**Chapter 7: Money Markets**

* Securities markets
  + Markets (roughly) delineated by classes of assets trading in those markets:
    - Debt markets
      * Money markets
      * Bond markets
        + These two share a lot of the same characteristics
    - Equity markets
    - Derivatives markets
      * Options and futures
  + Alternatively, can think of it as:
    - Money markets
      * Day-to-day cash management
    - Capital markets
      * Bond markets
        + 2-3 times bigger than the equity market
      * Equity markets
        + How to fund projects (presumably ones with a positive NPV)
        + Bigger than the money market
* Economic role of the money market
  + Money market is a market for liquidity
    - Liquidity is stored in MM by investing in MM securities
    - Liquidity is bought in MM by issuing securities
      * Borrowing
  + Provides a place for Fed’s reserve transactions
    - Open market operations
  + Indicator of economic conditions
* Money Market Security characteristics
  + Short term
    - Generally, less than 3 years
    - Most under 120 days
  + Cash and “cash equivalents”
    - High marketability
      * There’s a developed market for the securities, easy to find people to buy and sell
    - Highly liquid
    - Liquidity: ability to buy or sell an asset quickly and at a known price, there is no “measure” for this
    - Caveats
      * They are highly marketable and highly liquid, until they’re not
  + Low default risk
    - Chance that you won’t get your money back
* Money market instruments
  + Treasury bills (T-bills)
    - Maturities
      * 28 days (1 month)
      * 91 days (3 month)
      * 182 days (6 month)
      * 364 days (1 year)
      * Issued at weekly auction
      * Anything up to 1 year is a bill, anything up to 10 years is a note, anything after that is a bond
      * Bills do not pay coupons, only par value at maturity
    - Sold at discount to maturity value
      * Quoted as a discount rate, because a dollar today is worth more than a dollar in the future
      * Quoting and discounting conventions
        + Chart columns: maturity, bid, asked, change, asked yield
        + Bid and asked prices based on bank discount method (they are in %)
        + Bank discount method

Bid: price (or rate) at which *dealer* is willing to buy

Ask: price (or rate) at which *dealer* is willing to sell

Always from perspective of the dealer

Bid=buy

So, if you want to buy a security, you will pay the asked price, because that’s what the dealer will be asking

RBD=(par-price)/par x 360/daystomaturity

Two important differences:

Reported as a percentage of par value

This will be a return over days to maturity

Discount from par value is annualized based on 360-day year

Simple way (no compounding) to annualize: multiply by number of periods of the return per year

Need to know how many return periods per year. If T-bill matures in 30 days, the return period is 360/30=12 periods per year

* + - * + Bond-equivalent yield

Last column, “asked yield”

To compare T-bill discount rate to a bond yield, need to do a conversion

Bond yield calculated on an annual percentage rate method

RBEY=(10,000-price)/price x 365/daystomaturity

Note:

Discount from price, not par ($10,000)

T-bill quoted on 360-day convention

Bonds quoted on 365-day convention

* + - * + Effective Annual Yield

Bond equivalent yield is an annual percentage rate (APR) method

Does not take into account compounding

Convert to an effective annual yield: rEAY=[1+APRx(days/365)]365/days-1

Accounts for compounding

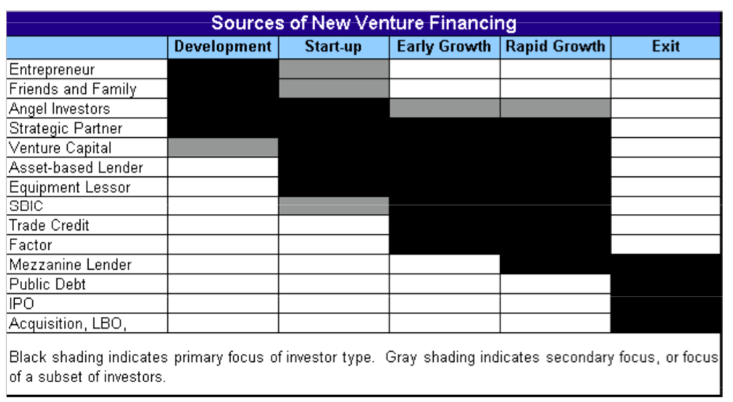
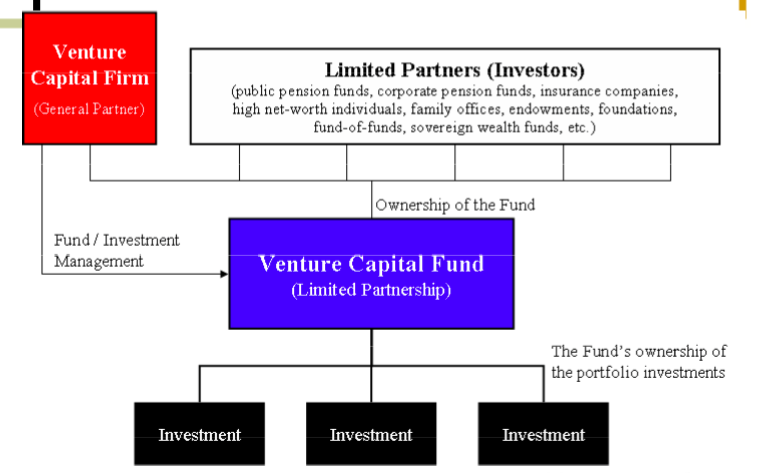
Also referred to as:

