

# Investments

## Seminar 1

Goal of investing - grow money to achieve long term financial goals

- Investment: any asset into which you place funds with the expectation that it will generate positive income and increase its value
- Portfolio: a collection of different investments
- Return: reward from investing

## Attributes of investments

- Securities - investments issued by firms, govt, or orgs that represent a financial claim on the issuer's resources
- Liquidity - ability to buy and sell quickly
- Property - real assets that are typically less liquid than securities

## Types of Investments

- Direct investment - investor directly acquires claim/ownership
  - Buying a stock directly
- Indirect investment - investor indirectly acquires a claim/ownership via a professional investment manager
  - Buying a mutual fund

## Debt, Equity, and Securities

- Debt (bonds) - Investor lends funds in exchange for interest income and repayment of loan in future
- Equity (common stocks) - Ongoing ownership in a business
- Derivative Securities (options) - Neither debt nor equity, derive value from an underlying asset

## Risky Investments

- Risk - uncertainty surrounding the return that a particular investment will generate (more predictable, lower avg returns; less predictable, higher avg returns)
- Diversification - different types of assets in an investment portfolio

## Investment Lengths

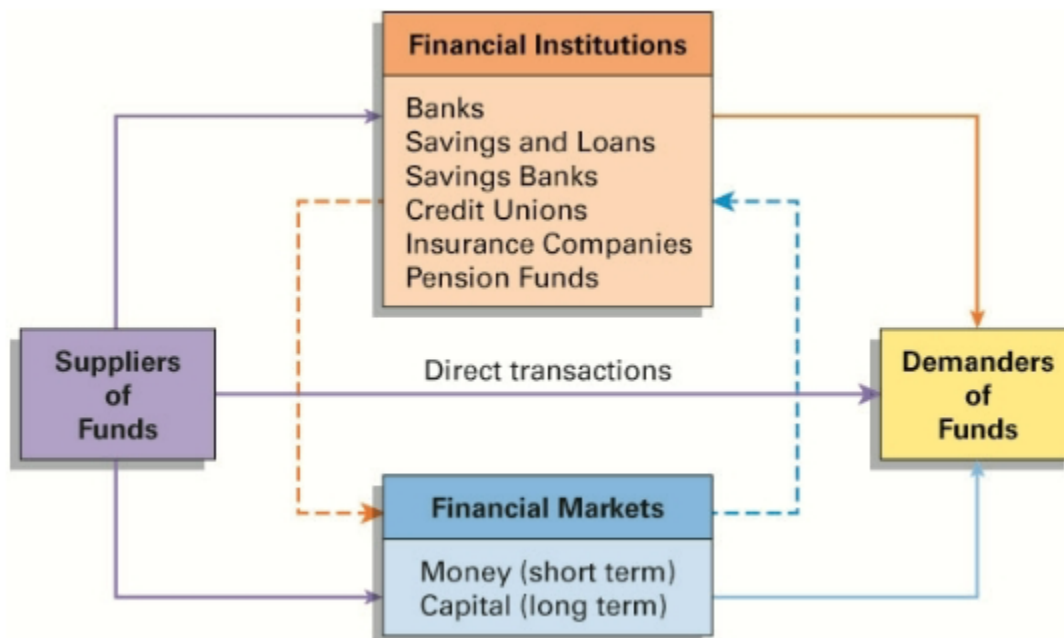
- Short term - maturities of one year or less
- Long term - maturities of longer than one year

## Domestic/Foreign

- Domestic - Securities issued by domestic companies
- Foreign - Securities issued by foreign companies

## Structures of Investment Process

- Households - net suppliers of funds
- Government - net demanders of funds
- Businesses - net demanders of funds
- Financial Institutions - organizations who pool the resources of households and other savers and use those funds to make loans and invest in securities
- Financial Markets - suppliers and demanders of funds trade financial assets



## Types of Investors

- Individual Investors - individuals that manage their own funds
- Institutional investors - investment professionals who earn their living by managing other people's money

Investors have a large variety of investments to choose from to achieve their goals

- Short-term investments
  - US Treasury Bills
  - Provide high liquidity (investments with live of 1 year or less)

- Common stock
  - Represents an ownership share of a corporation
- Fixed-income securities
  - Bonds are long-term debt instruments issued by corporations and governments
- Mutual funds
  - Allow investors to construct diversified portfolios without investing a lot of money
- Exchange-traded funds
  - Like mutual funds except ETF shares trade on exchanges
- Hedge funds
  - Funds that pool resources from different investors, but usually have higher minimum investments and are less regulated than mutual funds
- Derivatives securities
  - Securities that derive their value from some underlying asset
    - Options - securities that give the investor an opportunity to buy or sell an underlying asset at a specified price for a limited time
    - Futures - legally binding contracts stipulating that the seller will make delivery and the buyer will take delivery of an asset at a specific price
- Other popular investments
  - Tax advantaged investments (like municipal bonds)
    - Higher after tax returns by reducing the tax investors will pay
  - Real estate (like buildings)
    - Potential returns in the form of rental income, tax write-offs, and capital returns
  - Tangibles (like gold)
    - Investment assets, other than real estate, that can be seen and touched

## Investment Plan

- Developing a well thought-out investment plan encourages you to follow a disciplined approach to managing money
  - Writing an investment policy statement
    - Summarize your current situation
    - Specify your investment goals (financial objectives you wish to achieve)
    - Articulate your investment philosophy (risk)
    - Set investment selection guidelines
    - Assign responsibility for selecting and monitoring investments
  - Considering personal taxes
    - Basic sources of taxes - federal, state, local
    - Types of income
      - Active (wages)
      - Portfolio (interest, dividends)
      - Passive (real estate, royalties)
    - Capital asset - property owned and used by taxpayer, including securities and personal residence

- Capital gain - amount by which the proceeds from the sale of a capital asset exceed its original purchase price
  - Capital assets held less than one year - ordinary income tax rates
- Capital loss - amount by which the proceeds from sale of a capital asset are less than its original purchase price
  - Tax reduction on
- Tax planning
- Tax-Advantaged Retirement Savings Plan
- Investing over the life cycle
  - Investors tend to follow different investment philosophies
    - Growth - 20 to 45 yrs
    - Middle age consolidation - 45 to 60 yrs
    - Income oriented retirement - 61+ yrs
- Investing over the business cycle
  - Investments are affected by conditions in the US economy
  - The business cycle reflects the current status of the economic variables: GDP, industrial production, disposable income, unemployment rate
  - A strong economy is reflected in an expanding business cycle

Planning for and providing for adequate liquidity, in the event of an unexpected expenses or opportunities for example, is an important part of the investment plan

The role of short-term investments

- Primary function is to provide a pool of reserves for emergencies or simply to accumulate funds for some specific purpose
- Short-term investments earn either a stated rate of interest or earn interest on a discount basis
- High liquidity, low risk of default
- Low levels of returns, loss of purchasing power from inflation
- Emphasis on safety and security instead of high yield

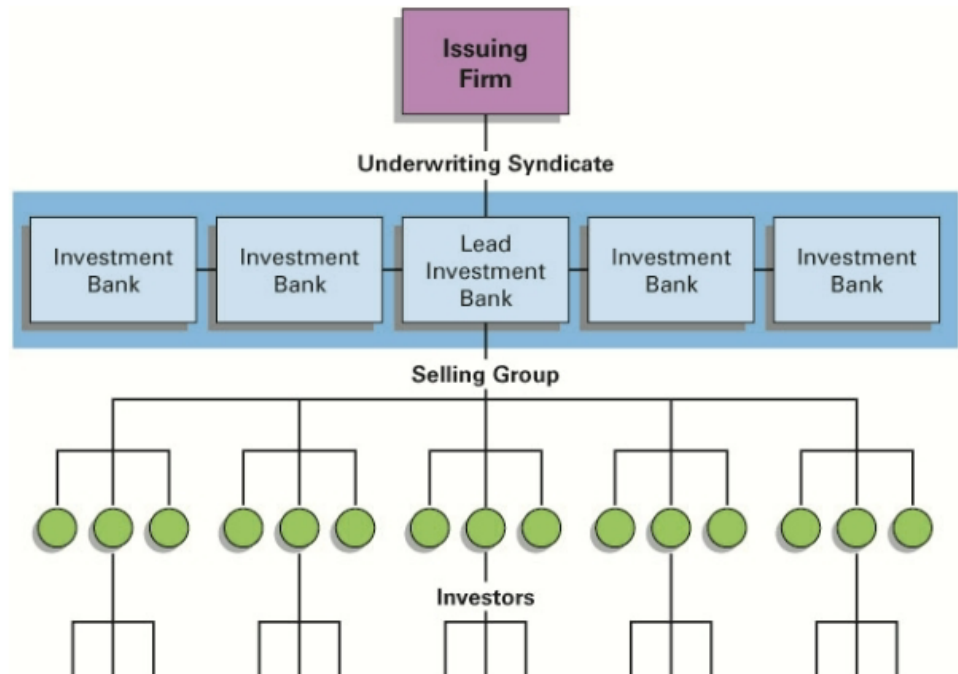
## Career in Finance

- Commercial banking
- Corporate finance
- Financial planning
- Insurance
- Investment Banking
- Investment Management

# Seminar 2

## Securities Markets

- The goal of securities markets is to permit financial transactions to be made quickly and at a fair price
  - Securities Markets - markets that allow buyers and sellers of securities to make financial transactions
- Types of securities markets
  - Money market - the market where short term debt securities trade
  - Capital market - the market where long-term securities, such as stock and bonds, are bought and sold, classified as primary or secondary
  - Securities and Exchange Commission (SEC) - federal agency that regulates the securities markets
  - Primary Market - the market in which new issues of securities are sold to investors
    - Initial public offering - the first public sale of a company's stock
      - Underwriting - promoting the stock and facilitating the sale of shares
      - Prospectus - registration statement describing the issue
      - Quiet period - time period after prospectus is filed when company must restrict what is said about the company
      - Red herring - preliminary prospectus available during the waiting period
      - Road show - series of presentations to potential investors
      - IPO Underpricing =  $(\text{Market Price [aka Stock Price]} - \text{Offer Price}) / \text{Offer Price}$
      - Gross Proceeds = IPO Offer Price x No. of IPO Shares Sold
    - Public offering - securities offered for sale to public investors
    - Rights offering - shares are offered to existing shareholders on a pro rata basis
    - Private placement - securities sold directly to select groups of private investors



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- Benefits of direct listing
  - Saving the issuer money in ib fees
  - Allows pre-IPO investors to liquidate some of their holdings making it easier for firm to add equity to employee compensation packages
- Disadvantages
  - No road show to explain the business to investors
  - Uncertainty around where the initial price will be set
- Broker markets and dealer markets
  - Broker Market - national and regional securities exchanges. Trades are executed when a buyer and seller are brought together by a broker and the trade takes place directly between the buyer and seller
  - Dealer market - Made up of the Nasdaq OMX and OTC trading venues. Trades and executed with a dealer (market maker) in the middle. Sellers sell to a market maker at a stated price. The market maker then offers the securities to a buyer
    - Bid/ask spread = ask - bid price
  - Bid price - the highest price offered to purchase a given security
  - Ask price - the lowest price offered to sell a given security
- Electronic and high-frequency trading
  - Electronic Communications networks (ECN) = automated computer-based trading that electronically execute orders by matching or crossing the buy and sell orders for securities
    - Most effective for high volume, actively traded securities and play a key role in after-hours trading
    - Can save money because they only charge a transaction fee

- High frequency trading - ultra-fast algorithmic trading that relies on computers and electronic order execution
  - Traders use highly sophisticated computer based trading strategies to analyze markets and execute order based on market conditions
  - Decimalization - the quoting and transacting of securities in decimals

Diversification: the inclusion of a number of different securities in a portfolio to increase returns and reduce risk

An investor can greatly increase the potential for diversification by holding a wider range of industries and securities, securities traded in a larger number of markets, and securities denominated in different currencies

- Growing Importance of International Markets
  - Top 4 securities by dollar volume = NYSE, Nasdaq, London, Tokyo
- International Investment Performance
  - Foreign markets do not necessarily move with the US securities market
- Ways to Invest in Foreign Securities
  - Indirect ways - purchase shares of US based multinational with substantial foreign operations
  - Direct ways - Purchase securities on foreign exchanges
    - Buy securities of foreign companies that trade on US stock exchanges
- Risks of Investing Internationally
  - Usual investment risks still apply
  - Government policies risks
  - Currency exchange risk, risk caused by the varying exchange rates between the currencies of 2 countries

An investor can make a number of basic types of securities transactions. Each type is available to those who meet the requirements established by government agencies as well as by brokerage firms

- Long purchase
  - Transaction in which investors buy securities, usually in the hope they will increase in value and can be sold at a later date for profit
  - Object is to “buy low and sell high”
  - Most common type of transaction
  - Return comes from any dividends or interest received during the ownership period plus the difference between the purchase and selling prices
    - Reduced by transaction costs
- Margin Trading
  - Borrowing money from the brokerage
  - Advantages - magnifies returns, allows an investors to spread their limited capital over a Number of investments which promotes diversification
  - Disadvantages - magnifies losses, cost of a margin loan

- Margin Trading
  - **Margin trading:** Investors use funds borrowed from brokerage firms to make securities purchases.
  - **Margin requirement:** the minimum amount of equity that must be in the margin investor's own funds. The margin requirement for stocks has been 50% for some time; set by the Federal Reserve Board.
  - Essentials of Margin trading
    - The idea of margin trading is to employ financial leverage.
      - **Financial leverage:** the use of debt financing to magnify investment returns
    - **Margin loan:** official vehicle through which the borrowed funds are made available in a margin transaction.

