - Resale
   - Swaption

b. Currency swaps

Plain vanilla interest rate swaps

Equity swaps
65. Risk Management Applications of OPTION Strategies

a. Simple Call & Put
   - Value at expiration
     - Profit
     - Maximum profit/loss
     - Breakeven underlying price
     - General shape of the graph
     - Market outlook of investors

b1. Covered call

b2. Protective put
66.1. Alternative Investments - Part 1

a. Managed investment companies (mutual funds)
   - Open-end vs. Closed-end
     - NAV
     - Investment company fees
       - one-time fees
       - ongoing annual fees

b. Strategies
   - Style
     - Sector
     - Index
     - Global
     - Stable Value
   - In-kind process
     - Advantages
       - Diversification
       - Exchange traded
       - Better risk management
       - Composition is known
       - Operating expense ratio
       - No trading at a discount or premium
       - Tax
       - Dividend
     - Disadvantages
       - Few indices
       - Intraday trade
       - Inefficient markets
       - Larger investors
   - ETF
     - Definition: mimic an index
     - Advantages
       - In-kind process
       - price
       - tax
     - Disadvantages
       - Few indices
       - Intraday trade
       - Inefficient markets
       - Larger investors
     - Risks
       - Market risk
       - Asset class/sector risk
       - Trading prices ≠ NAV (depth and liquidity)
       - Tracking errors
       - Derivative risks ➔ credit risk
       - Currency and country risks
66.2. Alternative Investments - Part 2

**e.f.g. Real Estate Investment**

- Outright ownership
- Leveraged equity position
- Mortgages
- Aggregation vehicles

**f.g. Approaches to the valuation of real estate**

- Cost method
- Sales comparison method
- Income method
- Discounted after tax cash flow model

**Characteristics**

- Illiquidity
- Long term horizon
- Difficulty in valuation
- Limited data
- Entrepreneurial / Management mismatches
- Fund Manager incentive mistakes
- Timing in the business cycle
- Requirement for extensive operations analysis

**h.i. Venture capital investing**

- Stages
  - Balanced stage
  - Formative stage
  - Early stage
  - R&D
  - Seed stage
  - Initial marketing
  - Commercial production
  - Start-up financing
  - Producing and selling products
  - First stage financing
  - Not yet generating income
  - Expansion stage financing
  - Second stage investing
  - Second stage investing
  - Commercial production
  - Mezzanine (bridge financing)
  - Third stage financing
  - Major expansion
  - IPO

- i. NPV of a venture capital project
66.3. Alternative Investments-Part 3

j. Hedge fund

k. Fund of funds investing

n. How legal issues affect valuation

n,o. Closely held companies

o. Valuation methods

p. Distressed securities investing

q,r Commodities

Absolute return

Forms
- Limited partnership
- Limited liability corporation
- Offshore corporation

Classifications
- Long/short funds
- Market-neutral funds
- Global macro funds
- Event-driven funds

Leverage

Unique risks
- Illiquidity
- Potential for mispricing
- Counterparty credit risk
- Settlement errors
- Short covering
- Margin calls

Performance

Biases
- Self-selection bias
- Backfilling bias
- Survivorship bias
- Smoothed pricing
- Option-like strategies
- Fee structures and gaming
- Effect of survivorship bias

Fund to invest in hedge funds

Benefits

Drawbacks

n,o. Closely held companies

Cost approach

Comparable approach

Income approach

Motivation for investing in commodities

Commodities

Commodities derivatives

Commodity-linked securities

Sources of return on collateralized commodity futures position

Self-selection bias

Backfilling bias

Survivorship bias

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Effect of survivorship bias

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Effect of survivorship bias
67. Investing in Commodities

- a. Relationship between spot prices and expected future prices
  - Contango
  - Backwardation

- b. Commodity investment
  - Sources of return
    - Risk
    - Effect on portfolio

- c. Commodity index strategy
  - Active investment