Effective annual rate (EAR)

Annual percentage yield (APY)

* + - Minimum denominations of $100
    - Highly liquid
    - Low default risk, almost 0
    - Competitive and noncompetitive bids
  + Federal funds
    - A bank’s reserve requirement funds on deposit with their Federal Reserve Bank
    - Fed funds market is overnight lending/borrowing of these funds between banks
      * Market for depository institutions
      * Most liquid of all financial assets
      * Related to monetary policy implementation
      * Interest rate on these overnight loans is the Federal Funds rate
    - Originally a market for excess reserves
      * Now a source of investment (federal funds sold) and continued financing (federal funds purchased)
    - Most are one-day, unsecured loans
    - Settled in immediately available funds
  + Repos and repurchases
    - Very short-term loans acquired by government securities dealers
      * Usually overnight
    - Dealers sell government securities to investor and agrees to repurchase at higher price in the future
      * Usually next day
      * Difference in price is interest
        + Dealer sells security to investor at $100
        + The next day the dealer will buy back the security at $105
        + The $5 is interest
      * Securities serve as collateral
      * How does interest rate on repo compare to Fed Funds rate?
        + Interest rate on repo is lower because it is collateralized, reduces risk, reduces return
    - Bank financing
      * Way to pay interest to corporate customers at negotiated market rate
    - Reverse repo: opposite transaction where government dealer lends money
      * Buys securities from investor then sells back
      * Bank investment
        + Smaller banks are able to invest excess liquidity in a secured investment
    - Repo players
      * Used by Federal Reserve in open market operations
      * Government securities dealers use repos to secure funds to invest in new Treasury issues
      * Banks participate in the repo market to secure funds to meet temporary liquidity needs as well as lend funds when they have excess reserves
  + Commercial paper (CP)
    - Short-term debt issued by large corporations (low credit risk)
      * Unsecured corporate debt
      * Problem with Lehman Brothers: theirs were asset-backed, this became a problem because they were mortgage-backed securities
    - Maturities up to 270 days
      * After 270 days, the firm has to register with the SEC
      * Costlier, this raises the cost of money
    - Denominations of $100,000
    - Highly liquid
      * Because low credit risk corporations
    - Often rolled over
      * Bad if not: Lehman Brothers had this problem
    - Sold at discount from par
    - CP players
      * Major investors
        + Commercial banks
        + Insurance companies
        + Nonfinancial business firms
        + Bank trust departments
        + State and local pension funds
        + A wholesale money market instrument—few individual investors
      * Role for banks
        + Banks are involved
        + Backup lines of credit to support or guarantee quality
        + Act as agents in issuance
        + Hold notes in safekeeping
  + CDs
    - Characteristics of negotiable CDs
      * Large time deposits (>$100,000), maturity less than six months
      * Negotiable—may be sold and traded before maturity
      * Issued at face value, interest is based on a 360-day year
      * Secondary market deals are for $1 million or more
      * Interest rates depend on the issuing banks creditworthiness
      * Yields are higher than on T-bills—higher credit risk, lower marketability, and higher taxability
    - The NCD Market
      * Rate negotiated between buyer and seller
      * Market is sensitive to rates above or below the market rates
      * Rates are lower for money center banks and are tiered upward for regional banks
      * Purchased mainly by corporate businesses
  + Banker’s acceptances
    - Time draft—order to pay in the future
      * Like a postdated check
    - Drafts are drawn on and/or accepted by commercial bank
      * Direct liability of bank
    - Used often in international trade
      * Unknown trade parties can secure banks credit standing
    - Standard maturities of 30, 60, or 90 days; max of 180
  + Eurodollars
  + Broker’s calls
  + LIBOR markets
    - London Interbank Offer Rate
    - Lending rate between large banks in London
    - Benchmark interest rate for many other transactions (e.g. Swaps)
      * LIBOR +1.5
    - LIBOR scandal
      * Big financial news in 2012
      * Participating banks submitted rates in order to profit from trades
  + \*\*\*Money rates from WSJ market data center (link on slides)
* Money Market Participants
  + Chart not super important
  + The federal reserve in money markets
    - MM securities are the major asset category of the Fed
    - Open-market operations (buying and selling of MM securities by Fed) is the primary tool for implementing monetary policy
      * Purchase—increases member bank reserves
      * Sale—decreases member bank reserves
  + Dealers in US Securities
    - Involved in both primary and secondary markets
    - Purchase new Treasury debt and resell it (primary market)
    - “Make a market” by buying/selling (dealer) securities (secondary market)
    - Purchases are financed by repurchase agreements or fed funds
    - Dealers have a small capital base and are highly leveraged
  + Money market mutual funds
    - Investment funds that pool funds from numerous investors and invest in money market instruments
    - Portfolios of liquid investments with low default risk
      * When your Investments professor says the optimal portfolio is to split your invested wealth between the market and the risk-free asset, the risk-free asset often means “money market mutual fund”
    - Provide investors with check-writing abilities/Alternative to bank deposits
* Money market size
  + Chart in book/in slides
  + Market doubled for T-bills between 2005 and 2010: flight-to-quality, also Fed flooded market with T-bills in order to increase the money supply, expansionary policy