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- Margin Trading
  - The Basic Margin Formula

$$\text{Margin} = \frac{\text{Value of securities} - \text{Debit balance}}{\text{Value of securities}} = \frac{V - D}{V}$$

- Example of Using Margin

$$\text{Margin} = \frac{V - D}{V} = \frac{\$6,500 - \$1,200}{\$6,500} = 0.815 = \underline{\underline{81.5\%}}$$

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- Short Selling
  - Practice of selling borrowed securities
  - Investor borrows securities from a broker
  - Broker lends securities owned by other investors that are held in a street name
  - Investor must make a deposit with the broker equal to the initial margin requirement applied to short-sale proceeds

## Seminar 3

- Investment research
  - Education sites
  - Articles, tutorials, online classes
    - Motley fool, investopedia
- Investment tools
  - Planning - develop plans, set goals
  - Screening - screen stocks on characteristics
  - Charting - Plot charts that track performance
  - Stock quotes and portfolio tracking - keep track of investments by obtaining stock quotes



Financial calculators -> calculator.net  
Yahoo, zacks -> stocks screeners

## Internet Trading

- Risk is still involved
- No live broker to act as a safety net
  - High transaction costs
  - Higher taxes on short term gains
- Beware of risks of margin trading
  - Higher taxes on short term gains

## Investment Information

- Descriptive Information - factual data based on past performance of the economy, market, industry, company, etc
- Analytical information - available current data in conjunction with projections and recommendations about potential investments
  - Types of info
  - Sources of info

### Types of info

- Economic and current event info
- Industry and company information
- Information on alternative investments
- Price information
- Information on personal investment strategies

### Sources of info

- Financial journals
  - Wall Street Journal - best known source
  - Barron's - second credible source, published weekly
  - Investor's Business Daily - more detailed price and market data than WSJ
- Institutional News
  - Dow Jones, Bloomberg
  - CNN Business
  - Marketwatch
- Business Periodicals
  - Forbes, Money, Fortune, The economist -> in depth articles on a wide range of business topics
- Government Publications
  - Fed reserve bulletin

- Quarterly financial report (us census bureau)
- Industry and Company Info
  - Trade Publications -> periodicals about a specific industry (chemical week, american banker, etc.)
  - WSJ, Business Week, Forbes, etc
  - Company websites -> reports, press releases, investor information
  - Regulation DF (fair disclosure) - company info released to public and professionals at the same time
  - Stockholders report (annual report)
  - 10-K -> annual statement filed with SEC for public traded companies
  - Subscription services - S&P, Value Line, etc
  - Brokerage Reports -> back office reports
- Price Information
  - Quotations - contain price information about various types of securities, including current price data and statistics on recent price movements
- Other online investment information sources
  - Financial portals
  - Bond sites
  - Forums -> reddit, twitter, etc

### Avoiding Scams

- Stock manipulators
  - Always know your source
  - Pump-and-dump schemes
  - Get-rich-quick promoters
1. Gauge general market conditions
  2. Compare your portfolios performance to that of a large market portfolio
  3. Study the historical performance and use that as a guide to understand the future market behavior

### Stock Market Averages and Indexes

- Average - reflect the arithmetic average price behavior of a representative group of stocks at a given point in time
- Indexes - measure the current price behavior of a representative group of stocks in relation to a base value set an earlier point in time

### Dow Jones Averages

- DJIA (dow jones industrial average) -> average made up of 30 stocks, from various industry sectors
- Price weighted (stocks with higher prices get more weight than stock with lower prices)

## S&P Indexes

- S&P 500: Common stock index comprising 500 large (not necessarily largest) companies
- S&P 100m 400 MidCap, 600 SmallCap, Total market index

## Bond Market Indicators

- Bond Yields
  - Return an investor would receive on a bond if it were purchased and held to maturity

## Role of a stockbroker

- Stockbrokers - act as intermediaries between buyers and sellers of securities (account executives, investment executives)
  - Must be licensed by both the SEC and the securities exchanges where they place orders
- Client places an order with a stockbroker. Stockbroker works for a brokerage firm that maintains memberships on the securities exchanges , and members of the securities exchange execute orders that the brokers in the firms various sales offices transmit for them
- For transactions in markets like nasdaq, brokerage firms transmit the orders to a market maker

## Brokerage Services

- Primary service is to execute the client purchase and sale transactions at the best possible price
- Client security certificates are held in a street name -> stock certificates issued in brokerage firms name but held in a trust for the client
- Full service brokers - offers an investors a full array of brokerage services such as providing advice, holding securities, and online brokerage services
  - Morgan Stanley
  - Merrill Lynch
- Premier discount broker - primarily focus on making transactions
  - Charge low commissions
  - Limited free research info
  - BofA
  - Charles Schwab

- Basic discount broker - deep discount brokers through whom investors can execute trades online via internet or phone
  - Robin hood

### Selecting a stockbroker

- Someone who understand your goals
- Consider the style and goals of your broker
- Be prepared to pay higher fees for advice
- Ask for referrals from friends or business associates
- Beware of churning: increasing commissions by causing excessive trading of clients account

### Opening an account

- Single or joint
  - Custodial account
- Cash or margin
  - Cash account - brokerage account where customer can make only cash transactions
  - Margin account - brokerage account in which brokerage firm extends borrowing privileges to a customers
- Wrap account - allows brokerage customers with portfolios worth 100k or more to shift stock selection decisions to a professional money manager in return for a fee

### Odd-lot and Round-lot

- Odd-lot consists of less than 100 shares
- Round-lot - orders for 100 share unit or multiples thereof

### Market order

- Orders to buy or sell stock at the best price available at the time the order is placed
- Quickest way to fill order

### Limit Order

- Order to buy at or below a specific price (limit buy) or to sell at or above a specific price (limit sell)
  - Fill-or-kill - order canceled if not immediately filled
  - Day order - order expires at the end of the day if not filled
  - Good til canceled - order remains in effect for six months unless executes canceled or renewed

## Stop-loss order

- Suspended order placed to sell a stock if the price reaches or falls below a specific level
- Used to protect against adverse effect of a rapid decline in share price
- Stop-limit order - order to buy or sell a stock at a given or better price once a stipulated stop price has been met
  - Prevents sales at an undesirable price

## Day trading

- An investor who buys and sells stocks quickly throughout the day in hopes of making quick profits
- Highly risky, especially if used with margin trading
- High brokerage commissions due to frequent trading

## Online tips

- Verify stock
- Use limit orders
- Don't ignore the online reminders that ask you to check and recheck
- Don't get carried away, have a strategy and stick to it to avoid impulse trading
- Open accounts with 2 brokers

## Regulation of Advisors

- Investment Advisers act of 1940 ensures that investment advisors make full disclosure of info about their background
- Advisors are required to be registered and file reports with the SEC
- Look for advisors with professional designations
- Robo-advisors
  - Investors get investment advice generated by algo rather than a human advisor
  - Essentially programs that gather financial data and generate recommendations
  - Benefits include unbiased recommendations

## Typical professional investment advice fee

- Small portfolio - 2-3% of funds under management
- Large - .25-.75% of funds under management
- Online advisors are less expensive - free or annual fee

## Seminar 4

### Return - the profit from an investment

- Components of return
  - Income: cash that investors periodically receive from the investment
  - Capital gains (or losses): the difference between the proceeds from the sale of an investment and its original purchase price
  - Total return : the sum of the income and the capital gain (loss) earned on an investment over a specified period of time
- Why return is important
  - The rate of return indicates how rapidly an investor can build wealth
  - Historical performance
    - Provides a basis for future expectations
    - Does not guarantee future performance
  - Expected return
    - Return an investor thinks an investment will earn in the future
    - Determines what an investor is willing to pay for an investment
- Level of return
  - Internal characteristics
    - Type of investment (stocks or bonds)
    - Quality of the firms management
    - Whether the firm finances its operations with debt or equity
  - External Forces
    - Political environment
    - Business environment
    - Economic environment
    - Direction of price changes
      - Inflation (deflation): up (down)
      - When investors expect inflation to occur, they demand higher returns
- Historical return
  - Returns vary over time and by type of investment
  - Significant differences exist among the average annual rates of return realized on stocks, bonds, and bills
- Time value of money
  - It is generally better to receive cash sooner rather than later
  - Computational aids for use in time value of money calculations
  - Determining a satisfactory investment
    - Satisfactory investment: one for which the present value of benefits (discounted at the appropriate discount rate) equals or exceeds its costs

## Measuring Return

- There are several measures that enable us to compare alternative investments
- To compare returns from different investments we need to incorporate time value of money concepts that explicitly consider differences in the timing of investment income and capital gains
  - Real, risk-free, and required returns
    - Inflation and returns
      - Nominal rate of return - the return that the investment earns expressed in current dollars. It does not take into account inflation
      - Real rate of return - measures the increase in purchasing power that the investment provides
        - Approximately equal to the nominal rate minus the inflation rate
    - Risk and returns
      - Investors are generally risk averse - they do not like risk and will only take risk when they expect compensation for doing so
      - Required return - the rate of return that fully compensates for an investment's risk
      - Expected inflation premium - the rate of inflation expected over an investment's life
      - Risk-free rate - rate of return that can be earned on a risk-free investment, such as a short-term U.S. Treasury bill
  - Holding period return
    - Holding period - the period of time over which one wishes to measure the return on an investment
    - Understand return components
      - Realized return - income received by the investor during the investment period
      - Paper return - the capital gain or loss that has been achieved but not yet realized
  - Internal rate of return
    - IRR for a stream of income
      - Investments such as income-oriented stocks and bonds typically provide the investor with an income stream
      - The IRR on an investment that pays income periodically is the discount rate that equates the present value of the investment's cash flows to its current price
  - Finding growth rates
    - Rate of growth - the compound annual rate of change in some financial quantity, such as the price of a stock or the size of its dividend

## Risk

- Risk - the uncertainty surrounding the actual return that an investment will generate

- Risk-return tradeoff - the relationship between risk and return in which investors want to obtain the highest possible return for the level of risk that they are willing to take
- Sources of risk
  - Business risk - the degree of uncertainty associated with an investments earnings and the investments ability to pay the returns (interest, principal, dividends) that investors expect
    - Tied to a firm's industry
    - Generally, investments from similar kinds of firms have similar business risk
    - Differences in management, costs, and location can cause variation
  - Financial risk - the increased uncertainty that results when a firm borrows money
    - The more debt used to finance a firm, the greater its financial risk
  - Purchasing power risk - the chance that unanticipated changes in price levels will adversely affect a security's value
  - Liquidity risk - the risk of not being able to sell (liquidate) an investment quickly without reducing its price
  - Tax risk - the chance that congress will make unfavorable changes in tax laws, driving down the after-tax returns and market values of certain investments
  - Event risk - occurs when an unexpected event has a significant and unusually immediate effect on the underlying value of an investment
  - Market risk - the risk that investment returns will decline because of factors that affect the broader market, not just one company or one investment
    - Political, macroeconomic, and social events as well as changes in investor risk preferences
    - Actually embodies a number of risks including purchasing power risk, interest rate risk, and tax risk
- The risk of a single asset
  - SD - a measure of return volatility
    - An indicator of an asset's risk, it measures the variation of return around an asset's expected return
  - Historical returns and risk
    - Standard deviation can be used as a measure of risk to assess historical investment return data
    - General pattern - investments with higher average returns have higher standard deviations, reflecting greater risk
- Assessing risk
  - A look at the general risk-return characteristics of alternative investments and at the question of an acceptable level of risk helps show how to evaluate risk
    - A risk-return tradeoff exists such that for a higher risk one expects a higher return, and vice versa
    - In general, low risk investments include US government securities and deposit accounts
    - In general, high risk investments include real estate and other tangible investments, common stocks, options, and futures



- A look at the general risk-return characteristics of alternative investments and at the question of an acceptable level of risk helps show how to evaluate risk
- An acceptable level of risk
  - Individuals differ in the amount of risk that they are willing to bear and the return they require as compensation for bearing that risk
    - Risk-indifference - describes an investor who does not require a change in return as compensation for greater risk
    - Risk-averse - an investor who requires greater return in exchange for greater risk
    - Risk-seeking - describes an investor who will accept a lower return in exchange for greater risk
- Steps in the decision process - combining return and risk
  - When you are deciding among alternative investments, you should take the following steps to combine return and risk
  - Estimate the expected return using present value methods and historical or projected return data
  - Assess the risk of the investment by looking at the historical/projected returns using standard deviation
  - Evaluate the risk return characteristics of each investment option to make sure the return is reasonable given the level of risk
  - Select the investments that offer the highest expected returns associated with the level of risk you are willing to accept

## Seminar 5

### Principles of portfolio planning

- A portfolio is a collection of investments assembled to meet one or more investment goals
- Growth-oriented portfolio - primary goal is long term price appreciation
- Income-oriented portfolio - designed to produce regular dividends and interest payments
  - Portfolio Objectives
    - Ultimate goal is an efficient portfolio
      - Efficient portfolio - one that provides the highest return for a given risk level
      - Requires search for investment alternatives to get the best combination of risk and return
  - Portfolio return and standard deviation
    - Portfolio return is just a weighted average of returns on the assets (investments) that make up the portfolio
    - A portfolio's standard deviation depends on three things
      - The standard deviation of each asset within the portfolio
      - The weight of each asset
      - The correlation between each asset contained in the portfolio

- Correlation and diversification
  - Correlation - a statistical measure of the relationship between two series of numbers
    - Positively correlated - two series tend to move in the same direction
    - Negatively - opposite direction
    - Uncorrelated - no relationship between two series
  - Correlation coefficient - measures the degree of correlation, whether positive or negative
    - Perfectly positively correlated - series with correlation coefficient of +1
    - Perfectly negatively correlated - series with a correlation coefficient of -1
  - The lower the correlation between any two assets, the greater the risk reduction that investors can achieve by combining those assets in a portfolio
    - When the correlation is +1, portfolios merely average the risk of the assets in the portfolio
    - When the correlation is less than +1, a portfolio's risk will be less than the average risk of stocks in the portfolio
    - When the correlation is -1, there will some combination of the assets that produces a portfolio with no risk at all
  - As an investor shifts the portfolio weight from the low-return to the high-return investment, the portfolio return will rise
  - The standard deviation may rise or fall depending on the correlation
  - The lower the correlation, the greater the risk reduction that can be achieved through diversification
- International diversification
  - Effectiveness of international diversification
    - Offers more diverse investment alternatives than US-only based investing
      - Returns in different markets around the world do not move exactly in sync
      - Investors can diversify across many stock markets around the world rather than just a few
      - Globalization, and thus rising correlation across markets, limits these benefits to an extent
    - Direct Investment Abroad
      - Foreign currency investment brings currency exchange risk
      - Less convenient, more expensive, and riskier than investing in US
    - Investment in stock or bonds of foreign companies listed on US exchanges

