

# Financial Instruments

## Chapter 2

## Major Types of Securities

- debt
  - money market instruments
  - bonds
- common stock
- preferred stock
- derivative securities

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## Markets and Instruments

- Money Market
  - debt instruments
  - derivatives
- Capital Market
  - bonds
  - equity
  - derivatives

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## Money Market

- a subsector of fixed-income market
- very short-term, marketable, liquid, low-risk debt securities (*cash equivalents*)
- usually large denominations, so out of reach for individual investors
- money market mutual funds make them accessible to individuals by pooling resources from many investors
- yields vary according to riskiness of securities (*risk premium*)

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## Money Market Instruments

- Treasury Bills
  - discount bonds
  - maturities of 28, 91 or 182 days
  - minimum denominations of \$10,000
  - income is exempt from all state and local taxes
  - highly liquid
- Certificates of Deposit
  - time deposits with a bank
  - treated as deposits by FDIC (partially insured)
  - negotiable if denomination > \$100,000
  - highly marketable if maturity < 3 months

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## Money Market Instruments (cont.)

- Commercial Paper
  - unsecured debt by large, well-known companies (usually backed by a line of credit)
  - maturities ≤ 270 days, usually 1-2 months
  - denomination is usually multiple of \$100,000
- Bankers Acceptances
  - like post-dated checks, selling at discount
  - foreign trade (unknown creditworthiness)
- Eurodollars
  - USD-denominated deposits overseas

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## Money Market Instruments (cont.)

- Repurchase Agreements (repos, RPs) and Reverse RPs
  - used by dealers in government securities
  - dealer sells government securities, usually overnight, and agrees to buy them back at a slightly higher price (1-day loan with collateral)
  - term repos – repurchase after  $\geq 30$  days
  - reverse repo – exactly the opposite of a repo
  - safe, since backed by government securities

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## Money Market Instruments (cont.)

- Federal Funds
  - *federal funds* = reserves at the Fed
  - some banks have shortage of funds (required reserves > fed funds)  $\rightarrow$  overnight loans
  - interest rate = *federal funds rate*
- Brokers' Calls
  - brokers borrow from banks (on call) to fulfill orders on margin
- LIBOR Market
  - LIBOR = London Interbank Offer Rate

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## Bond Markets

- longer-term debt instruments
- usually called the *fixed-income capital market*
- instruments:
  - US Treasury Bonds and Notes
  - Agency Issues (Fed Gov)
  - International Bonds
  - Municipal Bonds
  - Corporate Bonds
  - Mortgage-Backed Securities

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## Bond Market Instruments

- US Treasury Bonds and Notes
  - T-notes: maturity  $\leq 10$  years
  - T-bonds: maturity between 10 and 30 years, may be callable (usually during last 5 years)
  - since 2001, no maturity > 10 years
  - denominations  $\geq \$1,000$
  - prices are quoted as percentage of par value
  - semi-annual interest payments – *coupon payments*

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## Bond Market Instruments (cont.)

- Agency Issues (Federal Government)
  - usually to channel credit to particular sector of the economy that might not get enough credit through normal private sources
  - usually mortgage-related agencies (FHLB, FNMA, GNMA, FHLMC) – lend the money to S&Ls that can further lend it as mortgages
  - low risk (government owned or federally sponsored)
- International Bonds (London)
  - *Eurobond* = not issued in domestic currency

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## Bond Market Instruments (cont.)

- Municipal Bonds
  - issued by state and local governments
  - interest income is not subject to tax
  - 2 types: *general obligation* and *revenue bonds*
  - to compare the yields on munis ( $r_m$ ) to other bonds use *equivalent taxable yield*.

$$r = \frac{r_m}{1 - t}$$

- or solve for the tax rate that equates the two yields:

$$t = 1 - \frac{r_m}{r}$$

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## Bond Market Instruments (cont.)