**Venture Capital**

* New venture financing
  + Many firms go through a life-cycle:
    - Start out as small private firms
    - **Expand through various stages of VC/private equity financing (also: bank debt)**
    - Go public (have an initial public offering-IPO) or get acquired
    - Further expand through additional rounds of public equity/debt financing
* Primary sources of new venture financing
  + Independent venture capital firms (private partnerships and corporations set up to provide funds)
    - Organizer behind the partnership may obtain funding from institutions or individuals
    - Average amount invested by these per firm: $1 to 2 million
    - E.g. Artur Rock & Company of San Francisco provided venture funds to Apple Computers, Facebook, e-Bay, etc.
    - Only 2% of requests receive financing
    - Only 0.2% of US start-ups obtain VC financing
    - In 2014, about 803 VC firms in the US, running 1200 VC funds
    - Powerful engine for entrepreneurship and innovation
      * VC is 3-4 times more powerful than corporate research and development as a spur to innovation
      * Roughly 50% of the “entrepreneurial” IPOs in late 2000s are VC backed
  + Corporate venture capital firms (VC subsidiaries of large industrial or financial corporations)
    - e.g. Citicorp Venture Capital, Chemical Venture Capital Corp.
    - Only small portion of VC market
  + High net-worth individuals and families (angels) with experience and knowledge in that industry (typical angel net worth over $1 million)
    - Angels tend to invest only smaller amounts on average ($250,000) than VC firms
    - However, the aggregate investments from this source is much larger (at least twice as much) as from venture capital firms
  + ****
* Venture Capital Firms
  + A venture capital firm is a limited partnership that specializes in raising money to invest in the private equity of young firms
  + Typically, institutional investors, such as pension funds, endowments, sovereign wealth funds, and insurance companies, are the limited partners in the venture capital firm
    - Do not manage, only provide money
  + The general partners are known as venture capitalists and they work for and run the venture capital firm
  + ****
    - Venture capital fund usually has a life of 10 years
  + Venture capital firms offer limited partners a number of advantages over investing directly in start-ups themselves as angel investors
  + Because these firms invest in many start-ups, limited partners are more diversified than if they invested on their own. They also benefit from the expertise of the general partners
  + The advantages to limited partners come at a cost. General partners usually charge substantial fees, taken mainly as a percentage of the positive returns they generate
  + Most firms charge 20% of any positive returns they make, but the successful firms may charge more than 30%. This is called the **carried interest** or **carry**
  + They also generally charge an annual **management fee** of about 2% of the fund’s committed capital
  + Commitments graphs
  + VC firms can provide substantial capital for young companies
  + In return, VCs often demand a great deal of control. VCs typically control about 1/3 of the seats on a start-ups board of directors, and often represent the single largest voting block on the board
  + Although entrepreneurs generally view this control as a necessary cost of obtaining venture capital, it can actually be an important benefit of accepting venture financing
  + Venture capitalists use their control to protect their investments, so they may therefore perform a key nurturing and monitoring role for the firm
* Corporate investors (Corporate VCs)
  + Many established corporations purchase equity in younger, private companies
    - A corporation that invests in private companies is referred to by many different names, including corporate investor, corporate partner, strategic partner, corporate VC, and strategic investor
  + Most of the other types of investors in private firms are primarily interested in the **financial return** that they will earn on their investments
  + Corporate investors, by contrast, might invest for corporate **strategic objectives** in addition to the desire for investment returns
    - For example: in 2007, Microsoft, as part of a strategic partnership, invested $240 million in Facebook. The deal gave Microsoft a 1.6% stake in Facebook and control over its banner ad placement outside of the US
* Useful terms
  + **Carried interest**: portion of profits paid for the professional venture capitalist as incentive compensation
  + **Term sheet**: the roadmap to definitive agreements that will control the investment an entrepreneur’s company receives from a venture capitalist. A term sheet expresses basic understanding of the key points of a deal, with the understanding that there is much more to be discussed once a Term Sheet is signed
  + **Liquidation preference:** liquidation means closing down the company. The liquidation preference section is the multiple on the value of their initial investment that VC will receive as a result of this clause
    - E.g. in the event of a sale or bankruptcy proceedings, preference would be given to VC to receive a 3x return on their initial investment, before any proceeds are used to pay anything to any others
    - Typically, debt-holders will be paid first in the event of bankruptcy unless it’s specifically stated in the liquidation preferences
* What do venture capitalists do?
  + Provide financing
  + Monitor the entrepreneur: many venture capitalists spend several hours a week with the firm they have invested in
  + Provide expertise to firm management (and contacts, obtained from being involved in similar firms before)
  + Help them with additional financing from other sources, including initial public offerings (IPOs)
    - IPOs with venture backed financing:
      * Evidence indicates that venture-backed deals tend to be less “underpriced” than non-venture backed deals
      * Also, venture capitalists (many) seem to have excellent “timing” ability (i.e. the timing of the going-public decision)
    - Example: Kapor started Lotus in 1981 with financing from Sevin-Rosen
      * What each party brought to the deal:
        + Kapor (entrepreneur)