- Yankee bonds - bonds issued in the US bond market by a foreign entity
  - American depository shares (ADSs)
- International mutual fund
- A portfolio of US multinationals is more diversified than a portfolio of wholly domestic firms
- To fully realize benefits of international diversification, it is necessary to invest in firms located outside the US
- Cost of international diversification
  - Investment advisors suggest allocations to foreign investments of 20-30%
    - Two-thirds of this allocation in established foreign markets
    - One-third in emerging markets
  - Transaction costs of buying securities directly on foreign markets tends to be high
  - International mutual funds and ADSs allow you to obtain international diversification with low cost, convenience, transactions in US dollars, and protection under US security laws

## Capital Asset pricing model

- Diversification cannot eliminate risk entirely. From an investor's perspective this is the most worrisome risk; the risk is diversifiable
  - Components of risk
    - Diversifiable (unsystematic) risk - results from factors that affect a single firm or perhaps a handful of firms
      - Ex: whether a new product succeeds or fails, the performance of senior managers, or a firm's relationship with its customers and suppliers
    - Undiversifiable (systematic) risk - the inescapable portion of an investment's risk that remains even if a portfolio is well diversified
      - Associated with broad forces such as economic growth, inflation, interest rates, and political events
      - Also called market risk
    - Total risk - sum of undiversifiable and diversifiable
  - Beta - the measure of undiversifiable risk
    - Beta - a number that quantifies undiversifiable risk, indicating how the security's return responds to fluctuations in market returns
    - Deriving beta
      - Beta can be derived graphically by plotting the coordinates for the market return and security return of a stock at various points in time
      - The slope of the line is beta

- Interpreting beta
  - The beta for the overall market is 1
  - Stocks may have positive or negative betas, although nearly all investments have positive betas
  - The positive or negative sign in front of the beta number merely indicates whether the stock's return moves in the same direction as the general market (positive beta) or in the opposite direction (negative beta)
    - Beta of 2 - twice as responsive as the market
    - Beta of 1 - same response as the market
    - Beta of .5 - half as responsive as the market
    - Beta of 0 - unaffected by market movement
  - Applying beta
    - Beta measures the undiversifiable (market) risk of a security
    - Beta reveals how a security response to market forces
      - If the market return goes up by 10% and a stock's beta is 1.5, on average we would expect the stock's return to increase by 15%
    - Stocks with betas greater than 1 are more responsive than average to market fluctuation and are more risky than average
- CAPM - Using beta to estimate return
  - Capital asset pricing model - a model that uses beta to quantify the relation between risk and return for different investments
  - Security market line (SML) - graphically shows the expected return (y-axis) for any security given its beta (x-axis)
    - For each level of undiversifiable risk (beta) the SML shows the return the investor should expect to earn in the marketplace
  - Limitations
    - To implement CAPM requires an estimate of beta, which in turn usually comes from historical data
    - Betas estimated from historical data may or may not accurately reflect how the company's stock will perform relative to the overall market in the future
  - Simplicity and practical appeal
    - CAPM provides a useful conceptual framework for evaluating and linking risk and return
    - Widely used in corporate finance - many surveys show the primary method that companies use to determine the required rate of return on their stock is the CAPM

## Traditional vs. modern portfolio management

### Traditional approach

- Traditional portfolio management - emphasizes balancing the portfolio by assembling a wide variety of stocks and/or bonds
  - Interindustry diversification - typical emphasis uses securities of companies from a broad range of industries to diversify the portfolio
  - Tends to focus on well-known companies
    - Perceived as less risky
    - Stocks are more liquid
    - Familiarity provides higher comfort levels for investors

### Modern portfolio theory

- MPT - uses several basic statistical measures to develop a portfolio plan from
  - Expected returns
  - Standard deviations
  - Correlations
- Uses these measures among many combinations of investments to find an optimal portfolio
- Maximum benefits of diversification occur when investors find securities that are relatively uncorrelated and combine them in the portfolio
- Efficient Frontier
  - Any number of possible portfolios could be constructed from the hundreds of investments available at any point in time
    - Feasible set - set of all possible portfolio combinations if the risk and return of each were plotted on a graph
  - Efficient frontier - portfolios that provide the best tradeoff between risk and return
    - Portfolios that fall below the frontier are not desirable because portfolios on the frontier offer higher returns for the same risk level
    - Portfolios that fall to the left are not feasible/available
    - Indifference curves - indicate for a given level of utility, the set of risk-return combinations about which an investor would be indifferent
    - Optimal portfolio - the point at which an investor's highest possible indifference curve is tangent to the efficient frontier represents the highest level of satisfaction the investor can achieve given the available set of portfolios
  - Portfolio beta
    - There is no reward for bearing diversifiable risk, investors should minimize this form of risk by diversifying the portfolio so that only undiversifiable risk remains
    - Risk diversification

- Minimizing diversifiable risk through careful selection of investments requires that the investments chosen for the portfolio come from a wide range of industries
  - As more securities are added to a portfolio, the total portfolio risk declines because of the effects of diversification
  - The portfolio beta is calculated as the weighted average of the betas of the individual assets in the portfolio
- Traditional vs. MPT
  - Traditional - stresses security selection and emphasizes diversification of the portfolio across industry lines
  - MPT - stresses reducing correlations between securities within the portfolio to minimize the diversifiable risk
- Recommended portfolio management policy uses aspects of both approaches
  - Determine how much risk you are willing to bear
  - Seek diversification among different types of securities and across industry lines
  - Pay attention to correlation of return between securities
  - Use beta to keep portfolio at acceptable level of risk
  - Evaluate alternative portfolios to select highest return for the given level of acceptable risk

## Seminar 6

### Common Stocks

- Common stock shareholders are part owners of the firm, and thus have a claim on the wealth created by the company. This claim is not without limitations
  - Residual owners: a common stockholder's claim on company wealth is subordinate to the claims of other investors, such as lenders, and thus there is no guarantee that they will receive any return on their investment
- The appeal of common stocks
  - The appeal of common stocks
    - Popular investment choice for both individual and institutional investors
      - Stocks may increase in value over time and generate capital gains
      - Stocks may provide a periodic income stream through dividends
- Putting stock price behavior in perspective
  - When the market is strong, investors can generally expect to benefit from price appreciation
  - When markets falter, so do investor returns
  - Bad market days are the exception, rather than the rule
    - The total return on the S&P 500 over 92 year period from 1926-2017 was negative just 24 times
    - About  $\frac{1}{3}$  of the time, the market was up from less than 1% to nearly 54% on the year
- Real estate bubble goes bust and so does the market

- US stocks rose along with housing prices for many years, but when weakness in the housing sector spilled over into banking, stock prices plummeted
  - The average home price peaked in July 2006, and over the next three years fell sharply, falling 31% by summer of 2009
  - US economy fell into a deep recession
- Pros and cons of stock ownership
  - The advantages of stock ownership
    - Provide opportunity for substantial returns
    - Stocks typically outperform bonds, and usually by a wide margin
      - Over the last century, stocks earned annual returns roughly double that of the returns provided by high-grade corporate bonds
    - Stocks provide protection from inflation because over time their returns exceed the inflation rate
    - Stocks are easy to buy and sell
    - Costs associated with trading stocks are modest
  - Disadvantages of stock ownership
    - Stocks are subject to various types of risk
      - Business
      - Financial
      - Purchasing power
      - Market
      - Event
    - Stock returns are highly volatile and very hard to predict, so it is difficult to consistently select top performers
    - Stocks generally distribute less current income compared to other investment alternatives

### Basic characteristics of common stock

- Equity capital: every share of common stock represents an equity (ownership) position in a company. This is why stocks are sometimes called equity securities
  - Common stock as a corporate security
    - Publicly traded issues: shares of stock that are readily available to the general public and that are bought and sold in the open market
    - Issuing new shares
      - Public offering: an offering to sell to the investing public a set number of shares of a firm's stock at a specified price
      - Rights offering: existing stockholders have the first opportunity to purchase new shares of the company's stock in proportion to his or her current ownership position
      - In both types of offerings, the net result is the same
        - The firm ends up with more equity in its capital structure and the number of shares outstanding increases

- Stock spin-off: conversion of one of a firm's subsidiaries or divisions to a stand-alone company by distribution of stock in the new company to existing shareholders
- Companies normally choose to execute a spin-off if they believe the subsidiary is no longer a good fit or if they feel they've been too diversified and want to focus on their core products
- Stock splits
  - Stock split: when a company increases the number of shares outstanding by exchanging a specified number of new shares of stock for each outstanding share
    - 2 for 1: 2 new shares of stock are exchanged for each old share
  - Usually done to lower the stock price to make it more attractive to investors
- Treasury stock
  - Shares of stock that were originally sold by the company and have been repurchased by the company. Share repurchases are often called buybacks
    - Reduces the number of share outstanding to the public
    - Kept by the corporation and may be used later for mergers, acquisitions, stock dividends, or stock option plans
  - Companies buyback when they believe their stock is undervalued
  - Short-term impact usually positive: stock prices generally go up
- Classified common stock
  - Common stock issued in different classes, each of which entitles holders to different privileges and benefits
    - Different shares have different voting rights
  - Often used to allow relatively small group to control the voting of a publicly traded company
- Buying and selling stocks
  - Reading the quotes
    - Stock quotes appear daily in the financial press and online
    - Market capitalization: total number of shares \* outstanding multiplied by the share price
  - Transaction costs
    - Investors can trade stock in round or odd lots
    - Investors incur transaction costs when buying or selling stock
      - Bid ask spread - difference between bid and ask prices
- Common stock values
  - Par value - arbitrary amount assigned to a stock when it is first issued
    - Set very low, representing a minimum value (floor) for the value of the stock
    - Mainly an accounting term and not very useful to investors
  - Book value - stockholders equity as reported on the balance sheet



- Difference between the companies asset and liabilities
- Backward looking estimate of value
- Market value - the current price of the stock in the stock market
  - Forward looking, reflecting investors expectations about how the company will perform in the future
  - Stocks usually trade at market prices that exceed their book values, sometimes to a very great degree
- Investment value - the amount that investors believe the stock should be trading for, or what they think it's worth
  - Probably the most important measure for a stockholder
  - Determined by a complex process of evaluating risk and return information to place a value on the stock that represents the maximum price an investor should be willing to pay

### Common stock dividends

- Dividend income is one of the two basic sources of return to investors
- Dividend income is more predictable than capital gains, so it is preferred by investors seeking lower risk
- Current tax laws put dividends on the same plane as capital gains, both now are taxed at the same rate
  - Dividend Decision
    - A firm's board of directors evaluates the firm's operating results and financial condition to determine whether dividends should be paid out and in what amount
    - Corporate vs. market factors
      - Corporate:
        - EPS: Amount of annual earnings available to common stockholders, stated on a per-share basis
      - Other corporate:
        - Growth prospects - how much does the firm need of their earnings to invest and finance future growth
        - Cash position - make sure dividends would lead to a cash shortfall
        - Loan agreements - is the firm legally limited in the amount of dividends it can pay
      - Market:
        - Can the firm justify to investors retaining the earnings and reinvesting them at a favorable rate of return to achieve faster growth and higher profits
  - Important Dates
    - Once a dividend is declared, the firm must indicate certain dates associated with that dividend
      - Date of record - investor must be registered shareholder of the firm to receive the dividend

- Payment date - Actual date on which the company will mail dividend checks
  - Ex-dividend date - dictates whether you were an official shareholder and therefore eligible to receive the declared dividend
- Types of dividends
  - 2 main types
    - Cash dividend - dividend paid out in the form of cash
    - Stock dividend - dividend paid out in the form of stock
    - Rarely, dividends may be paid out in the other forms such as stock spinoffs or perhaps samples of the companies products
      - Cash dividends - most common, tend to increase over time as earnings grow
        - Dividend yield - measures dividends on a relative basis rather on an absolute basis
        - Dividend payout ratio - measures the percentage of earnings that a firm pays in dividends
      - Stock dividends - the firm pays its dividend by distributing additional shares of stock
        - The dividends would normally lead to a decline of around 10% in the stock's share price
- Dividend reinvestment plans
  - Dividend reinvestment plan - a corporate sponsored program where shareholders can have their cash dividends automatically reinvested into additional shares of the company's stock
    - Over 1000 companies offer DRIPs
    - Convenient and inexpensive way to accumulate capital
  - Similar reinvestment programs are offered by mutual funds and some brokerage houses such as bank of america and fidelity
  - Reinvested dividends are treated as taxable income in the year they're received, just as though they had been received as cash

## Types and uses of common stock

- The market contains a wide range of stocks, from the most conservative to the highly speculative. Generally, the kinds of stocks that investors seek depend upon their investment objectives and investment programs
  - Types of stocks
    - Blue chip stocks - stocks issued by large, well established firm with long track records of earning profits and paying dividends
      - Companies are often leaders in their industry
        - High dividend yields - AT&T, J&J, McDonalds
        - Growth oriented - UPS, Nike, Home Depot

- Less risky than most stocks, appeal to investors who want to earn higher returns without taking a great deal of risk
- Income stocks - stocks with a long history of regularly paying higher-than-average dividends
  - Ideal for investors seeking safe and high level of current income
  - Dividends tend to increase regularly over time
  - Some companies pay high dividends because they offer limited growth potential
  - Subject to a fair amount of interest rate risk
- Growth stocks - stocks issued by companies experiencing rapid growth in revenues and earnings
  - Sustained earnings growth well above general market
  - Pay little or no dividends
  - May include blue chip as well as speculative stocks
  - Appeal to investors looking for capital gains rather than dividends, and willing to bear more risk
  - Amazon, Starbucks, Centene
- Tech stocks - stocks representing the technology sector
  - Range from speculative stocks of small companies to stocks of large companies that are growth oriented
  - Vast majority of these stocks are traded on the Nasdaq
  - Offer potential for very high returns but also considerable risk
  - Apple, Cisco, Google
- Speculative stocks - stocks that offer potential for substantial price appreciation, but that lack sustained records of success
  - Offer attractive growth prospects with a chance to hit big
  - Companies lack a sustained track record of business and financial success
- Cyclical stocks - stocks issued by companies whose earnings are closely linked to the overall economy
  - Stock price tends to move up and down with the business cycle
    - Tend to perform poorly in a weakening economy
- Defensive stocks - stocks that tend to hold their value, and even do well, when the economy starts to falter
  - Tend to be less susceptible to downswings in the business cycle
  - Include stocks of public utilities, industrial and consumer goods companies that produce or market staples such as beverages, foods, and drugs
- Market-cap stocks
  - US stock market can be broken into 2 segments based on a stock's market capitalization
  - Large cap: Stocks of large companies with over 10 bil market cap
    - Over 75% of the total market value of all US equities

