

## Lecture 2

(1)

### Investment Types and the Asset Allocation Decision

#### Outline

##### • Investment types:

- What investment instruments are available?
- What are their cash flow and risk properties?
- How is trading conducted?
- Why should investors have a global perspective?

##### • Asset allocation:

- What is involved in the asset allocation process?
- How to allocate assets in accordance with investors' objectives?
- How important is the asset allocation decision?

##### • What is a Market?

###### • Basic concepts

- It brings buyers & sellers together to aid in the transfer of goods and services
- It does not need to have a physical location
- Does not necessarily have to own the goods & services
- It can deal in any variety of goods & services
- Both buyers and sellers benefit from the market.

###### • Characteristics of a Good Market

- Availability of past transaction information
  - must be timely and accurate

###### • Liquidity

- Marketability

- Price continuity

- Depth

- low transaction costs: Internal efficiency

- rapid adjustment of prices to new information:

- External efficiency

## • Primary markets

- Market where new securities are sold and funds go to issuing unit

## • Secondary markets

- Market where outstanding securities are bought and sold by investors.
- The issuing unit does not receive any funds in a secondary market transaction.

## • Trading in Secondary Markets

### • Basic Trading Systems

#### • Pure Auction Market:

- Buyers and sellers submit bid-and-ask price
- (buy and sell orders) for a given stock to a central location
- where the orders are matched by a broker
- who does not own the stock but acts as a facilitating agent
- (It is also known as order-driven market)

#### • Dealer Market:

- Individual dealers provide liquidity for investors
- by buying and selling the shares of stock
- for themselves (also known as quote-driven market)

### • Call vs continuous Markets

#### • Call markets

- trade individual stocks at specified times
- to gather all orders
- and determine a single price to satisfy the most orders.
- used for opening prices on NYSE if orders build up
- overnight or after trading is suspended.

#### • In a continuous Market,

- trades occur at any time the market is open.

## Overview

- Investment instrument types:
  - Financial assets:
    - Fixed-income investments
      - Savings accounts
      - Debt securities / capital market instruments
      - Preferred stock (hybrid instrument)
    - Equity securities
    - Derivatives
    - Investment companies
  - Real assets:
    - Real estate
    - Low-liquidity investments
- Fixed-income investments
  - contractual payment schedule
  - saving accounts
  - Capital market instruments
    - Bonds and other traded debt instruments
      - Investors are lenders
      - expect interest payment & return of principal
    - Preferred stock
      - dividends require board of directors' approval
      - can be considered a hybrid between debt & equity.
- Capital market instruments
  - fixed income obligations that trade in secondary market
  - Types:
    - U.S. Treasury securities
    - U.S. Government agency securities
    - U.S. municipal bonds
    - Corporate bonds
    - International bonds

- U.S. Treasury securities

- Bills, notes, or bonds - depending on maturity
  - Bills mature in less than 1 year
  - Notes mature in 1-10 years
  - Bonds mature in over 10 years
- Highly liquid
- Backed by the full faith & credit of the U.S. Government.

- Corporate bonds

- Issued by a corporation
- Fixed income
- Classified by:
  - Issuer (Industrial or utility)
  - credit quality measured by ratings
  - Maturity

- Preferred stock.

- Hybrid security
- Fixed dividends
- Dividend obligations
  - are not legally binding, but must be voted on
  - by the board of directors to be paid
- credit implications of missing dividends
- Corporations may exclude 80% of dividend income from taxable income.

- International bonds

- ~~International bond markets~~

- Bond identification characteristics.
  - Country of origin
  - Location of primary trading market
  - Home country of the major buyers
  - Currency of the security denomination.

## • International bonds

### • Eurobond

- An international bond denominated in a currency not native to the country where it is issued
  - Eg. Eurodollar bonds to Eurosterling bonds
- Not to be confused with European bonds.