Recognized a market need

Technical abilities and team

Had a reasonable business plan

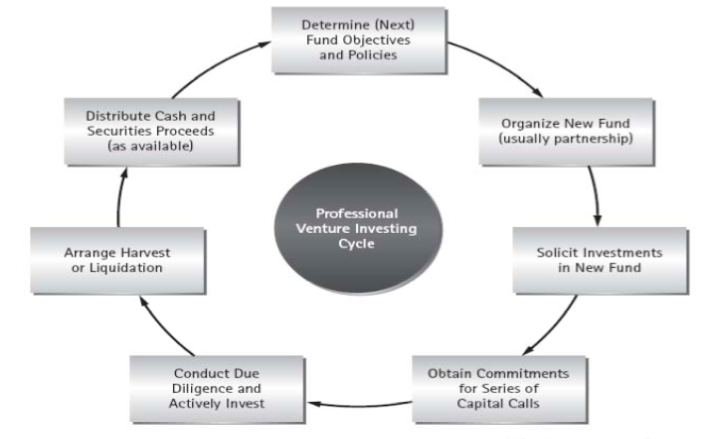
* + - * + Sevin-Rosen (VC)

Capital

Experience

Industry credibility

* + - * + Sometimes, the VCs contacts can be so crucial that from whom capital is raised can be more important than terms on which raised
* Potential issues with VC financing
  + Potential for excessive dilution of equity
  + Potential interference in the day-to-day running of the firm
  + May force pre-mature abandonment of project(s) if VC is sole supplier
  + Firm may have to try and go public too early
* Exit strategies adopted by VCs
  + Going public is typically the most desirable route—so the one the VC mostly aims at
    - Costs: equity dilution, investment banking fees, must release confidential information to the market, comply with the SEC
  + Sale to another company
    - Majority of companies exit through acquisition now
  + Sale of ownership stake to another investor—often to a “working partner”
  + Sale back to the entrepreneur—rare, but used if entrepreneur can borrow from bank or has cash
  + Reorganizing the company (Chapter 11)
  + Liquidation of assets
* Financial contracting with VC
  + A venture-capital contract or deal should:
    - Allocate cash flows appropriately
    - Allocate the risks involved in the firm
    - Give rise to the “right” incentive effects between the entrepreneur and the venture capitalist
      * i.e. it should motivate the entrepreneur to put forth optimal effort and put forth realistic cash flow projections
* Addressing difficulties
  + Difficulties are dealt with by:
    - **Stage financing**: financing the project (investing in the firm) in stages
      * Essentially an abandonment option
    - **Use of appropriate financial contracts**:
      * Debt with warrants
      * Convertible debt
      * Preferred equity, especially convertible preferred equity
    - **Earn-out agreements** 
      * A portion of the purchase price is paid in the future contingent on the target’s future earnings
* Venture capital valuation (of the start-up)
  + Pre-money valuation
    - Product of price paid by VC per share and the number of shares outstanding prior to VCs investment
  + Post-money valuation
    - Product of price paid per share by VC and the total number of shares (including new shares issued to VC) outstanding after VC’s investment