- Mid cap: between 2 billion and 10 billion
    - Long-term track records
  - Small cap: less than 2 billion
    - Annual revenues less than 250 million
- Investing in foreign stocks
  - Globalization of financial markets is growing
  - Comparative returns
    - Over a long period of time, stock returns in the US have been unremarkable relative to those in other markets around the world
    - There are definitely attractive return awaiting investors willing to venture in to foreign markets
  - Going global: direct investments
    - Most adventurous approach
    - Known what you're doing and be prepared to tolerate a good deal of market risk
      - Going Global with ADRs
        - Buy American depository receipts (ADRs), which are dollar-denominated instruments that represent ownership interest in American depository shares (ADSs).
          - ADSs represent a certain number of shares in a non-U.S. company that have been deposited in a U.S. bank.
        - Great for investors who want to own foreign stocks without the hassles that often come with them.
        - ADRs are bought and sold on U.S. markets just like stocks in U.S. companies.
        - Transactions are in U.S. dollars.
- 
- Putting global returns in perspective
  - Foreign stocks are values much the same way as US stocks
    - Each market react to its own set of economics forces
    - Earnings and dividends drive stock values in foreign markets
  - Measuring global returns
    - The exchange rate represents the value of the foregin currency in US dollars, or how much one unit of foreign currency is worth in US money
  - Currency exchange rates
    - A stronger US dollar has negative impact on foreign investments
    - A weaker US dollar has positive impact on foreign investments

- You want the value of both the foreign stock and the foreign currency to go up over your investment horizon
- Alternative investment strategies
  - Investors may use stocks as a
    - Store of value
      - Safety of investment most important
      - High quality blue chip and non-speculative
    - Accumulate capital
      - Capital gains and dividends build wealth
      - Growth stocks and income stocks
      - Long term investments
    - Source of income
      - Dependable flow of dividends
      - High yield, good quality income shares preferred
  - Depending on their investment goals, investors use various investment strategies
  - Buy and Hold
    - Basic and very conservative investment strategy
    - Objective is to place money in a secure investment and watch it grow over time
    - Investors buy high quality stocks that offer attractive current income and/or capital gains
    - Hold for extended periods, possibly 10-15 years
    - Investors often add to existing stocks over time
    - Value-oriented investors
  - Current income
    - Investors buy stocks that have increasing dividend yields
    - Safety and stability of income are primary importance
    - Capital gains are secondary importance
    - Used to provide supplement income (ie retirement)
  - Quality long term growth
    - Emphasizes capital gains as primary source of return
    - Significant trading of stocks may occur over time
    - Investors buy high-quality growth stocks, including mid-cap, baby blue, and tech stocks
    - Diversification is used to spread higher level of risk
    - Total return approach is a version that combines quality long term growth as well as high income
      - Amount of return is more important than source of return
      - Investors in this approach are concerned with quality
  - Aggressive stock management
    - Seeks attractive rates of return through fully manages portfolio

- Investor aggressively trades in and out of stocks, often holding for short periods
- Capital gains are primary goal
- Timing security transactions and turning investment capital over fairly rapidly are key elements of this strategy
- Substantial risks and trading costs
- Time consuming to manage
- Speculation and short term trading
  - Sole objective is capital gains
  - Most risky strategy - highest level of risk due to emphasis on capital gains in short term period
  - Investors concentrate on speculative or small-cap stocks and tech stocks, not averse to foreign shares (especially in emerging markets)
  - Process of constantly switching from one position to another, as new opportunities appear
  - Investors often look for big score on unknown stock
  - Time consuming and high trading costs

## Seminar 7

### Security analysis

- Security analysis should be part of formulating a successful long-range investment program
  - Principles of security analysis
    - Security analysis - process of gathering information, organizing it into a logical framework, and then using the information to determine the intrinsic value of common stock
    - Intrinsic value - a measure of the underlying worth of a share of stock
    - A prudent investor will only buy a stock if its market price does not exceed what the investor thinks the stock is worth
    - Intrinsic value depends upon several factors
      - Estimates of the stock's future cash flows
      - The discount rate
      - The risk associated with future performance
    - The top-down approach to security analysis
      - Step 1: Economic analysis
        - Assess the general state of the economy and its potential effects on businesses
      - Step 2: Industry analysis
        - Overall outlook for specific industry within which a company operates
        - Level of competition in that industry

- Step 3:
    - Financial condition and operating results of a company
    - Company analysis helps investors formulate expectations about company's future performance
- Who needs security analysis in an efficient market?
  - Security analysis, and fundamental analysis in particular, is based on the assumption that at least some investors are capable of identifying stocks whose intrinsic values differ from their market values
    - Fundamental analysis operates on the broad premise that some securities may be mispriced in the marketplace, at least some of the time
  - The efficient market hypothesis asserts
    - Securities are rarely, if ever, substantially mispriced in the marketplace
    - No security analysis is capable of consistently finding mispriced securities more frequently than might be expected by random chance
  - Fundamental analysis is still of value because
    - All of the people doing fundamental analysis is the reason the market is efficient
    - Financial markets may not be perfectly efficient - pricing errors are inevitable

## Economic Analysis

- Economic analysis - the study of the underlying condition of the economy and the impact it might have on the behavior of share prices
  - Economic analysis and the business cycle
    - The overall performance of the economy has a significant bearing on the performance of most companies
    - Business cycle - a series of alternating contractions and expansions which reflects changes in the total economic activity over time. Two widely followed measures:
      - GDP - market value of all goods and services produced in a country over a given period
      - Industrial production - An indicator of the output produced by industrial companies
        - Normally, GDP and index of industrial production move up and down with the business cycle
  - Key economic factors
    - The state of the economy is affected by a wide range of factors
      - Government fiscal policy
        - Taxes
        - Government spending
        - Debt management

- Monetary policy
  - Money supply
  - Interest rates
- Other
  - Inflation
  - Consumer spending
  - Business investments
  - Foreign trade and foreign exchange rates

Gross domestic product (GDP)	This is the broadest measure of the economy's performance. Measured every three months by the Commerce Department, GDP is an estimate of the total dollar value of all the goods and services produced in the United States. In particular, watch the annual rate of growth or decline in "real" or "constant" dollars. This number eliminates the effects of inflation and thus measures the actual volume of production. Remember, though, that frequent revisions of GDP figures sometimes change the picture of the economy.
Industrial production	Issued monthly by the Federal Reserve Board, this index tracks the output of U.S. factories, mines, and electric and gas utilities. The index tends to move in the same direction as the economy, so it is a good guide to business conditions between reports on GDP. Detailed breakdowns of the index give a reading on individual industries.
The leading economic index	This boils down to one number, which summarizes the movement of a dozen statistics that tend to predict—or "lead"—changes in the GDP. This monthly index, issued by the Conference Board, includes such things as average weekly hours worked by employees of manufacturing firms, initial weekly claims for unemployment insurance, stock prices, and consumer expectations. If the index moves in the same direction for several months, it's a fairly good sign that total output will move the same way in the near future.

Personal income	A monthly report from the Commerce Department, this shows the before-tax income received in the form of wages and salaries, interest and dividends, rents, and other payments, such as Social Security, unemployment compensation, and pensions. As a measure of individuals' spending power, the report helps explain trends in consumer buying habits, a major part of GDP. When personal income rises, people often increase their buying.
Retail sales	The Commerce Department's monthly estimate of total retail sales includes everything from cars to groceries. Based on a sample of retail establishments, the figure gives a rough clue to consumer attitudes.
Money supply	The amount of money in circulation as reported weekly by the Federal Reserve is known as the money supply. Actually, there are several measures of the money supply. M1, which is designed to measure the most liquid forms of money, is basically currency, demand deposits, and NOW accounts. M2, the most widely followed measure, equals M1 plus savings deposits, money market deposit accounts, and money market mutual funds. An expanding economy is generally associated with a rising money supply, although when the money supply increases too fast, inflation may result. A reduction in the money supply is often associated with recessions.
Consumer prices	Issued monthly by the Labor Department, the Consumer Price Index (CPI) shows changes in prices for a fixed market basket of goods and services. The CPI is the most widely watched indicator of inflation.

Producer prices	The Labor Department's monthly Producer Price Index (PPI) shows price changes of goods at various stages of production, from crude materials such as raw cotton to finished goods like clothing and furniture. An upward surge may mean higher consumer prices later. However, the index can miss discounts and may exaggerate rising price trends. Watch particularly changes in the prices of finished goods. These do not fluctuate as widely as the prices of crude materials and thus are a better measure of inflationary pressures.
Employment	The percentage of the workforce that is involuntarily out of work (unemployment) is a broad indicator of economic health. But another monthly figure issued by the Labor Department—the number of payroll jobs—may be better for spotting changes in business. A decreasing number of jobs is a sign that firms are cutting production.
Housing starts	A pickup in the pace of housing starts usually follows an easing in the availability and cost of money and is an indicator of improving economic health. This monthly report from the Commerce Department also includes the number of new building permits issued across the country, an even earlier indicator of the pace of future construction.



- Developing an economic outlook
  - Sources for economic outlook
    - WSJ
    - Barrons
    - Fortune
  - Use the economic outlook information to either
    - Determine areas for further analysis
      - What industries will be hurt/benefit
      - Focus on or avoid companies in industries based on this
    - Or evaluate specific industries or companies
      - How will specific industries or companies be affected by expected development in the economy
  - Assessing the potential impact on share prices
    - Investors can use indicators of economic outlook to help predict where stock prices in the market may be headed in the future

Economic Variable	Potential Effect on the Stock Market
Real growth in GDP	Positive impact—it's good for the market.
Industrial production	Continued increases are a sign of strength, which is good for the market.
Inflation	Detrimental to stock prices when running high. High inflation leads to higher interest rates and lower price-to-earnings multiples, and generally makes equity securities less attractive.
Corporate profits	Strong corporate earnings are good for the market.
Unemployment	A downer—an increase in unemployment means business is starting to slow down.
Federal budget	Budget surpluses during strong economic times are generally positive, but modest deficits are usually not cause for alarm. Larger deficits during downturns may stimulate the market.
Weak dollar	Has a complex impact on the market. A weak dollar may increase the value of U.S. firms' overseas earnings while at the same time making U.S. investments less attractive to foreigners.
Interest rates	Another downer—rising rates tend to have a negative effect on the market for stocks.
Money supply	Moderate growth can have a positive impact on the economy and the market. Rapid growth, however, is inflationary and therefore detrimental to the stock market.

- The market as a leading indicator
  - Changes in stock prices usually occur before the actual forecasted changes become apparent in the economy
  - The current trend of stock prices is frequently used to help predict the course of the economy itself
- Understanding the outlook and risks inherent in an industry gives valuable insight about the outlook for and risks inherent in individual companies and their securities, that makeup that industry
  - Key Issues
    - Industry analysis - in analyzing an industry, look at such things as its makeup and basic characteristics, the key economic and operating variables that drive industry performance, and the outlook for the industry
      - Step 1 - establish the competitive position of a particular industry in relation to other industries

- Step 2 - identify companies within the industry that hold particular promise
    - Look for strong market positions, pricing leadership, economies of scale, etc
- Seek answers to questions such as:
  - What is the nature of the industry
  - Is the industry regulated
  - What role does labor play in the industry
  - How important are technological developments
  - Which economic forces are especially important to the industry
  - What are the important financial and operating considerations
- The industry growth cycle
  - Growth cycle - an industry's growth cycle reflects the vitality of the industry over time
    - Initial development - industry is new and risks are very high
    - Rapid expansion - product acceptance is growing and investors become very interested
    - Mature growth - expansion comes from growth in the economy and the long term nature of the industry becomes more apparent
    - Stability or decline - demand for the industry's products is diminishing and companies are leaving the industry
- Developing an industry outlook
  - Sources for industry information
    - S&P industry surveys
    - Brokerage house reports
    - Articles in popular financial media
  - Assess the expected industry response to forced economic developments
    - Demand for product
    - Industry sales
    - Research and Development

## Fundamental analysis

- The study of a firm's financial statements and other information for the purpose of determining a stock's intrinsic value
  - The concept

- The value of a stock is influenced by the performance of the company that issued the stock
- Company analysis - a historical analysis of the financial strength of the firm, using financial statements of the firm
  - The competitive position of the company
  - The types of assets owned and growth rate of sales
  - Profit margins and dynamics of earnings
  - Composition and liquidity of assets
  - Capital structure
- Time consuming and demanding phase, so investors may rely on published reports and financial websites as well
- Financial statements
  - Balance sheets - statement of what a company owns and what it owes at one specific time
    - Assets - what a company owns (cash, inventory, etc)
    - Liabilities - what a company owes (bills, debt)
    - Stockholders equity - difference between assets and liabilities, claim held by the firm's stockholders
  - Income statement - provides a financial summary of the operating results of the firm over a period of time such as a quarter or a year
    - Revenue (sales)
    - Expenses
    - Profit/Loss
    - The income statement shows how successful the firm has been in using the assets listed on the balance sheet
  - Statement of Cash Flows - provides a summary of the firm's cash flow and other events that caused changes in its cash position
    - Helps investors determine how much cash a firm usually spent and received in a particular year
      - A company's reported earnings vs. cash flow
      - A firm that shows positive profits on its incomes statement may be spending more cash than it is taking in, which could lead to financial distress
    - Net cash flow from operating activities - amount of cash generated by the company and available for investment and financing
- Financial ratios
  - Ratio analysis - study of the relationship between various financial statement accounts
  - What ratios have to offer
    - Investors use financial ratios to evaluate the financial condition and operating results of a company and to compare those results to historical or industry standards
      - Compare a companies ratios from one year to the next