### • Yankee bonds

- Sold in the United States & denominated in U.S. dollars,
- but issued by foreign corporations or governments
- Eliminates exchange risk to U.S. investors

### • International domestic bonds

- sold by issuer within its own country in that country's currency

## • Equity securities

- Represent a share in the ownership of an entity
- Returns are not contractual and may be better or worse than on a bond
- Common stock
  - The most common type of equity security
  - Represents ownership of a firm
  - Investor's return tied to performance of the company and may result in loss or gain

## • Classification of common stock

### • Industrial:

- manufacturers of automobile, machinery, chemicals, beverages

### • Utilities:

- Electrical power companies, gas suppliers, water industry

### • Transportation:

- Airlines, truck lines, railroads

### • Financial:

- Banks, saving and loans, credit unions

## • Derivatives

- Financial instruments

- whose values are derived from one or more underlying variables.

- Possible underlying variables:

- assets

- market securities (both debt + equity)

- commodities

- Interest rates

- exchange rates

- Most important types of derivatives:

- Forward & futures contracts

- call & put options

- swaps

- Different trading mechanisms:

- Traded on an organized exchange

- Futures & options

- Traded as private contracts (over-the counter, or OTC)

- Forwards and swaps

## Forward and futures contracts

- are made in advance of delivery

- imply a firm commitment to buy or sell a future delivery date (maturity or expiration of the contract) at a set price.

- The price is set so that the buyer & the seller enter the contract without exchanging any payment at time of contracting

- (but a margin deposit could be required as guarantee)

## Major differences b/w forward & futures contracts

### Forward Contracts

- Customized contracts in terms of size & delivery dates.
- Private contracts between two parties.
- Difficult to reverse a contract.
- Profit or loss on a position is realized only on the delivery date.
- Margins are set once, on the day of the initial transaction.

### Futures Contracts

- Standardized contracts in terms of size and delivery dates.
- Standardized contract b/w a customer & a clearing house.
- Contract may be freely traded on the market.
- All contracts are marked on market:
  - profits & losses are realized immediately.
- Margins must be maintained to reflect price movements.

## Swaps

- Is a contract whereby 2 parties agree to a periodic exchange of cash flows
- can be regarded as a long-term package of periodic forward contracts.
- On each swap payment date,
  - the two cash flows are netted
  - a payment is made by the party owing money
- are used extensively by banks to manage risk exposure on their assets & liabilities.
- The swap market is an OTC market

## Options

- A call (or put) option

- gives the buyer of the option contract the right,
- but not the obligation,
- to buy (or sell) a specified number of units
- of an underlying asset at a specified price,
- the strike price, at or before a specified date,
- the expiration date.

- In all cases

- the seller, or writer, of an option is subject
- to the buyer's decision to exercise or not to exercise the option.

## Options - Types

- Currency Options

- Stock Options

- On individual common stocks
- On stock indexes

- Interest Rate Options

## Investment companies

- An investment company

- sells shares in itself & invests the pooled investor money in a portfolio of other financial instruments,
- Such as: stocks, bonds, or money market instruments

- Types by investment:

- Money market funds
- Bond funds
- Common stock funds
- Balanced funds
- Index funds

## Investment companies

### Balanced Funds

- Invest in a combination of stocks & bonds depending on their stated objectives.

### Index Funds

- Those are mutual funds created to track the performance of a market index like the S&P 500.
- Appeal to passive investors who want to simply experience returns equal to some market index.
- Numerous non-stock indexes including various bond indexes have been created.

### Exchange-Traded Funds (ETFs)

- These are depository receipts for a portfolio of
  - securities deposited at a financial institution
  - in a unit trust that issues a certificate of
  - ownership for the portfolio of stocks
- The stocks in a portfolio are those in an index
  - like the S&P 500 and
  - dozens of country or industry indexes.
- ETFs can be bought and sold continuously on an exchange like common stock.

## Real estate investment

### Real estate investment

#### Real Estate Investment Trust (REIT)

- Investment fund that invests in a variety of real estate properties.

#### Direct real estate investment:

- Purchase of a home.
- Purchase of raw land
- Land development
- Rental property.

## Low-liquidity investments

- some investments don't trade on securities markets
- lack of liquidity keeps many investors away
- Auction sales create wide fluctuations in prices
- without markets, dealers incur high transaction costs.

### Examples:

- Antiques
- Art
- Coins & stamps
- Diamonds.