**Chapter 8: Bond Markets**

* Capital Markets
  + Capital
    - Debt capital—bonds
    - Equity capital—stocks
  + Economic purpose—brings together long-term (>1 year) borrowers and investors
  + Major issuers
    - Corporations—stocks and bonds
    - Governments—federal, state, and local bonds
  + Major investors
    - Households
    - Financial intermediaries
  + The goal is to raise long-term capital
    - Issuers have long-term assets or projects, and want to match the asset life with the maturity of debt
      * Example: a firm buys a plant with an economic life of 15 years. It will issue a 15-year bond to match
    - But short-term debt is cheaper than long-term debt. Can the issuer just keep borrowing short-term?
    - Short-term debt exposes issuers to refinancing risk
      * Rates may skyrocket
      * Credit freezes may occur (e.g. the 2008 crisis)
* 3 Types of Debt (issuer)
  + Federal government—T-bills, T-notes, T-bonds
  + State and local government
  + Corporations
* US Treasury and Agency securities
  + US government issues notes and bonds
    - Coupon issues
      * Unlike T-bills, they have coupons, which are paid semi-annually
    - Notes: 1-10 year maturities
    - Bonds: over 10 year maturities
    - Sold in auction by the Treasury Department, free of default risk
    - Interest income is exempt from state and local income tax
    - Trend is toward more short-term market financing and less long-term financing
    - Note that short-term Treasury debt instruments are T-bills: pure discount bonds with original maturity less than one year
  + Inflation-Indexed Notes and Bonds (TIPS)
    - TIPS eliminate the inflation risk by providing promised payments specified in real terms
    - Like T-notes and bonds, fixed coupon rate determined by auction process
    - However, principle adjusts for inflation periodically
    - Minimum denomination is $1,000
    - Interest on TIPS is a direct measure of real rate of interest
    - Downside: increases in principal are charged every even though investors receive the principal at maturity. Also, the coupon rate is lower than the standard T-note/bond
    - TIPS Example
      * The yield on a 5-year T-note is 3.49% and the yield on a 3-year TIPS is 1.1%. What’s the market’s estimate of the annual inflation rate over the next 5 years?
        + Hint: use Fisher equation
        + Nominal rate: 3.49%
        + Real rate: 1.1%
        + Expected inflation=2.36%
    - TIPS Example
      * A TIPS with an original principal amount of $100,000, a 3% annual coupon rate (1.5% semiannually), 10 years to maturity
      * If the semi-annual inflation rate in the previous 6 months is 1%, what happens to the note?
        + Coupon rate=1.5% semi-annually
        + New principal=$100,000\*(1+0.01) =$101,000
        + New coupon payment=$101,000\*1.5% $1,515
        + If inflation is 1.4% in the following 6-month period, coupon= (101,000\*1.014) \*1.5%=$1,536.21
  + Separate Trading of Registered Interest and Principal (STRIP)
    - Each coupon and principal of a US Treasury note or bond is sold separately by a dealer
    - Each separated security is a zero-coupon bond
    - Most T-notes are eligible for STRIPs
    - Dealers engage in creating STRIPs because investors value zero-coupon default risk-free securities and are willing to pay more for STRIPs than underlying bonds
    - Exhibit 8.3
* State and Local government bonds
  + Known as municipal bonds or munis
    - Exempt from federal taxes, also exempt from state and local taxes if purchased in the same state
    - Issued by states, counties, cities, school districts, transit authorities, etc.
    - Varying degrees of default risk exist, which is generally higher than that of Treasury bonds
    - There are more than 50,000 issuers of muni bonds in the US
    - Detroit’s bankruptcy court protection in October 2013 on $600 million unsecured debt (the biggest municipal bankruptcy in US history)
  + Types of municipal bonds
    - General Obligation (GO): backed by taxing power of political entity (aka “full faith and credit” of the issuer)
      * Increase taxes in case of default risk
      * Typically issued to fund basic services like education and health
    - Revenue: financed and paid back with cash flows from a specific project
      * Examples include bonds issued to finance toll roads, water treatment plants, college dorms, etc.
  + The relationship between municipals and taxable yields
    - Interest on municipal bonds is exempt from federal income tax
    - Most states also exempt investors of home bonds from state income tax
    - Munis and taxable corporates are similar except for the taxation of interest
    - The yield on municipals equals the yield on taxables times one minus the marginal tax rate
      * Im = it(1-t)
    - Corporate vs. Muni Bond
      * An investor has the choice of an AA-rated corporate bond with a yield of 6%, or an AA-rated muni yielding 4%. If the investor has a marginal tax rate of 30%, which bond should he/she select?
        + Corporate, yields 4.2%
  + Investors in Munis
    - Three groups of investors in munis whose demands are affected by their high federal tax exposure are:
      * Households: affected by income level and marginal tax rates
      * Casualty insurance companies: investment determined by industry profitability
      * Commercial banks: the Tax Reform Act of 1986 ended the tax deductibility of interest expense incurred on borrowing for the purchase of tax-exempt securities
  + The market for municipal bonds
    - Primary market
      * Many individual smaller issuers
      * Underwritten by investment bankers from local to national markets
      * Most general obligation (GO) bonds are sold by competitive bid
    - Secondary market
      * Not well-developed, OTC markets made by dealers
      * Thin secondary markets lead to larger bid-ask spreads
      * Limited marketability leads to higher yields
* Corporate bonds
  + Debt contracts (indentures) that require borrowers to make periodic payments of interest and repay principal, usually $1,000, at maturity date
  + Types of ownership record
    - Bearer bonds: coupon bond owned by bearer
    - Registered bonds: owner noted by records
  + Maturity
    - Term bonds: all bonds mature on one date
    - Serial bonds: bonds in the issue mature on different dates
      * Most munis are serial issues
  + Types of corporate bonds
    - Simple (fixed, straight) bonds: fixed coupon payments for the life of the bond plus the principal payment at maturity
    - Fixed rate vs. variable rate; foreign currency vs. US denominated bonds; covered bonds vs. naked bonds
    - Zero coupon bonds: no coupon payments, and the principal plus the interest is paid at maturity
    - Private bonds are only available to private, qualified investors
    - Convertible bonds: allow the bondholder to convert the debt into shares of the firm at a predetermined ratio at the discretion of the bondholder
    - Callable bonds: firm can withdraw the bond sale
* The bond indenture
  + Collateral
    - Mortgage bonds: real assets pledged
    - Equipment trust certificates: specific, titled, or identifiable equipment
    - Collateral bonds: secured by financial assets
    - Debentures: unsecured bonds
  + Claim on assets
    - Senior debt: first priority to general assets
    - Subordinated debt: asset claim ranking of unsecured debentures below senior or specific general creditors
  + Provisions
    - Sinking fund provision
      * The periodic retirement of a number of bonds
    - Call provision
      * Gives issuer right to retire bonds before maturity
    - Convertible bonds
      * Bonds that can be converted into common stock
* Global bond markets
  + Foreign bonds: issued in a financial market of a nation by a foreign company in that country
    - When a foreign company like Nestle (Switzerland) issues a bond in the US corporate bond market, it is considered to be a foreign bond and is referred to as “Yankee bonds”
    - Similarly, foreign firms issuing corporate bonds in the Japanese market will have their bonds referred to as “Samurai bonds”
    - Foreign bonds must conform to the regulations imposed in the country of issue, denominated in the currency of that country, be brought to the market by investment bankers of that country, and sold to only investors of that country
  + Eurobonds: issued by an entity in one or more countries denominated in a currency other than the currency of the country where the bonds are issued
    - IBM issues a dollar denominated bond outside of the US—Eurobond
    - Eurobonds are often bearer bonds and do not have to be registered
    - Interest or coupon payments are annual
  + Eurobonds and foreign bond issuances take country or political risk into consideration
  + International credit ratings have become a more significant influence than domestic ratings on the interest rates of debt
  + International credit ratings also take country or political risk into consideration
* Bond pricing example