- Compare a company's ratios to those of other companies in the same line of business
- Understanding a company's past performance allows forecast of its future performance with some degree of confidence
- 5 groups of financial ratios
  - Liquidity
    - Company's ability to meet its daily operating expenses and pay its short term bills as they come due
    - Current ratio - measures a company's ability to meet its short term liabilities with its short term assets
      - Best measures of financial health
      - Higher ratio = more liquidity
    - Quick ratio - similar to current ratio but excludes inventory
      - Inventory is often the least liquid asset on a firm's balance sheet
      - During periods of declining sales, firms may have difficulty selling its inventory and converting it into cash
    - Net working capital - difference between current assets and current liabilities
      - Investors want firms to maintain enough liquidity to cover short-term obligations, but they do not want the firms to hold excessive amounts of liquid assets
  - Activity
    - Activity ratios compare sales to various asset categories in order to measure how well the company is using its assets
      - Also called efficiency ratios
      - High or increasing ratio values generally indicate the firm is managing its assets efficiently
    - Accounts receivable turnover ratio - captures the relationship between a firm's receivables balance and its sales
      - A high receivables turnover indicates a firm generates sales without having to extend credit for long periods
    - Inventory turnover measure - how quickly the company is selling its inventory

- Generally, a higher turnover ratio indicates a firm is doing a better job managing inventory
      - Unless it is holding too little inventory
      - Some analysts prefer to use COGS in the numerator rather than sales
  - Total asset turnover - indicates how efficiently a firm uses its assets to support sales
    - A high figure suggests that corporate resources are being well managed and that the firm is able to realize a high level of sales (profits) from its asset investment
- Leverage
  - Leverage ratios indicate the amount of debt being used to support the resources and operations of the company
    - Called solvency ratios
    - Investors are concerned with indebtedness, ability of firm to service its debt
  - Debt to equity ratio - measures the relative amount of funds provided by lenders and owners
    - Helpful in assessing a stock's risk exposure
    - Lower or declining ratio indicates lower risk exposure
  - Equity multiplier (financial leverage ratio) - measures a firm's use of debt
    - Holding equity fixed, the more debt the firm uses, the higher will be its total assets, and the higher will be the equity multiplier
  - Times interest earned - measures the ability of the firm to meet (cover) its fixed interest payments
    - As a rule, a ratio 8-9 times earnings is strong
    - Usually little concern until times interest earned drops to something less than 2-3 times earned
- Profitability
  - Profitability is a relative measure of success, three widely used profitability measures relate the returns (profits) of a company to its sales, assets, or equity
    - Higher or increasing measures of profitability are what investors want to see

- Net profit margin - indicates the rate of profit being earned from sales and other revenues (the bottom line)
- Return on assets (ROA) - measures managements efficiency at using assets to generate profits
  - As a rule you would like to see a company maintain as high an ROA as possible
- Return on equity (ROE) - measures the return to the firm's shareholders by relating profits to shareholder equity
  - Sometimes called ROI
  - Shows annual profit earned by the firm as a percentage of the equity that stockholders have invested in the firm
  - Generally speaking, look out for a falling ROE, it could mean trouble later on
- ROA vs. ROE
  - Investors want to know if ROA is moving up because of improvement in the companies profit margin and/or its total asset turnover
  - Investors want to know if ROE is moving up simply because of how much debt the company is using or because the firm is managing its assets and operations
  - High ROE means the firm is currently very profitable and if some of those profits are reinvested in the firm, the firm may grow rapidly
- Common stock
  - Common stock ratios tell the investors exactly what portion of total profits, dividends, and equity is allocated to each share of stock
    - Valuation ratios, market ratios
  - Price to earnings (P/E, PE ratio) - used to determine how the market is pricing the company's commons stock
    - Investors would like to find stocks with rising P/E ratios
    - Watch out for P/E ratios that become too high, may be a signal that the stock is overvalued and ready to fall
  - Price/Earnings growth ratio (PEG) - compares company's P/E ratio to the rate of growth in earnings

- Ratio >1, stock may be fully valued
  - Ratio = 1, stock price in line with earnings growth
  - Ratio <1, stock may be undervalued
- Dividends per share - the amount of dividends paid out to common shareholders, on a per share basis
- Payout ratio - indicates how much its earnings a company pays out to stockholders in the form of dividends
  - Traditional payout ratios have been 30-50%, growth oriented companies have a low or zero payout ratio
  - A rising dividend payout ratio is a sign that earnings are falling
  - High payout ratios may be difficult to maintain and the stock market does not like cuts in dividends
- Book value per shares - represents the difference between total assets and total liabilities
  - A stock should sell for more than its book value, otherwise it could indicate something is seriously wrong with the companies outlook and profitability
- Price to book value ratio - relates the book value of a company to the market price of its stock, to show how aggressively the stock is being priced
  - Most stocks have a value of more than 1
  - In a strong bull market, it is not uncommon to find stocks trading a 4 to 5 times their book value
  - Too high a price to book value ratio may indicate that stock is already fully priced or overpriced
- Interpreting the numbers
  - Rather than compute all the numbers themselves, most investors rely on published reports for such information
    - Many large brokerage houses and financial services firms publish such reports
    - These reports provide vital information in a convenient, easy-to-read format and relieves the investor of the chore of computing the financial ratios themselves
    - As an investor, though, you must be able to evaluate this information
  - Using historical and industry standards
    - Look at historical ratio trends for the company
    - Look at ratios for the industry
    - Compare and evaluate how the company performed relative to its industry
      - Stockrow
  - Looking at the competition
    - Evaluate the firm relative to two or three major competitors

- A lot can be gained from seeing how a company stacks up against its competitors and by determining whether it is, in fact, positioned to take advantage of unfolding developments

## Seminar 8

### Stock valuation

- Valuation - investors attempt to resolve the question of whether and to what extent a stock is under or over valued comparing its current market price to its intrinsic value
  - Valuing a company based on its future performance
    - For stock valuation, the future matter more than the past
      - The price of a share of stock depends on investor's expectations about the future performance of a company
    - Investors look at past performance to gain insight about a firm's future direction
      - Historical data are used to project key financial variables into the future
    - Forecasting sales and profits
      - Forecast future sales based upon
        - Naive approach - assume sales will grow as they have in the past and extend the historical trend
        - OR historical trend in sales adjusted based on the economy, industry
        - Common-size income statement - takes every entry found on an ordinary income statement or balance sheet converts it to a percentage
          - Helps investors identify changes in profit margins and highlights possible causes of those changes
          - Helps investors make projections of future profits
      - Given a sales forecast and estimate of net profit margin, we can combine these to arrive at future earnings
    - Forecasting dividends and price
      - Given a corporate earnings forecast, investors need three additional pieces of information
        - An estimate of future dividend payout ratios
          - Project firm's recent experience into the future, unless there is evidence to contrary
        - The number of common shares that will be outstanding over the forecast period
          - Not likely to change much from one year to the next, use the current number in the forecast until announcements otherwise are made
        - A future P/E ratio



- More difficult to estimate
- Estimating the P/E ratio
  - P/E ratio is generally a function of several variables
    - Growth rate in earnings
    - General state of the market
    - Amount of debt in a company's capital structure
    - Current and projected rate of inflation
    - Dividend payout ratio
  - Higher P/E ratios associated with higher earnings growth rates, an optimistic outlook, and lower debt
  - Inflation often puts downward pressure on stock prices and P/E multiples
  - Most companies with high P/E ratios have low dividend payouts due to prospect of earnings growth
- A relative P/E multiple
  - Average market multiple - average P/E ratio of all the stocks in a given market index, like S&P 500 or DJIA
    - Indicated general state of the market
    - Gives idea of how aggressively the market, in general, is pricing stocks
    - All else equal, the higher P/E ratio the more optimistic the market
    - Increases in P/E ratio do not necessarily indicate a bull market, P/E ratio spiked in 2009 because earnings were very low due to the recession
  - Relative P/E multiple - investors calculate this to evaluate the stocks' P/E performance relative to the market
    - If a stock's p/e is 35 and the market multiple is 25, the stock's relative p/e is  $35/25 = 1.4$
  - The higher the relative P/E, the higher the stock will be priced in the market
  - High relative P/E multiples can also mean lots of price volatility
- Generate a forecast of the stock's future P/E over the anticipated investment horizon
  - Use existing P/E multiple as a base
  - Adjust up or down based on expectations
- Estimated earnings per share

### Equation 8.2

$$\text{Estimated EPS in year } t = \frac{\text{Future after-tax earnings in year } t}{\text{Number of shares of common stock outstanding in year } t}$$

### Equation 8.3

$$\text{EPS} = \frac{\text{After-tax earnings}}{\text{Book value of equity}} \times \frac{\text{Book value of equity}}{\text{Shares outstanding}} = \text{ROE} \times \text{Book value per share}$$

○

$$\text{Estimated dividends per share in year } t = \frac{\text{Estimated EPS for year } t}{\text{Estimated payout ratio}}$$

○

- Estimated future value of stock

### Equation 8.5

$$\text{Estimated share price at end of year } t = \frac{\text{Estimated EPS in year } t^*}{\text{Estimated P/E ratio}}$$

○

- Estimated share price is important because it has embedded in it the capital gains portion of the stock's total return
- Developing a forecast of universal's financial performance
  - Company dimension handled first, sales and rev estimates, net profit margins, net earnings, and number of common stock outstanding
  - Estimate earnings per share by dividing expected earnings by shares outstanding
  - Project dividends
  - Project price of a share of stock
- The valuation process
  - Valuation - process by which an investor determines a security's worth, keep in mind the tradeoff between risk and return
    - Investors must determine key inputs such as the amount and timing of future cash flows, and the required return on the investment
    - Valuation models help determine an expected rate of return or the intrinsic worth of a share of stock
    - A stock could be a worthwhile investment candidate if
      - The expected rate of return equals or exceeds the return that is warranted given the stock's risk
      - The intrinsic value is equal to or greater than the current market price
    - There is no assurance that the actual outcome will match the expected outcome
  - Required return
    - The return that an investor requires to compensate them for the investments risk
      - Required rate = risk free rate + (Stock beta x (market return -risk free rate))

- Stock's beta - many online sites and print sources publish stock betas
- Risk free rate - the current return provided by a risk-free investment such as a Tbill
- Market return - can be estimated using a long run average return on the stock market
  - May have to be adjusted up or down based on what investors expect the market to do over the next year or so

## Investors employ several stock valuation models

- The dividend valuation model
  - DVM - approach which holds the value of a stock depends on its future dividends
  - 3 version of DVM:
    - Zero growth model - assumes dividends will not grow
      - Values of a zero growth stock is simply the present value of its annual dividends
      - Value of a share = annual dividends / required rate of return
    - Constant growth model - assumes dividends grow by constant rate
      - Best suited to the valuation of large or mature mid cap companies with establish dividend policies and fairly predictable growth rates in earnings and dividends
  - $$\text{Value of a share of stock} = \frac{\text{Next year's dividends}}{\text{Required rate of return} - \text{Dividend growth rate}}$$
  - Estimating the dividend growth rate
    - Look at historical behavior of dividends
      - Company's annual report, various online sources
      - Assume growth will continue at the average rate in the future
    - Average rate of growth in dividends
      - Use basic present value arithmetic to find the growth rate embedded in a stream of dividends
    - Stock-Price behavior over time
      - Constant growth model implies that a stock's price will grow over time at the same rate that dividends growth, and that growth rate + the dividend yield equals the required return
  - Variable growth model - assumes rate of growth in dividends will vary
    - Calculates a stock price in two stages
    - Value of a stock = present value of future dividends during the initial variable growth period + present value of future dividends during the end of the variable growth period

- Appropriate for companies that are expected to experience rapid or variable rates of growth for a time and then settle down to a more stable growth rate thereafter
  - Estimate annual dividends during initial variable growth period, then specify constant growth rate that dividends will grow at after the initial period
  - Find present value of dividends expected during initial period
  - Using constant growth DVM find price of stock at end of initial growth period
  - Find present value of price from constant growth period
- Defining the expected growth rate
  - One of the most difficult aspects of the DVM is specifying the appropriate growth rate over an extended period of time
  - Growth rate,  $g$ , has an enormous impact on the value derived from the model
  - Historical dividend growth of company does not always work well for determining the future growth rate
  - Approach widely used in practice assumes the future dividend growth depends on the rate of return a firm earns and the fraction of earnings managers reinvest in the company
- Other approaches to stock valuation
  - The market has developed other approaches to valuing stock in addition to DVM
    - Free cash flow to equity method (or flow to equity method): estimates cash flow that a firm generates for common stockholders, whether it pays those out as dividends or not
      - Free cash flow - the cash flow remaining after a firm pays all of its expenses and makes necessary investments in working capital and fixed assets

$$\text{Value of a share of stock} = \frac{\text{present value of future free cash flows going to equity}}{\text{shares outstanding}}$$

$$\text{Free cash flow} = \text{after-tax earnings} + \text{depreciation}$$

$$- \text{investments in working capital} - \text{investments in fixed assets}$$

- Requires forecasts of the cash flow going to equity far into the future
- Similar to dividend-growth model, except we are discounting future free cash flows rather than future dividends
- As in the dividend growth model, we can assume free cash flows remain constant over time, grow at a constant rate, or grow at a rate that varies over time
  - Zero growth in free cash flow
  - Constant growth in free cash flow
  - Variable growth in free cash flow
- Use IRR to solve for expected return