## Lecture 2

### Investment types and asset allocation decision

#### Margin transactions (page 32)

- On any type order,
  - instead of paying 100% cash
  - investors can borrow a portion of the transaction & use the stock as collateral (security).
- Changes in stock price change
  - the total market value of the stock bought &
  - affect the investor's equity position in the stock
- Margin requirement
  - the initial margin requirement is set by the Federal Reserve at 50%
  - although individual investment firms can require higher percentages.
- Maintenance margin
  - required proportion of equity to stock after purchase
  - protects broker if stock price declines
  - minimum requirement is 25%
  - margin call on under-margined account to meet margin requirement.
  - if margin call is not met, the stock will be sold to pay off the loan.

$$200 \times 50 =$$

Example: Suppose you bought 200 shares of a \$50 stock and borrowed the maximum amount of money given an initial margin requirement of 50%.

If the stock price increases to \$60 per share, what will be your equity position in the stock?

Solution

- Total final stock value =  $200 \times \$60 = \$12,000$

- Less amount borrowed = 50% of  $(200 \times \$50)$   
 $\therefore 200 \times \$50 = \$10,000$

None 50% of \$10,000 is  $\frac{\$5,000}{2}$

- Equity amount = Final stock value - less amount borrowed  
 $= \$12,000 - \$5,000$   
 $= \underline{\underline{\$7,000}}$

- Equity position (%) =  $\frac{\$7,000}{\$12,000} = \underline{\underline{58\%}}$

Q. What would be your percentage return given that the price reaches \$60?

Return on your margin account:

- Stock return :  $\frac{(\$60 - \$50)}{\$50} = 20\%$

- Your return :  $\frac{(\$12,000 - \$5,000)}{\$5,000} = \frac{\$7,000}{\$5,000} = 40\%$

Q. If the maintenance margin is 25%, what is the margin call price?

- Equity position:  $200P - \$5,000$

- percentage margin:  $\frac{(200P - \$5,000)}{200P} =$

- At margin call:  $\frac{(200P - \$5,000)}{200P} = 25\%$

Solving for P, ~~200P - \$5,000 = 200P × 0.25~~

$$-\$5,000 = 50P - 200P$$

$$\therefore P = \frac{-\$5,000}{-150P} = \$33.33$$

## Short Sales

- sell overpriced stock that you don't own ♀
- purchase it back later (hopefully at a lower price)
- borrow the stock from another investor (through your broker)
- must pay any dividends to lender
- margin requirements apply

Example: you believe that the stock of Cara Corporation is overpriced and decide to sell 1,000 shares short at \$80. you have posted 50 % margin as required. If the stock price drops to \$70 per share, what will be the percentage margin on your account?