**Chapter 10: Equity Markets**

* Common stock
  + Ownership in a corporation
  + One vote per share
    - Vote to elect board of directors, as well as big decisions in SH meetings
  + A residual (last) claim on income and assets in liquidation, thus a riskier position than bonds and preferred stockholders
  + Shareholder’s liability for the debts of the corporation is limited to their investment in the common stock
* Preferred stock
  + A preferred or prior claim on earnings and assets compared to common stock
  + Dividends paid ahead of common stock
    - Non-participating preferred receive a fixed level of dividends, thus not participating in possible high earnings level of the corporation
    - Cumulative provision: arrearage plus current dividends must be paid before any payment made to common shareholders
  + Preferred stockholders are usually excluded from voting for board and SH issues
* Corporate equity holders (from largest to smallest)
  + Households
  + Mutual funds
  + Foreign investors
  + Private pension funds
  + Federal, state, and local retirement funds
  + Insurance companies
  + Exchange traded funds
  + Others
* The secondary market for equity securities
  + Initial public offering (IPO): the first time shares are sold in the market
  + Subsequent trading in securities after primary issue on secondary markets
  + Provides investor liquidity
    - Stock liquidity: how easy it is to sell your stocks without much loss of its value
  + Stable prices are related to the extent of:
    - Breadth of the market: the number of varied traders of the stock
    - Depth of the market: the extent to which there are conditional orders to buy and sell below and above the current price
    - Resilience of the market: the ability of the market to attract buyers/sellers when the stock prices decrease/increase, respectively, due to order imbalances
  + Four ways to bring buyers/sellers together
    - Direct search: buyer may incur search costs and find a seller on their own
    - Broker: brings buyers and sellers together, charges a commission
    - Dealer: may sell/buy (bid/ask) securities from an inventory of securities, reducing search costs. The dealer’s return is the bid/ask spread
    - Auction market: allocates the selling shares to the highest bidder, providing a buyer/seller
* Stock exchanges
  + Exchanges are physical places or electronically connected markets where listed stocks are traded by members of the exchange
  + The NYSE is the largest US stock exchange (73.5%)
    - Founded in 1817
    - Stocks are traded on an auction basis at specific locations on the trading floor (posts)
    - All bid/ask information is in a single place
  + NASDAQ (26.5%)
    - National Association of Securities Dealers Automated Quotation
      * Founded in 1971
      * Second largest exchange
      * More technologically advanced
    - NASDAQ accelerated disclosure of dealer quotes to brokers, reducing search time and enhancing ability to find the best price
  + Buy/sell orders include:
    - Market orders: to buy or sell at the available price
    - Limit orders: to buy and sell at a designated price
    - Stop orders: to sell only if the price drops to the stop price and buy if the price increases to the stop price
  + Short sale: an investor who believes a stock’s price is going to fall can borrow shares from a broker and sell them today
* Equity trading
  + Over-the-counter market (OTC)
  + Securities not listed are traded OTC. The reason for not listing include:
    - Little investor interest
    - Small issue size
    - Insufficient order flow
  + The OTC market is a dealer market, which includes a large number of relatively small OTC dealers
  + Brokers seek favorable prices from a variety of dealers
* Equity valuation basics
  + The value of a security is the present value of expected cash flows, discounted at the required rate of return (DCF model)
    - Identify the size and timing of relevant future cash flows
    - Select the appropriate discount rate (determined by risk)
    - Calculate the present value by discounting the cash flows at the discount rate
* Apple’s financial performance
  + EPS=net income/shares outstanding
  + P/E=share price/EPS
    - Higher when future earnings are expected to grow more and when future earnings are not as risky
    - Used to judge how expensive a stock is
* The total risk of a security
  + Comprised of the systematic (market or undiversifiable) risk and the unsystematic (diversifiable) risk
  + Proper diversification can reduce unsystematic (i.e. unique, security-specific) risk
  + Diversification across different securities helps reduce total risk, resulting in portfolio returns being less volatile than the average of individual securities’ returns
  + Measuring **systematic** risk: Beta
    - Investors are assumed to hold securities in a diversified portfolio with only systematic or market risk to analyze
    - The relevant risk of a security is how it correlates with the portfolio
    - The extent to which stock returns vary with a broad-based market portfolio is called the beta of the stock. It is a measure of relative risk of a security
    - If the stock varies as the market portfolio does, the beta is 1.0 and the stock has a risk level matching the market portfolio such as the S&P 500
    - A beta greater than one is risker (aggressive stock) than the market while a beta less than one is not as risky as the market (defensive stock)
    - Betas calculated for securities identify their relative historic riskiness
  + Security market line (SML)
    - SML depicts the offsetting returns demanded for increased increments of risk, the classic risk/return tradeoff
    - SML enables us to conceptualize the risk of a stock as the sum of the risk-free rate plus the market risk premium adjusted for the relative risk of the stock (beta):
      * E(r)=Rf +B [E(RM)-RF]
  + Stock Market Indexes
    - Each stock is assigned a relative weight in the portfolio
      * A price-weighted index (e.g. Dow Jones) is computed by summing the prices of the individual stocks, then dividing by a divisor to determine the base index value
        + The divisor, such as 100, relates the starting value and is adjusted as stocks split or composition of the index is changed
      * A market value-weighted index (e.g. S&P 500) is calculated by summing the total market value of the firms in the index. The percentage change in the total market value of the firms is the return on the index
      * Both composition and weighting affect the value of an index over time
  + The stock market as a predictor of economic activity
    - Changes may predict real economic activity because:
      * Stock prices are thought to represent the PV of expected CFs. If a recession is coming with lower earnings and dividends, the market should reflect those expectations with lower prices
      * Stock price declines reduce wealth and may reduce consumption, and negative business expectations should curtail investment spending
      * Evidence indicates that the stock market is not very successful in predicting economic activity