- Some investors prefer to find the expected return of a stock given its current market price rather than estimate the stock's intrinsic value
- Use trial and error to find the discount rate that equates the present value to the current market value of a firm's common stock
- Having estimated the stock's expected return, investors can decide if that return is sufficient to justify buying the stock given its risk
- P/E approach: builds the stock valuation process around the stock's price-to-earnings ratio
  - Simpler approach
  - Favorite of professional security analysts and widely used in practice
  - $\text{Stock price} = \text{EPS} \times \text{P/E ratio}$
  - Customary to use forecasted EPS for next year
  - P/E approach and other price relative procedures base their valuation on assumptions that the value of stock is directly linked to a performance characteristic
    - Price to cash flow ratio
    - Price to sales ratio
    - Price to book value ratio
  - Involved a good deal of judgment and intuition
  - Rely heavily on the market expertise of the analyst of the firm
- A price to cash flow procedure
  - Similar to the P/E approach, but substitutes projected cash flow for the earnings
  - Popular with investors who believe cash flow provides a more accurate picture of a company's true value than do net earnings
    - $\text{P/CF ratio} = \text{Market price of common stock} / \text{cash flow per share}$
- Price to sales and price to book value ratios
  - Similar to P/E approach, but substitutes sales or book value for earnings
  - Useful for companies with no earnings or volatile earnings
    - $\text{P/BV ratio} = \text{market price of common stock} / \text{book value per share}$
    - $\text{P/S ratio} = \text{market price of common stock} / \text{sales per share}$
- Major advantage is that these approaches do not rely on dividends as the primary input

# Seminar 9

## Efficient Markets

- Random walk hypothesis - the theory that stock price movements are largely unpredictable
  - Studies of stock price movements indicate that they do not move in neat patterns
  - This random pattern is a natural outcome of markets that are highly efficient and respond quickly to new information
- Efficient market - a market that rapidly and fully incorporates new information
  - The efficient markets hypothesis
    - Stock prices (and prices in other financial markets) rapidly incorporate new information
      - Investors should not expect to earn abnormal return consistently
    - Abnormal return (alpha)
      - Actual return - expected return
    - Expected return
      - $E(r) = r + b(r(m) - r)$
    - The more information that is incorporated into stock prices and the more rapidly that information becomes incorporated in prices, the more efficient the market becomes
    - Levels of the EMH
      - Weak Form EMH
        - Past data on stock prices are of no use in predicting future stock price changes
        - Stock prices move at random
      - Semi-Strong Form EMH
        - Investors cannot consistently earn abnormally high return using publicly available information
        - Any price anomalies are quickly discovered and the stock market adjusts
      - Strong Form EMH (closest to random walk)
        - There is no information, public or private, that allows investors to consistently earn abnormally high returns
    - Arbitrage and efficient markets
      - Arbitrage - type of transaction in which an investors simultaneously buys and sells the same asset at different prices to earn an instant, risk-free profit
      - In the real world, if price differences exist, arbitrageurs exploit those differences and through their buying and selling transactions push the prices closer together until no arbitrage opportunity remains
  - Market anomalies
    - Patterns observed in the market that seem inconsistent with the EMH

- Calendar effects
  - Stock returns may be closely tied to the time of year or time of week
  - January effect (tendency of small cap stocks to outperform large-cap stocks by an unusually wide margin in the month of january)
- Small firm effect
  - Small firms tend to earn positive abnormal returns of as much as 5% to 6% per year
  - Small firms may offer higher returns than larger firms, even after adjusting for risk
- Post earnings announcement drift (or momentum)
  - Stock price adjustments may continue after earnings adjustments have been announced
  - This pattern seems to create an opportunity for investors to earn abnormal returns by purchasing stocks that have recently issued good earnings news or by short selling stocks that have recently delivered poor earnings results
  - Momentum - tendency for stocks that have gone up recently to keep going up or the tendency for stocks that have gone down to continue going down
- The value effect
  - Using P/E or market-to-book ratios to buy or sell stocks
  - On average, low P/E or market-to-book ratio stocks outperform high P/E or market-to-book ratio stocks
- Possible explanations
  - Stocks that appear to earn abnormally high returns are actually riskier than other stocks, so higher returns merely represents compensation for risk
  - Some anomalies may simply be patterns in that data that appeared by chance and are thus not likely to persist over time
  - Behavioral finance - market participants make systematic mistakes when they invest, and those mistakes create persistent inefficiencies in the market

## Behavioral Finance: a challenge to EMH

- Although considerable evidence supports the concept of market efficiency, an increasing number of studies have begun to cast doubt on the EMH. This research documents various anomalies and draws from research on cognitive psychology to offer explanations for the anomalies
  - Investor behavior and security prices
    - Overconfidence and self-attribution bias
      - Overconfidence - investors tend to be overconfident in their judgment or ability and this leads them to underestimate risks

- Self attribution bias - investors tend to take credit for successes and blame factors out of their control for failures
  - These biases may cause investors to trade too often, leading to higher transaction costs and much lower returns
- Loss aversion - the tendency to exhibit risk-averse behavior when confronting gains and risk-seeking behavior when confronting losses
  - Investors may hold on to investments that have lost money longer than they should
    - Studies have shown that when investors want to sell a stock in their portfolio, they are more likely to sell a stock that has gone up than one that has fallen in value
    - Other studies show a tendency for stocks that investors sell (stocks that have gone up) to perform better than the stocks that they choose to hold (stocks that have lost value)
- Representativeness - cognitive biases that occur because people have difficulty thinking about randomness in outcomes
  - Overreaction
    - Investors overreact to a string of good performance and overestimate the likelihood that the trend will continue
      - Past performance of mutual funds
      - May explain the value anomaly
      - Firm looking to make an acquisition may overreact to a firm that has been growing faster than its competitors in recent years and pay a larger premium even though the prospect of sustaining the growth is low
  - Underreaction
    - Investors may underreact to new information, such as earnings announcements
      - Could explain the post earnings announcement drift anomaly
  - Narrow framing - investors tend to analyze a situation in isolation, while ignoring the larger context
    - Example - asset allocation decisions investors make in their retirement plans
- Belief perseverance - investors tend to ignore information that conflicts with their existing beliefs
  - Investors who believe a stock is good and purchase it may later tend to discount any signs of trouble
  - In many cases they even avoid gathering new information for fear it will contradict their initial opinion



- Anchoring - individuals attempting to predict or estimate some unknown quantity place too much weight on information that they have at hand, even when that information is not particularly relevant
  - Investors tend to predict faster (slower) sales growth when they know the past growth rate that has been high (low)
  - Investors estimate future market returns anchored on the markets recent past returns
- Familiarity bias - investors buy stocks that are familiar to them without regard to whether the stocks are good buys or not
  - May lead to investors to hold undiversified portfolios
- Implications of behavioral finance for security analysis
  - The contribution of behavioral finance is to
    - Identify psychological factors that can lead investors to make systematic mistakes
    - AND
    - Determine whether those mistakes may contribute to predictable patterns in stock prices
  - If that's the case, the mistakes of some investors may be the profit opportunities of other

## Using behavioral finance to improve results

Don't hesitate to sell a losing stock.	If you buy a stock at \$20 and its price drops to \$10, ask yourself whether you would buy that same stock if you came into the market today with \$10 in cash. If the answer is yes, then hang onto it. If not, sell the stock and buy something else.
Don't chase performance.	The evidence suggests that past performance is at best a very noisy guide to future performance. For example, the best performing mutual funds in the last year or even the last five years are not especially likely to perform best in subsequent years. Don't buy last year's hottest mutual fund based solely on its performance. Always keep your personal investment objectives and constraints in mind.
Be humble and open-minded.	Many investment professionals, some of whom are extremely well paid, are frequently wrong in their predictions. Admit your mistakes and don't be afraid to take corrective action. The fact is, reviewing your mistakes can be a very rewarding exercise-all investors make mistakes, but the smart ones learn from them. Winning in the market is often about not losing, and one way to avoid loss is to learn from your mistakes.
Review the performance of your investments on a periodic basis.	Remember the old saying, "Out of sight, out of mind". Don't be afraid to face the music and to make changes as your situation changes. Nothing runs on "autopilot" forever-including investment portfolios.
Don't trade too much.	Investment returns are uncertain, but transaction costs are guaranteed. Considerable evidence indicates that investors who trade frequently perform poorly.

## Technical analysis

- The practice of searching the historical record of stock prices and returns for patterns. If these patterns repeat, investors who know about them and can spot them early may have an opportunity to earn better-than-average returns
- Technical analysis in practice remains controversial. Its focus on past price movements to predict future returns puts it at odds with even the weak form of market efficiency
  - Measuring the market
    - Technical analysts argue that internal market factors, such as trading volume and price movements, often reveal the market's future direction long before it is evident in financial statistics
    - Investors use charts and/or market statistics in their technical analysis to address those factors in the marketplace that can (or may) have an effect on the price movement of stocks in general
    - The confidence Index - one measure that attempts to capture the tone of the market through bond returns
      - A ratio that reflects the spread between the average yield on high grade corporate bonds relative to the yield on average or intermediate grade corporate bonds
      - A rise in the index is interpreted as a positive sign for future stock returns
      - Trend of "smart money" is revealed in the bond market before it shows up in the stock market
        - A rise in the confidence index today foreshadows a rise in the stock market
    - Market volume
      - Obvious reflection of the amount of investors interest in stocks
      - Increasing volume during a rising market is a positive sign that the upward movement in stocks will continue
      - When stocks have been moving up and volume begins to drop off, that may signal the end of the bull market
      - Easy statistic to track; reported by numerous sources
    - Breadth of the market
      - Looks at number of stock prices that go up (advances) versus the number of stock prices that go down (declines)
      - The number of advances and declines reflects the underlying sentiment of investors
        - The market is strong when advances outnumber declines
        - The market is weak when declines outnumber advances
      - Data on advances and declines are widely available
    - Short interest
      - The number of shares of stock sold short in the market at any point in time

- The more stocks that are sold short, the higher the short interest
- Can give 2 different interpretations
  - Measure of future demand for stock
    - Strong market when short sales are high since guarantees future stock sales to cover the short positions
  - Measure of present market optimism or pessimism
    - Weak markets when short sales are high since professional short sellers think stocks will decline
- Odd-lot trading
  - Many small traders deal in transactions of fewer than 100 shares, or odd lots
  - Theory of contrary opinion - uses the amount and type of odd-lot trading as an indicator of the current state of the market and pending changes
    - Assumes that small traders will do just the opposite of what should be done
      - Panic and sell when market is low
      - Speculate and buy when market is high
    - When there is a significant difference between odd lot purchases and sales, this can signal and bull or bear market is about to end
- Trading rules and measures
  - Market technicians - analysts who believe it is primarily supply and demand that drive stock prices and use a variety of mathematical equations and measures to assess the underlying condition of the market
    - Develop trading rules based on these market measures
    - Analysts like to see three or four of these measures all pointing in the same direction
  - Advance decline line
    - Difference between stocks closing higher (advance) and stocks closing lower (declines) than previous day; difference plotted on a graph to view trends
    - If the graph is rising, the advancing issues are dominating the declining issues and analysts conclude the market is strong
    - Technicians use the A-D line as a signal to buy or sell stocks
  - New high-new lows
    - Measures the difference between stocks reaching a 52 week high and stocks reaching a 52 week low
    - A 10 day moving average is plotted on a graph to view trends
    - Used a signal to buy or sell stocks
    - Market is strong when highs outnumber lows
    - Market is weak when lows outnumber highs

#### ■ Arms Index

- Trading index (TRIN): combines the A-D line with the trading volume

$$\text{TRIN} = \frac{\text{Number of up stocks}}{\text{Number of down stocks}} \div \frac{\text{Volume in up stocks}}{\text{Volume in down stocks}}$$

- 
- A strong market is characterized by more stocks rising in price than falling, along with greater volume in rising stocks than in the falling ones
- Higher TRIN values signal a weak market

#### ■ Mutual fund cash ratio

- MFCR looks at the cash position of mutual funds as an indicator of future market performance
- Measures the percentage of mutual fund assets that are held in cash

$$\text{MFCR} = \frac{\text{Mutual fund cash position}}{\text{Total assets under management}}$$

- 
- Assumes the higher the MFCR the stronger the market
- High cash positions in mutual funds provides liquidity for future stocks purchases or protection from future mutual fund withdrawals

#### ■ On balance volume

- Momentum indicator that relates volume to price change
- It uses trading volume in addition to price and tracks trading volume as a running total
- Up-volume occurs when stock closes higher and is added to running total; down-volume occurs when stock closes lower and is subtracted from running total
- Direction or trend of indicator is more important than actual value
- Used to confirm price trends
- Bull market when OBV values higher
- Bear market when OBV values lower

#### ■ Relative strength

- Relative strength index (RSI) index measuring a securities strength of advances and declines over time
- Indicates a securities momentum and it is most often used for short trading periods
- Helps identify market extremes, signaling a security is approaching its price top or bottom may soon reverse this trend
- RSI ranges from 0 to 100, but most values between 30 and 70
  - Investors set buy and sell ranges
  - Investors compare RSI with stock price charts

#### ○ Charting

- Charting - technical analysts use various types of charts to show a visual summary of stock activity over time
  - Provides valuable information about developing trends and future behavior of the market or individual stocks
  - Price patterns evolve into chart formations that provide signals about the future course of the market or a stock
- Chart formations
  - Patterns form “support levels” and “resistance lines” that when combined with the basic formations, yield buy and sell signals
    - Buy when stocks break through the “line of resistance”
    - Sell when stocks breakthrough the “line of support”
  - Moving averages
    - Mathematical procedure that records the average value of a series of prices, or other data, over time
    - Smooths out a data series and make it easier to spot trends
    - Computed over time periods of 10 to 200 days
    - Plotting the stock price and the moving average line together helps technicians make buy and sell decisions about a stock
      - Buy signal when security’s price starts moving about the moving-average line
      - Sell signal when the security’s price moves below the moving-average line

## Seminar 10

### Bonds

- Bonds are publicly traded, long-term (>1 year) debt securities. Because bond issuers usually repay lenders by making fixed periodic interest payments and a fixed principal payment at maturity, bonds are called “fixed-income securities)
  - The issuer (borrower) agrees to pay a fixed amount of interest periodically and to repay a fixed amount of principal at maturity
  - Like stocks, bonds can provide two types of income: 1. current income and 2. capital gains
  - A brief history of bond prices, return, and interest rates
    - The behavior of interest rates is the most important influence on bond returns
      - When interest rates rise, bond prices fall
      - When interest rates fall, bond prices rise