### Solution:

#### • The value of your Equity

- sales of the stock: \$80,000

$$1000 \times \$80 = \$80,000$$

- money deposited: +\$40,000

$$1000 \text{ share} \times \$80 = \$80,000$$

$$50 \% \text{ of } \$80,000 = \$40,000$$

- the value of the stock owed: -1000p

#### • percentage margin

$$\frac{(\$80,000 + \$40,000 - 1000p)}{1000p}$$

$$= \frac{(\$80,000 + \$40,000 - 1000 \times \$70)}{1000 \times \$70} = 71\%$$

## Historical Risk-Returns Performance

### • Data

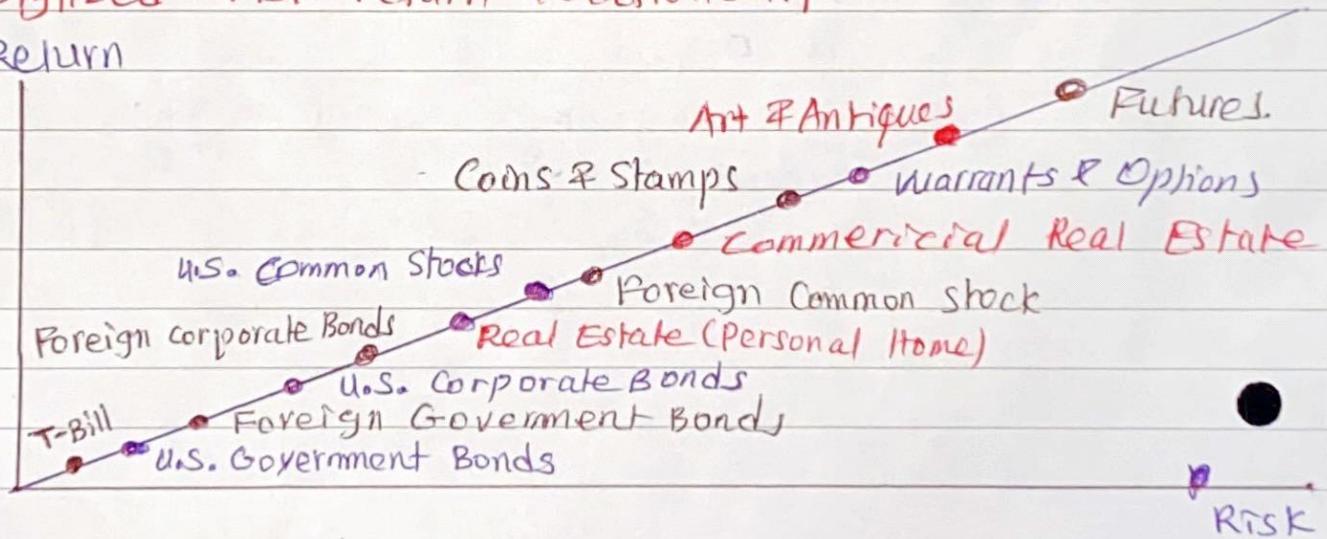
- Reilly & Wright (2004) examined the performance of
  - numerous assets in a range of countries:
  - Time span: 1980 - 2001
  - Asset classes:
    - stocks, bonds, cash, real estate, & commodities.
  - Country coverage:
    - U.S., Europe, Pacific Basin, Japan, emerging markets

### • Results

- Return & total risk:
  - Riskier assets with higher standard deviations
  - experienced higher returns
- Return & systematic risk:
  - Systematic risk (beta) is an even better predictor
  - of returns than total risk (standard deviation)
- Correlations between asset returns:
  - U.S. equities have a reasonably high correlation
  - with developed countries,
  - but low with emerging markets
  - This can be used for developing a diversified portfolio.

## Simplified risk-return relationship

### Rate of Return



## Global Investment

The case for constructing global investment portfolios.

1. Ignoring foreign markets
  - can substantially reduce the investment choices for investors
2. The rates of return on foreign securities often
  - have substantially exceeded those for U.S./UK-only securities.
3. The low correlation between U.S. stock markets
  - and many foreign markets can help to substantially reduce portfolio risk
  - Thus inclusion of foreign securities
    - can substantially reduce portfolio variance
    - recall that it is the beta that matters!

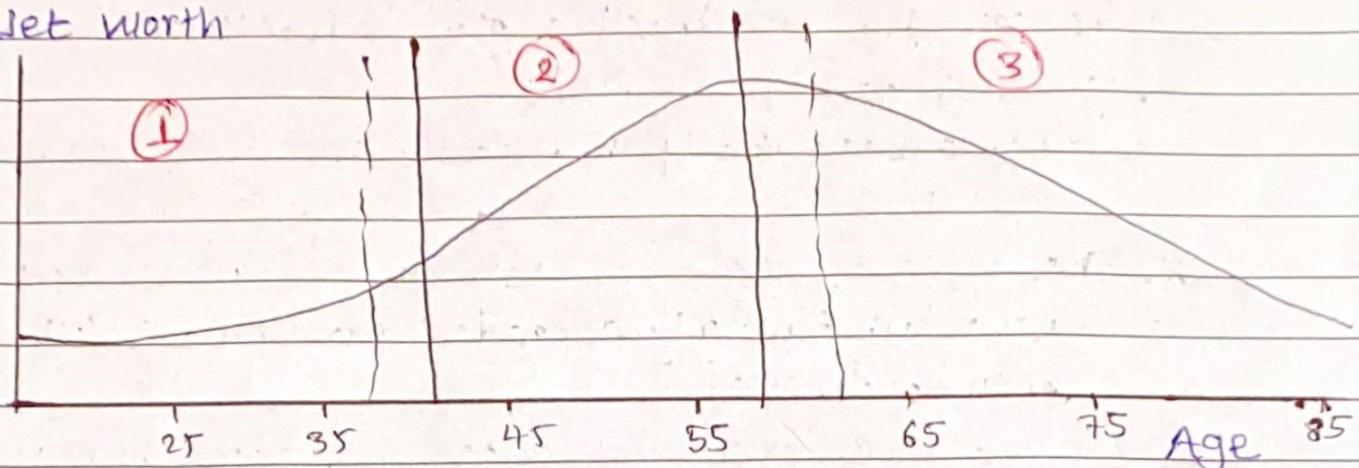
## Relative size of U.S. financial markets