- Corporate Bonds
  - similar to Treasury issues, but with default risk
  - *risk classification*: secured, unsecured (debentures), and subordinated debentures
  - *feature classification*: callable, convertible
  - *current yield* = annual coupon / price
- Mortgage-Backed Securities
  - from securitization of mortgage loans
  - currently, bigger market than corporate bonds
  - guarantee interest and principal payments, but not *returns*

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## Capital Market - Equity

- Common Stock (Equity Securities, Equity)
  - gives owner (1) one vote at corporation's annual meeting (also *proxy*) and (2) a share in financial benefits
  - *residual claim* = shareholders have a claim to what is left of a firm's income or assets when liquidated, after other claimants have been paid
  - *limited liability* = the most shareholders can lose in case of failure is their initial investment
  - *price/earnings ratio* = price/earnings per share

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## Capital Market – Equity (cont.)

- Preferred Stock
  - similar to bonds:
    - fixed dividends (like a perpetual bond)
    - paid before common stocks
    - no voting rights
    - can be redeemable (like callable bonds)
  - similar to stocks:
    - payment of dividends to the discretion of the firm (usually cumulative)
    - dividends are not tax exempt for the firm

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## Stock Market Indexes

- Uses
  - track average returns
  - compare performance of managers
  - base of derivatives
- Factors in constructing or using an Index
  - is it representative?
  - how broad should it be?
  - how is it constructed?

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## Price-Weighted Indexes

$$I = \frac{\sum p_i}{d}$$

- where  $p_i$  is the price of security  $i$  and  $d$  is initially equal to the number of securities in the index
- stock splits ( $n$ -for-1, stock  $j$ ) change the divisor:

$$d_1 = \frac{(p_j^0 / n) + \sum p_i^0}{I_0}$$

- like a portfolio with one share of each stock
- examples: Dow Jones Industrial Average
- cautions: low number of stocks (frequent changes in composition), high prices have higher weight

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## Value-Weighted Indexes

$$I = \frac{\sum p_i^1 N_i^1}{\sum p_i^0 N_i^0} \times I_0$$

- where  $p_i$  is the price of stock  $i$ ,  $N_i$  is the number of shares of stock  $i$  on the market, and  $I_0$  is the initial level of the index
- like a portfolio with stock held in proportion with their market value
- examples: Standard & Poor's Composite 500, NASDAQ Composite, NYSE Composite

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## Other Indexes

- Equally-Weighted Indexes
  - equal dollar investments in each stock
  - would need readjustments every period
- Foreign Indexes
  - Nikkei, FTSE (or Footsie), DAX, TSX etc.
- International Indexes
  - MSCI computes indexes for over 50 countries and regions
- Bond Market Indexes
  - Merrill Lynch, Lehman Brothers, Salomon Smith Barney

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## Derivative markets – Call Options

- contracts that give the buyer the right to choose whether or not to buy a certain asset, on or before a certain date (*expiration date*), at a predetermined price (*exercise or strike price*)
- exercised when asset price *rises*
- seller of option contract charges a *premium*, which is the per-share price of the contract
- each contract is for 100 shares
- call option prices increase with maturity and decrease with the strike price

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## Derivative markets – Put Options

- contracts that give the buyer the right to choose whether or not to sell a certain asset, on or before a certain date (*expiration date*), at a predetermined price (*exercise or strike price*)
- exercised when asset price *falls*
- seller of option contract charges a *premium*, which is the per-share price of the contract
- each contract is for 100 shares
- put options prices increase with maturity and with the strike price

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## Derivative markets – Futures

- contracts for the delivery of a certain asset (or its cash value) on a certain date (*delivery date*), at a predetermined price (*futures price*)
- trader who commits to purchasing the asset takes the *long position* and profits when price  $\uparrow$
- trader who commits to selling the asset takes the *short position* and profits when price  $\downarrow$
- both parties are *obliged* to close their positions
- one party's loss is the other party's profit
- futures contracts are *free*

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