- Corporate and government bond rates tend to move together, but corporate bond rates are higher
  - Corporate bonds are more risky and thus require a higher rate to compensate for this risk
  - Difference between the corporate and government bond rates is called the yield spread, or credit spread
- Historical returns
  - Total returns on bond depend on the direction of interest rate movements
  - When interest rates are rising, total returns on bonds include capital losses that can sometimes exceed the bond's interest income, resulting in a negative total return
    - Total returns on US treasury bonds were negative in 10 of 55 years, years with negative total returns on bonds were years in which bond yields rose
  - The inverse relationship between bond prices and yields can also work in investor's favor. Years with the highest total returns on bonds are almost always years in which bond yields fell during the year
- Bond vs. Stocks
  - Compared with stocks, bonds generally offer lower returns
  - Main benefits of bonds in a portfolio
    - Lower risk
    - Higher levels of current income
    - Diversification
  - Bonds add an element of stability to a portfolio
- Exposure to risk
  - Bonds are exposed to five major types of risk
    - Interest rate risk - the change that changes in interest rates will negatively affect the bond's value
    - Purchasing power risk - the chance that bond yields will lag behind inflation rates. Inflation erodes the purchasing power of money
    - Business/Financial risk - the risk that the issuer of the bond (the business) will default on interest or principal payments
    - Liquidity risk - the risk that a bond will be difficult to sell at a reasonable price
    - Call risk - risk that a bond will be "called" (retired) before its scheduled maturity date

## Features of a bond

- A bond is a long-term debt instrument that obligates the borrower to make interest and principal payments
- Bondholders are lenders, not owners

- Bond interest and principal
  - Coupon - amount of annual interest income that it pays to the bondholder
  - Principal (par value; face value) - the amount that the borrower must repay at maturity
  - Coupon rate - the coupon divided by the bond's par value, and it simply expresses the interest payment as a percentage of par value
  - Current yield - measures the interest component of a bond return relative to the bond's market price (calculated as the bond's annual coupon divided by the bond's current price)
- Maturity date
  - Maturity date - the date when a bond matures and the principal must be repaid
    - Fixed
    - Term to maturity - amount of time remaining on a bond's life until it matures
  - Term bond - a bond issue that has a singular maturity date for all the bonds being issued, most common type
  - Serial bond - a bond issue that has a series of bonds with different maturity dates, perhaps as many as 15 or 20, within a single bond offering
  - Note - a debt security that's originally issued with a maturity of 2 to 10 years (unlike bonds which are usually issued with a maturity of more than 10 years)
- Principles of bond price behavior
  - The price of a bond is a function of the bond's coupon, its maturity, and the level of market interest rates
  - Premium bond - a bond that sells for more than its par value, occurs when market interest rates drop below the bond's coupon rate
  - Discount bond - a bond that sells for less than its par value, occurs when market interest rates are above the bond's coupon rate
  - The maturity of an issue has a greater impact on price volatility than the coupon does
    - Prices of bonds with longer maturities are affected more by changes in interest rates
- Quoting bond prices
  - Bonds are not widely quoted in the financial press like stocks are
  - Prices of all types of bonds are usually expressed as a percent of par
    - In the corporate and municipal markets, bond prices are expressed in decimals
      - A quote of 87.562 translates into a price of 87.562% of par
    - In US treasury and agency bond quotes are stated in 32nds of a point (1 point equals \$10)
      - A quote of a T-bond of 94.16 translates to 94 16/32 or 94.5% of par

- The price of a bond depends on its coupon and maturity, so these are usually included in a price quote
- The call feature
  - Call feature - every bond is issued with a call feature, which stipulates whether and under what conditions a bond can be called in for retirement prior to maturity
    - Freely callable - issuer can prematurely retire the bond at any time
    - Noncallable - issuer is prohibited from retiring the bond prior to maturity
    - Deferred call - the issue cannot be called until after some time has passed since the issue date
  - Call features work for the benefit of the issuer, allowing issuers to take advantage of declines in market interest rates. The investor is left with a much lower rate of return than would be the case if the bond was not called
  - Call premium - the amount added to the bond's par value and paid upon call to compensate bondholders
  - Call price - the bond's par value plus the call premium
  - Refunding protection provision - prevent borrowers from using the proceeds of a new, lower-coupon bond issue to pay for the cost of calling an outstanding bond issue
- Sinking funds
  - Sinking fund - stipulates how the issuer will pay off the bond over time
  - Applies only to term bonds
  - Not all term bonds have sinking fund requirements
  - Sinking fund requirements usually begin 1 to 5 years after the date of issue and continue annually thereafter until all or most of the issue is paid off
    - Any amount not repaid would then be retired with a single "balloon" payment at maturity
  - Obligates the issuer to pay off the bond systematically over time
- Secured or unsecured debt
  - Senior bonds are secured obligations, meaning they are backed by a legal claim or some specific property of the issuer
    - Mortgage bonds are secured by real estate
    - Collateral trust bonds are secured by financial assets owned by the issuer but held in trust by a third party
    - Equipment trust certificates are secured by specific pieces of equipment, such as boxcars and airplanes
    - First and refunding bonds are a combination of first mortgage and junior lien bonds
      - Bonds secured by a first mortgage on some of the issuer's property and by second or third mortgages on other properties



- Less secure than straight first-mortgage bonds
- Junior bonds - unsecured debt, backed only by the promise of the issuer to pay interest and principal
  - Debenture - a bond that is totally unsecured, meaning there is no collateral backed up by the obligation
  - Subordinated debenture - unsecured bond issues whose claim is secondary to other debenture bonds
  - Income bonds: most junior of all bonds; unsecured debts requiring that the issuer pay interest only after it earns a certain amount of income
- Bond ratings
  - Bond rating agencies - institutions that perform extensive financial analysis on companies issuing bonds to assess the credit risk associated with a particular bond issue
    - Moody's, Standard and Poor's, Fitch
  - Bond ratings: letter grades that rating agencies give to bond issues, corresponding to a certain level of credit risk
  - How ratings work
    - A firm's financial strength and stability are very important in determining the appropriate rating
    - Generally, higher ratings are associated with more profitable companies that:
      - Rely less on debt as a form of financing
      - Are more liquid
      - Have stronger cash flows
      - Have no trouble servicing their debt in a prompt and timely fashion
    - Investment grade bonds - bonds receiving one of the top 4 ratings, indicating financially strong, well-run companies
    - Junk bonds (high yield bonds) - bonds with below-investment-grade ratings, reflecting issuers lacking financial strength
    - Split rating - occurs when a bond issue is given different ratings by major rating agencies
    - Ratings change as the financial condition of the issuer changes. All rated issues are reviewed regularly to ensure the assigned rating is value
      - Upgrades and downgrades
  - What ratings mean
    - Ratings are tied to bond yields: the higher the rating, the lower the yield
    - A bond's rating has an impact on how sensitive its price is to interest rate movements as well as to changes in the company's financial performance

- Bond ratings serve to relieve individual investors of the time and cost of a thorough credit analysis of their own, but keep in mind
  - Bond ratings only measure an issue's default risk, which is not related at all to an issue's exposure to interest rate risk
  - Ratings agencies do make mistakes

## The market for debt securities

- The bond market is
  - Mainly over-the counter in nature
  - Far more stable than the stock market
  - Growing rapidly
- The US bond market is quite a bit larger than the US stock market
  - Major market segments
    - Treasury bonds
      - Issued by the US Treasury, all Treasury obligations are of the highest quality because they are backed by the full faith and credit of the US government
      - Treasury notes - issued with the maturities of 2,3,5,7,10 years
      - Treasury bonds - maturity of 30 years
      - Interest is paid semiannually and exempt from state and local taxes
      - Today the treasury issued are noncallable securities
      - The treasury issued its securities at regularly scheduled auctions
      - Treasury inflation protected securities (TIPS) - these securities offer investors the opportunity to stay ahead of inflation by periodically adjusting their returns for any inflation that has occurred
        - Maturities of 5, 10, 30 years
        - Pay interest semiannually
        - Eliminates purchasing power risk
        - Lower risk than ordinary bonds, TIPS generally offer lower returns than ordinary Treasury bonds do
    - Agency bonds
      - Agency bonds - debt securities issued by various agencies and organizations of the US govt
        - Federal home loan bank
        - Federal farm credit systems
        - Small business administration
        - Student loan marketing association
        - Federal national mortgage association
      - High quality securities with almost no risk of default
      - Usually provide yields that are slightly above the market rates for treasuries
    - Municipal bonds

- Municipal bonds (munis) - used by states, counties, cities, and other political subdivisions
- Two basic types:
  - General obligation bonds are backed by the full faith, credit, and taxing power of the issuer
  - Revenue bonds are services by the income generated from specific income-producing projects (toll road)
- Some are backed by municipal bond guarantees, which are an additional source of collateral in the form of insurance, which improves the quality of the bond (higher ratings and improved liquidity)
- Tax advantages
  - Interest is tax exempt for federal taxes
  - Interest can be tax exempt from state and local taxes if you live in the state where the bond was issued
  - Taxable equivalent yield - the taxable yield that is equivalent to a municipal bond's lower, tax, free yield
- Corporate bonds
  - Issued by corporations from 4 major segments
    - Industrials
    - Public utilities
    - Transportation
    - Financial services
  - Wide variety of bond quality and bond types available
  - Popular with individuals because of the steady, predictable income they provide
  - Equipment trust certificate - special corporate issue security issued by the railroad, airlines, and other transport concerns, used to purchase equipment that serves as collateral for the issue
- Speciality issues
  - Zero coupon bonds
    - Pay no interests
    - Sold at a discount from their par values
    - Investors receive full par value when the bonds mature
    - Subject to tremendous price volatility as interest rates fluctuate
    - Interest must be reported as it is accrued for tax purposes, even though no interest is actually received
    - Treasury strip - zero coupon bonds created from US treasury securities and sold by government securities dealers
  - Mortgage backed securities
    - Mortgage backed bond - a debt issue that is secured by a pool of mortgages
    - The monthly payments received by bondholders are, like mortgage payments, made up of both principal and interest

- Issued primarily by three federal agencies
    - Government national mortgage association (GNMA)
    - Federal home loan mortgage corporation (FHLMC)
    - Federal national mortgage association (FNMA)
  - Self liquidating investment, since a portion of the monthly cash flow is repayment of the principal
- Collateralized mortgaged obligations
  - CMO - Mortgage backed bond pool that is divided into tranches, or classes of investors, based on whether they want a short, medium, or long term investment
  - Principal payments go first to the shortest tranche until it is fully retired, then the next in sequence is paid
  - Complex and potentially risky
    - Prepayment (call) risk
    - Different tranches have different levels of prepayment risk
- Asset backed securities
  - Securitization: various lending vehicles are transformed into marketable securities.
  - Asset-backed securities (A B S): securities backed by pools of auto loans, credit card bills, home equity lines of credit, as well as computer leases, hospital receivables, small business loans, truck rentals, even royalty fees.
  - Issued by corporations
  - Offer relatively high yields
  - Short maturities, typically less than 5 years
  - Interest and principal payments are monthly
  - High credit quality
- Junk bonds
  - Highly speculative securities that have received low, sub-investment grade ratings
  - Often take the form of subordinated debentures
  - Called junk because of their high risk of default
  - Typically offer very high yields
  - Price tend to behave more like stocks than bonds
  - PIK bond - an unusual type of junk bond
    - PIK - payment in kind
    - Rather than paying the bond's coupon in cash, the issuer can make annual interest payments in the form of additional debt, usually for 5 or 6 years, before making interest payments in real money
- Global view of the bond market
  - Foreign bonds have caught on with investors who want to hold well-diversified portfolios.

- Big risk with foreign bonds has to do with the impact that currency fluctuations can have on returns in U.S. dollars.
- The U.S. has the world's biggest bond market, followed by Japan, China, and several EU countries (Germany, Italy, France), together accounting for greater than 90% of the world bond market.
- U.S.-Pay Versus Foreign-Pay Bonds
  - Dollar-Denominated Bonds
    - Yankee bonds: issued by foreign governments or corporations or by supranational agencies, like the World Bank and the InterAmerican Bank.
      - Issued and traded in the U.S.
      - Registered with SEC
      - All transactions are in U.S. dollars
      - No currency risk
    - Eurodollar bonds: issued and traded outside of the U.S. and are not registered with the SEC.
      - Denominated in U.S. dollars
      - Eurodollar market primarily aimed at institutional investors and dominated by foreign-based investors.
  - Foreign-Pay Bonds
    - Bonds denominated in another currency other than U.S. dollars.
    - Issued and traded overseas
    - Not registered with the SEC
    - Examples: German government bonds, payable in euros; Japanese bonds, issued in yen.
    - Subject to currency exchange rate risk

## Convertible securities

- Convertible bonds: securities originally issued as bonds (or even preferred stock) by a corporation and containing a provision that gives investors the option to convert their bonds into shares of the issuing firm's stock.
- Convertibles are hybrid securities because they contain attributes of both debt and equity.
- They should be viewed primarily as a form of equity.
  - Convertibles as Investment Outlets
    - Convertible securities are popular with investors because of their equity kicker: the right to convert these bonds into shares of the company's common stock.
    - The market price of a convertible often behaves very much like the price of its underlying stock.
    - Issued either as:
      - Convertible bonds (most common).

- Convertible preferreds.
- Convertibles are usually viewed as a form of deferred equity.
- Convertible Notes and Bonds
  - Convertible notes are like convertible bonds, except the debt portion of the security carries a shorter maturity (usually 5 to 10 years).
  - Forced conversion: while the bondholder has the right to convert the bond at any time, more often than not, the issuing firm initiates the conversion by calling the bonds.
- Conversion Privilege
  - Conversion privilege: key element of a convertible that stipulates the conversion feature's conditions.
  - Conversion period: the time period during which a convertible issue can be converted.
  - Conversion ratio: denotes the number of common shares an investor receives by converting a bond.
  - Conversion price: indicates the implicit price per share that an investor pays by trading a bond for shares of stock.
- LYONs
  - LYON (liquid yield option note): zero-coupon convertible bond that is convertible, at a fixed conversion ratio, for the life of the issue
    - i.e., a zero coupon bond with both a conversion feature and a put option.
  - No current income, but no limit on potential capital appreciation.
  - Put option allows security to be sold back to issuer at prespecified prices, providing downside protection.
- Sources of Value
  - Value of convertibles is based on both the stock and the bond dimensions of the security.
  - Convertibles trade much like common stock as the market price of the stock starts getting close to (or exceeds) the stated conversion price.
  - Convertibles trade much like a bond when the market price of the stock is well below the conversion price.
    - Bond price sets a "price floor" in case the stock price goes into a freefall.
- Measuring the Value of a Convertible
  - Conversion Value
    - Conversion value: indicates what a convertible issue would trade for if it were priced to sell on the basis of its stock value.
    - Conversion equivalent (conversion parity): indicates the price at which the common stock would have to sell in order to make the convertible security worth its present market price.
    - Conversion Premium: the extent to which the market price of the convertible exceeds its conversion value.