**Chapter 18: Investment Banking**

* Investment Banking Activities
  + Investment banks (IB) are the most important participant in the direct financial markets
  + Assist firms and governments in selling new securities in the primary market
  + Make the market (dealer) or arrange the buying and selling (broker) in the secondary market
* Investing and commercial banks differ
  + Commercial banks (CB) accept deposits and make commercial loans as a financial intermediary
    - Differ in how they finance securities
  + CB traditionally could underwrite only low-risk securities of governments under the Glass-Steagall Act
  + Many large firms now use the direct financial markets rather than bank loans to finance
* US vs. other developed nations
  + Until 1999, investment banks in the US could not do commercial banking activities and vice versa
  + Outside of japan, in most other developed nations, financial institutions are allowed to do both investment and commercial banking
    - Called Universal Banks
    - Engage in deposit taking, making loans, brokerage, securities underwriting, and insurance
* Largest investment banks
  + Goldman Sachs, JP Morgan, Merrill Lynch, Morgan Stanley, Citi, Deutsche Bank, Credit Suisse
  + Fees earned in:
    - M&A
    - Equity
    - Bonds
    - Loans
* Early history
  + IBs trace their origins to European investment houses which branched to the US
  + Early US CBs were chartered for note issue and business lending
    - Different from private IBs, organized as partnerships
  + IBs grew with the growth of security issuance and trading in the Civil War and later in the railroad and steel industries
  + CBs pressured for investment banking privileges from their regulators, and by the 1930s, they could provide full IB services
* Glass-Steagall Act
  + Separated CB and IB in the US
  + The act restricted the asset powers of commercial banks to low-risk underwriting areas
  + CB could not underwrite (buy and resell) risky business securities
  + CB were limited as to the risk assumed in their investment portfolio—no risky corporate securities
  + IB firms were prohibited from engaging in CB
* Objectives of the Glass-Steagall Act
  + Discourage speculation in financial markets
  + Prevent conflict of interest and self-dealing
  + Restore confidence in the safety and soundness of the financial system
* Gramm-Leach-Bliley Act
  + Financial Services Modernization Act of 1999
  + Repealed Glass-Steagall
  + Permitted CB, IB, and insurance underwriting under a financial holding company
  + Triggered by the merger of Citicorp and Travelers Group into Citigroup
* Investment Banking and the 2007-2008 Financial Crisis
  + Investment banks traditionally benefitted from less government regulation and no capital requirements
    - No auditing costs, fees, regulation costs
  + During the crisis, investment banks transformed themselves to bank holding companies (BHC) to get government bailout money
    - Only able to receive bailout money as a BHC since IBs were unregulated
    - Option to get bailout money is valuable even if banks are not in bankruptcy because it’s like insurance
      * Debtholders care about this, you care about the debtholders because if you have insurance, you have less default risk, therefore you can offer debtholders a lower rate of interest
  + The Dodd-Frank Wall Street Reform and Consumer Protection Act 2010 and the Volcker Rule bans banks from investing and trading for their own profit
* Investment bank example: Goldman Sachs
  + Largest revenue: institutional client services (assisting client with buying and selling securities)
* How banks finance themselves:
  + LT debt
    - IB: 21%
    - CB: 20%
  + Equity
    - IB: ~10%
    - CB: ~10%
  + Deposits
    - IB: 12%
    - **CB: 70%**
  + Trading liabilities
    - **IB: 25%**
    - CB: 4%
      * If you trade and purchase a lot of derivatives (has winners and losers), for losers this is like accounts payable, you will pay the winner when you get the money
* Primary services of an investment bank
  + Bring new securities to market
    - Public offering
    - Private placement
  + New issues are called primary issues, first issued in the primary market
    - Initial public offering (IPO)—first sale of securities to the public
    - Seasoned offering—additional issue of securities already trading
  + Three steps of bringing a new issue to the market:
    - Origination: design of a security contract that is acceptable to the market
      * Prepare SEC registration statements and a summary prospectus
      * Obtain a rating on the issue, obtain a bond counsel, a transfer agency and a trustee
    - Underwriting: IB buys the securities at a given price to resell them to the public at a higher price
      * In an underwritten offer, IB guarantees the issuer a certain price
        + The risk of not selling the issue at a price higher than that promised to the issuer is borne by the IB
        + The difference between the price at which the issue is sold and that promised to the issuer is the underwriting spread