1. The share of the U.S. in the combined stock & bond market of the world has dropped
  - from about 65% in 1969 to about 47% in 2010
2. The growing importance of non-U.S. securities in world capital markets is likely to continue.

# The Asset Allocation Decision

Individual investor life cycle

Net worth



## 1. Accumulation phase

- Long-term:
  - retirement
  - children's college needs
- Short-term:
  - house & car

## 2. Consolidation phase

- Long-term:
  - retirement
- Short-term:
  - vacations
  - children's college needs

## 3. Spending phase (Gifting phase)

- Long-term:
  - estate planning
- Short-term:
  - lifestyle needs gifts.

## The portfolio management process

### 1. Policy statement

- specifies investment goals & acceptable risk levels
- Should be reviewed periodically
- Guides all investment decisions

### 2. Study current financial & economic conditions & forecast future trends

- Determine strategies to meet goals
- Requires monitoring & updating

### 3. Construct the portfolio

- Allocate available funds to minimize investor's risks & meet investment goals

### 4. Monitor & update

- Evaluate portfolio performance
- Monitor investor's needs & market conditions
- Revise policy statement as needed
- Modify investment strategy accordingly.

## The need for a policy statement

- Helps investors understand their own needs, objectives, & investment constraints
- sets standards for evaluating portfolio performance
- Reduces the possibility of inappropriate behavior on the part of the portfolio manager.

## Investment objectives

- Return
- Risk tolerance
- General goals
  - Capital preservation
    - Minimize risk of loss
  - Capital appreciation
    - Portfolio growth in real terms to meet future needs
  - Current income
    - Focus on generating income rather than capital gains

## Investment constraints

- Liquidity needs
- Time horizon
- Tax concerns
  - Capital gains or losses - taxed differently from income
  - Unrealized capital gain - reflect price appreciation of currently held assets that have not yet been sold
  - Realized capital gain - when the asset has been sold at a profit
- Legal & regulatory factors
  - No insider trading
  - Early withdrawal fees (e.g., from pension plans)

## The importance of asset allocation

- An investment strategy is based on 4 decisions
  1. What asset classes to consider for investment
  2. What normal or policy weights to assign to each eligible class
  3. Determining the allowable allocation ranges based on policy weights
  4. What specific securities to purchase for the portfolio
- The first 3 steps comprise the asset allocation decision

## The Importance of asset allocation

- According to research studies,
  - the asset allocation decision is much more important than the selection of specific securities
- Ibbotson & Kaplan (2000) observe that!
  - About 90% of given fund's return variability over time is explained by the target asset allocation policy
  - About 40% of the variability between different funds' returns is explained by variation in their asset allocation policies
  - On average, an actively managed fund underperforms a static portfolio at target weights by about 10%
  - Good fund managers
    - might add value,
    - but the major source of investment return is the asset allocation decision

### Returns & Risks of Different Asset Classes

- Historically, small company stocks have generated the highest returns, so have the volatility
- Inflation & taxes have a major impact on returns
- Returns on Treasury Bills have barely kept pace with inflation
- Measuring risk by the probability of not meeting your investment return objective indicates risk of equities
  - Is small & that of T-bills is large because of their differences in expected returns.
- Focusing only on return variability as a measure of risk ignores reinvestment risk

## Asset allocation & cultural differences

- Social, political, and tax environments influence the asset allocation decision.
- Equity allocations of U.S. pension funds average 58%.
- In the UK, equities make up 78% of assets
- In Germany, equity allocation averages 8%.
- In Japan, equities are 37% of assets.

## Summary of the asset allocation task

- Identify investment needs, risk tolerance, & familiarity with capital markets
- Identify objectives & constraints
- Enhance investment plans by accurate formulation of a policy statement
- Focus on asset allocation, as it determines long-term returns & risk