- Investors are willing to pay a premium because of the added current income provided relative to the underlying stock and because of the convertible's upside potential.
- Payback period: a measure of the length of time it will take to recover the conversion premium from the extra interest income earned on the convertible.
- Investment Value
  - Investment value: the price at which the bond would trade if it were nonconvertible and if it were priced at or near the prevailing market yields of comparable nonconvertible bonds.
  - The present value of its coupon stream and its par value discounted at a rate equal to the prevailing yield on comparable nonconvertible issues.

## Seminar 11

### Behavior of Market Interest Rates

- The required return on a bond can be expressed as:
  - $R_i = r^* + IP + RP$
- For bonds, the risky premium addresses the default (credit) risk of the issuer, liquidity and call risks
- The risk free rate (real rate of return plus expected inflation premium) accounts for interest rate and purchasing power risk
  - Keeping tabs on market interest rates
    - The bond market is not a single market, but consists of many different sectors
      - US Treasury issues
      - Municipal bond issues
      - Corporate bond issues
    - There is no single interest rate that applies to all the segments of the bond market
    - Yield spreads: differences in interest rates between various market sectors
    - Municipal bond rates are usually 20-30% lower than corporate bond rates due to their tax-exempt feature
    - General obligation bonds pay lower rates than revenue bonds
    - Treasury bonds have lower rates than corporate bonds due to no default risk and exemption from state income taxes
    - The lower the credit rating (and higher the risk), the higher the interest rate
    - Bonds with lower maturities generally provide higher yields than short-term issues (Not ALWAYS the case)

- Freely callable bonds generally pay higher interest rates than noncallable bonds
- What causes rates to move?
  - Major determinants of interest rates
    - Inflation is the most important variable to have an effect on market interest rates. Holding other factors constant
      - Expected inflation goes up, interest rates go down
      - Expected inflation goes down, interest rates go up
    - In addition to inflation, five other economic variables can significantly affect the level of interest rates

Economic Variable	Type of Change	Effect on Rates
Change in money supply	Slow increase	Decrease
	Slow decrease	Increase
	Fast increase	Increase
	Fast decrease	Decrease
Federal Budget	Deficit	Increase
	Surplus	Decrease
U.S. Economic Activity	Recession	Decrease
	Expansion	Increase

Economic Variable	Type of Change	Effect on Rates
Federal Reserve Policies	Expansionary	Decrease
	Contractionary	Increase
Foreign Interest Rates	Higher	Increase
	Lower	Decrease

- The Term Structure of Interest Rates and Yield Curves
  - Term structure of interest rates - the relationship between interest rates (yield) and time to maturity for any class of similar-risk securities
  - Yield curve - a graph that depicts this relationship
  - Types of yield curves
    - Most common is upward sloping
    - Occasionally, the yield curve becomes inverted (downward sloping)
    - Flat - rates for short and long term debt are essentially the same
    - Humped - when intermediate rates are the highest
  - Plotting your own curves
    - Treasury securities (bills notes bonds) are usually used to construct yield curves, for several reasons
      - Treasury securities have no risk of default
      - They are actively traded, so their prices and yields are easy to observe
      - They are relatively homogeneous with regard to quality and other issue characteristics



- Can also construct yield curves with other classes of debt securities, such as A-rated municipal bonds, Aa rated corporate bonds, and even certificates of deposit
- Explanation of the term structure of interest rates
  - The shape of the yield curve can change over time
  - There are three commonly cited theories to explain reasons for the general shape of yield curve
    - Expectations hypothesis
      - The yield curve reflects investors expectations about future interest rates
        - When investors expect interest rates to go up, they will only purchase long term bonds if those bonds offer higher yields than short term bonds, hence the yield curve will be upward sloping
        - When investors expect interest rates to go down, they will only purchase short term bonds if those bonds offer higher yields than long term bonds, hence the yield curve will be downward sloping
    - Liquidity preference theory
      - Long term bond rates should be higher than short term rates because of the added risk involved with the longer maturities
        - Investors may view long term bonds as being riskier because long term bonds are less liquid and are subject to greater interest rate risk
        - Borrowers will also pay a premium to obtain long term funds, Borrowers thus assure themselves that funds will be available and avoid having to roll over short term debt at unknown and possibly unfavorable rates
    - Market segmentation theory
      - The bond market is segmented on the basis of the maturity preferences of different investors (short, intermediate, and long)
        - The yield curve changes as the supply and demand for funds within each maturity segment determines its prevailing interest rate
        - If supply is greater than demand for short term loans, short term rates will be relatively low. If at the same time, demand for long

term loans is higher than the available supply of funds, then long-term rates will move up. The yield curve will slope upward

- Explanations of the term structure of interest rates
  - Which theory is right?
    - Upward sloping yield curves results from:
      - Expectations of rising interest rates
      - Lender preferences for shorter maturity loans
      - Greater supply of shorter term loans
    - Downward sloping yield curves results from
      - Expectations of falling interest rates
      - Lender preference for longer maturity loans
      - Greater supply of long term loans
- Using the yield curve in investment decisions
  - Analyze the changes in yield curves
    - Provides investors with information about future interest rate movements, which affect the prices and returns on different types of bonds
    - If the entire yield curve begins to move upwards, indicating inflation is going to be increasing, then investors expect interest rates too will rise. Seasoned bond investors would turn to short or intermediate (3 to 5 year) maturities
    - Consider the differences in yields on different maturities - the steepness of the curve
      - Steep yield curves are generally viewed as a bullish sign. Aggressive bond investors would look to move into long-term securities
      - Flatter yield curves reduce the incentive for moving to long term maturities because the difference in yield between different maturities is small

## Pricing of Bonds

All bonds are priced according to the present value of their future cash flow streams

- Market yields largely determine bond prices
  - The basic bond valuation model

- Bondholders receive two distinct types of cash flow:
  - Periodic interest income (coupon payments)
  - Principal (par value) at maturity
- Bonds are priced according to the present value of their future cash flow streams
- Annual compounding
  - You need the following information to value a bond
    - Annual coupon payment (C)
    - Par value (usually 1000) (PV<sub>n</sub>)
    - Number of years remaining to maturity (N)
    - Prevailing market yield to use as the discount rate (R<sub>i</sub>)
      - Bond price = present value of coupon payments + present value of bond's par value
- Semiannual compounding
  - In practice, most bonds pay interest every six months, so it is appropriate to use semiannual compounding to value bonds
    - C/2
    - r<sub>i</sub>/2
- Accrued interest
  - What happens if you sell a bond at some time between scheduled coupon dates?
    - Accrued interest - the amount of interest earned on a bond since the last coupon payment
    - The bond buyer adds accrued interest to the bond's price
      - Clean price of a bond equals the present value of its cash flows
      - Dirty price of a bond is the clean price plus accrued interest

## Measures of yield and return

- There are three widely used metrics to assess the return of a bond
- Expected return measures the expected (or actual) rate of return earned over a specific holding period
  - Current yield
    - Indicates the amount of current income a bond provides relative to its prevailing market price
    - Simplest of all bond return measures
    - Looks at only one source of return - a bond's annual interest income (current income)
  - Yield to maturity
    - YTM - the most important and widely used measure of a bond's return
      - Also known as the promised yield

- The rate of return earned by an investor who holds a bond to maturity and receives all principal and interest payments when promised
  - Used not only to gauge the return on a single issue but also to measure required return for broad classes on bonds
  - Basically, the internal rate of return on a bond
- Yield to call
  - YTM is not always a good measure of the return you can expect from the purchase of a callable bonds, since the issue may not remain outstanding to maturity
  - YTC - shows the yield on a bond assuming that the bond is called on its first (or some other specified) call date
    - The length of the investment horizon (N) is defined as the number of years to the first call date, rather than years to maturity
    - Use the bond's call price (premium) instead of the par value
- Expected return
  - Used by investors who expect to actively trade in and out of bonds rather than hold until maturity date
  - Expected return - indicates the return an investors can expect to earn by holding a bond over a period of time that's less than the life of the issue
    - Also called realized yield, because it shows the return an investors would realize by trading in and out of bonds over short holding periods
  - Uses estimates of market price of the bond at the expected sales date instead of par value
    - Lacks precision (subject to uncertainty)
- Valuing a bond
  - Conservative, income-oriented investors focus on YTM
    - Earning interest income over extended periods of time is their primary objective
  - More aggressive bond traders, hoping to profit from swings in market interest rates, calculate the expected return
    - Earning capital gains by purchasing and selling bonds over relatively short holding periods is their chief concern

## Duration and Immunization

- Duration - a measure of bond price volatility, which captures both price and reinvestment risk and which is used to indicate how a bond will react in different interest rate environments
  - Improvement over YTM because it accounts for reinvestment risk and price (or market) risk
- Concept of duration
  - In general, bond duration possess the following properties
    - Higher coupons results in shorter durations
    - Longer maturities mean longer durations
    - Higher yields (YTM) leads to shorter durations
    - These variables (coupon, maturity, yield) interact to determine a bond's duration
  - Shorter the duration, the less volatility in bond prices
- Measuring duration
  - Bond duration is the average amount of time that it takes to receive the interest and principal
    - Weighted average life of a bond - calculates the weighted average of the cash flows (interest and principal payments) of the bond, discounted to the present time
  - Steps in calculating duration
    1. Find the present value of each coupon or principal payment. Use prevailing YTM on the bond as the discount rate
    2. Divide this present value by the current market price of the bond. This is the weight
    3. Multiply this weight by the year in which the cash flow is to be received
    4. Repeat steps 1 through 3 for each year in the life of the bond, then add up the values computed in step 3
  - Duration for a single bond
    - Keep in mind the duration on any bond will change over time as YTM and term to maturity change
  - Duration for a portfolio of bonds
    - Need duration of the individual securities in a portfolio and their weights in the portfolio
    - The duration of portfolio is the weighted average of the durations of the bonds in the portfolio
  - Duration is measured in years. Generally, the higher the duration of a bond or a bond fund (meaning the longer you need to wait for the payment of the coupons and return of principal), the more its price will drop as interest rates rise
  - For example, if you expected rates to rise, it may make sense to focus on shorter-duration investments (in other words, those that have less interest rate risk). Or, in this environment, you may want to focus on bonds that take on different types of risk, such as the Strategic income opportunities fund, which is less affected by movements in interest rates

- Bond duration and price volatility
  - The duration measure helps investors understand how bond prices will respond to changes in market interest rates, as long as those changes are not too large
    - A bond's duration can be used as yield swing are relatively small
      - As interest rates change, bond prices change in a nonlinear fashion
      - However, duration predicts as interest rates change, bond prices move in the opposite direction in a linear fashion
- Effective duration
  - An alternative duration measure used for bonds that may be called or converted because they mature is effective duration ED
- Uses of bond duration measures
  - Bond immunization
    - Immunization - allows you to derive a specific rate of return from bond investments over a given investment interval regardless of what happens to market interest rates
    - Seeks to offset the opposite changes in bond valuation caused by price effect and reinvestment effect
      - Price effect - change in bond value caused by interest rate changes
      - Reinvestment effect - as coupon payments are received, they are reinvested as higher or lower rates than original coupon rate
    - Bond immunization occurs when the average duration of the bond portfolio just equals the investment time horizon

## Bond investment strategies

There are a number of strategies investors can use with fixed income securities in order to reach their different investment objectives

- Passive strategies
  - Characterized by a lack of input regarding investor expectations of changes in interest rates and or bond prices
  - Typically do not generate significant transaction costs
  - Examples of some passive strategies
    - Bond immunization
    - Buy-and-hold - replace bonds as they mature or are called, or when quality declines
    - Bond ladders
      - Set up ladder by investing equal amounts into varying maturity dates (3, 5, 7, 10 year)
      - As bonds mature, purchase new bonds with 10 year maturity to keep ladder growing
      - Provides higher yields of longer term bonds and dollar costs averaging benefits

- Trading with forecasted interest rate behavior
  - Forecasting interest rate approach - strategy essentially about market timing
    - Investors seek to increase the return on a bond portfolio by making strategic moves in anticipation of interest rate changes
      - Seek attractive capital gains when they expect interest rates to decline
      - Seek preservation of capital when they anticipate increasing rates
    - Trading is mostly done with investment grade securities because active traders hope to profit from their increased sensitivity to interest rate movements
- Bond swaps
  - Occurs when investors sells one bond and simultaneously buys another to take its place
  - Can be executed to
    - Increase current yield or yield to maturity
    - Exploit interest rate shifts
    - Improve the quality of a portfolio
    - Save taxes
  - May go by names such as profit takeout, substitution swap, or tax swap
  - Yield pickup swap - investor switches out a low-coupon bond into a comparable higher-coupon issue to realize an instantaneous pickup of current yield and yield to maturity
    - Such swap opportunities arise because of the yield spreads that normally exist between different types of bonds.
    - Must be careful of transaction costs.
  - Tax swap: Sell a bond that has declined in value, use the capital loss to offset other capital gains, and repurchase another bond of comparable credit quality.
    - Watch out for wash sales—new bond cannot be an identical issue to old bond.

## EXAM INFO

- Sentence long questions
  - Paragraph/multiparagraph answers
  - Targeted to the lectures and the textbook
  - Can use online sources and the textbook
  - No SEC law and regulation questions
  - Chapters 1-11
  - Plagiarism checker
  - No references, no citations, no quotes, no copy-paste (in your own words, paraphrase)

Part 1:

2 paragraph case study (investor with a problem)

Part 2:

1-3 paragraph per answer (100-300 words)

Recommendations:

Take the full 4 hours and add more info to each answer