Profit earned by the IB

* + - Sales and distribution: selling quickly reduces inventory risk
      * Syndicates are formed to reduce inventory risk
      * Market price declines cut the IBs margin
  + Bringing new securities to market
    - Reputation and signaling: underwriters vouch for the integrity of the process and the quality of the issuer to the investors
    - Most offerings are brought to the market by a syndicate of banks
    - Syndicates are led by book runners and lead managers
    - Sometimes, different book runners are in charge of different market segments (e.g. domestic vs. foreign placements)
    - Relative prestige of an investment bank: rankings and tombstones
* Mergers and Acquisitions
  + Specialized IB departments provide the following services
    - Arrange mergers which would produce economic synergy or increase total value
    - Assist firms in fighting hostile takeovers
    - Help establish the value of target firms
  + Mergers and acquisitions have been a profitable aspect of the IB business
  + CB have expanded their M&A departments
  + M&A advice:
    - Advisor identifies potential clients
    - Advisor offers valuation services for potential targets
    - If working for a potential target, the advisor helps to position the business so that it can be sold
    - The advisor helps to find potential acquirers or targets
    - The advisor has expertise in negotiation, which the clinet may lack
    - Acquirer’s advisor can help conduct due diligence
    - Advisor can help with the tax structure of a deal
    - Advisor can arrange the financing needed to complete an acquisition
    - Advisor knows how to navigate the legal aspects of the process
  + Hostile acquisitions
    - Made without the consent of the target’s board and management
    - Hostile acquisitons in the US are very rare, but can be quite large
    - Hostile leveraged buyouts (LBOs) started with the advent of high-yield bonds in the early 1980s
* Trading and brokerage
  + Brokerage function: to bring a buyer and seller together
  + Dealer function: buying (bid) and selling (ask) from an inventory of securities owned by the seller
  + Providing loans to customers, who invest the margin proportion and borrow the rest
  + Full service brokerages
  + Discount (internet) brokerages

**Stock Market Efficiency**

* Stock prices
  + Should reflect all available information
  + Dividend pricing model
    - Perpetuity formula: Div/r
  + How does a stock price respond to changes in information?
    - Analyze this through an event study
      * Day 0: when an event is announced
    - Market will respond quickly and accurately (on average) to an event (ex. Announced that dividends will go up by $1, result is stock price will go up)
    - Shouldn’t use as trading rule—ex. You can’t use yesterday’s information to make money
* Takeover examples
  + Time Magazine
    - Had been trading at $17 per share
    - Announcement: Company was going to buy them for $18.50 per share
    - Stock price rose to $18.45
      * $18.45 is the PV of $18.50, deal will happen in a few months
  + Time Warner
    - Was trading at $70 per share
    - Announcement: AT&T offered to pay $103 per share
    - Stock price rose to $89
      * Because the deal may not go through—Department of Justice has an antitrust suit, deal is uncertain
    - AT&T has the network, Time Warner has the content
      * Vertical deal
  + Space Shuttle Challenger
    - Main manufacturers
      * Morton Thiokol
      * Lockheed
      * Martin Marietta
      * Rockwell
    - Facts
      * January 28, 1986: 11:39am Challenger explodes, news is out by 11:47am
      * Was a surprise
      * Immediate stock market reaction
        + 4 firms stock prices all decreased, wasn’t clear who was responsible yet
        + At the end of the day, Morton Thiokol was deemed responsible, their stock price stayed down about 12% while the others rebounded

Loss of $200 million in equity value in one day

Market reacted quickly and accurately

Lawsuits, retrofit, lost businesses

* + - * What information did they know?
        + Analysis—temperature thought to be around 50 degrees, but turns out the night before, the temperature dropped to below freezing
  + Other examples
    - Orange juice futures market based on frozen concentrate
      * As temperature goes down, orange juice prices go up
      * Can predict the weather more accurately than the weather channel
    - Airplane crashes
      * No stock price effect
        + Could be pilot error or parts
        + If pilot error, Delta’s fault; parts error, manufacturer’s fault

**Financial Crises**

* Creditors have taken on too much debt, don’t have the cash to pay
* Printing money leads to inflation which means $ now worthless
* Debt is the root cause of most corporate financial failures and therefore the root cause of the financial system failure
* Firm crises
  + If they can’t repay
  + Uneven cash flows
* Almost always before a financial crisis, policymakers claim that **“this time is different”**
* Sovereign debt
  + Government-owned debt
  + Two types: internal and external
    - Internal: owed to someone within the country
    - External: outside of the country, more implications
* Debt intolerance
  + What is the relationship between debt levels and default?
    - How much debt can I take on without having to worry about defaulting?
* Emerging markets: can handle **less** debt than developed countries, lower debt intolerance
  + Emerging markets use a lot more external debt
* Main themes of book
  + This time is different
  + Crises happen often
  + Inflation a cause
  + To avoid future bubbles, bankers and economists should use an early-warning

system and a stricter regulatory scheme