Chapter 3 Securities Markets

Chapter Objectives

- Describe the role of investment bankers in primary issues.
- Identify the various security markets.
- Compare trading practices in stock exchanges with those in dealer markets.
- Describe the role of brokers.
- Compare the mechanics and investment implications of buying on margin and short-selling.

3.1 HOW FIRMS ISSUE SECURITIES

- Firms regularly need to raise new capital to help pay for their many investment projects. Broadly speaking, they can raise fund either by borrowing money or by selling shares in the firm.
  - Investment bankers are generally hired to manage the sale of these securities in what is called a **primary market** for newly issued securities.
  - Once these securities are issued, however, investors might well wish to trade them among themselves.
    - ✓ For example, you may decide to raise cash by selling some of your shares in Apple to another investor. This transaction would have no impact on the total outstanding number of Apple shares.
  - Trades in existing securities take place in the **secondary market.**
  - Shares of *publicly listed* firms trade continually on well-known markets such as the New York Stock Exchange or the NASDAQ Stock Market.
    - ✓ There, any investor can choose to buy shares for his or her portfolio.

- ✓ These companies are also called *publicly traded*, *publicly owned*, or just *public companies.*

◆ Other firms, however, are *private corporations*, whose shares are held by small numbers of managers and investors.

- ✓ While ownership stakes in the firm are still determined in proportion to share ownership, those shares do not trade in public exchange.
- ✓ Some private firms relatively young companies that have not yet chosen to make their shares generally available to the public, others may be more established firms that are still largely owned by the company's founders or families, and others may simply have decided that private organization is preferable.

● Privately Held Firms

■ A privately held company is owned by a relatively small number of shareholders.

◆ Privately held firms have fewer obligations to release financial statements and other information to the public.

- ✓ This save money and frees the firm from disclosing information that might be helpful to its competitors.

- ✓ Some firms also believe that eliminating requirements for quarterly earnings announcements gives them more flexibility to pursue long-term goals free of shareholder pressure.

- When private firms wish to raise funds, they sell shares directly to a small number of institutional or wealthy investors in a **private placement.** Rule 144A of the SEC allows them to make these placements without preparing the extensive and costly registration statements required of a public company.
  - While this is attractive, shares in privately held firms do not trade in secondary markets such as a stock exchange, and this greatly reduces their liquidity and presumably reduces the prices that investors will pay for them.
    - ✓ *Liquidity* has many specific meanings, but generally speaking, it refers to the ability to trade an asset at a fair price on short notice.
    - ✓ Investors demand price concession to buy illiquid securities.
- Until recently, privately held firms were allowed to have only up to 499 shareholders.
  - This limited their ability to raise large amounts of capital from a wide base of investors.

- Thus, almost all of the largest companies in the U.S. have been public securities.

- As firms increasingly chafed against the information requirements of going public, federal regulators came under pressure to loosen the constraints entailed by private ownership.
  - The JOBS (Jumpstart Our Business Startups) Act, which was signed into law in 2012, increased the number of shareholders that a company may have before being required to register its common stock with the SEC and file public reports from 500 to 2,000.

    security exchange commission
  - It also loosened rules limiting the degree to which private firms could market their shares to the public.
- Trading in private corporations also evolved in recent years.
  - To get around the maximum investor restriction, middlemen formed partnerships to buy shares in private companies; the partnership counts as only one investor, even though many individuals may participate in it.
- Very recently, some firms have set up computer networks to enable holders of private company stock to trade among themselves.

- However, unlike the public stock markets regulated by the SEC, these networks require little disclosure of financial information and provide correspondingly little oversight of the operations of the market.
- Skeptics worry that investors in these markets cannot obtain a clear view of the firm, the interest among other investors in the firm, or the process by which trades in the firm's shares are executed.

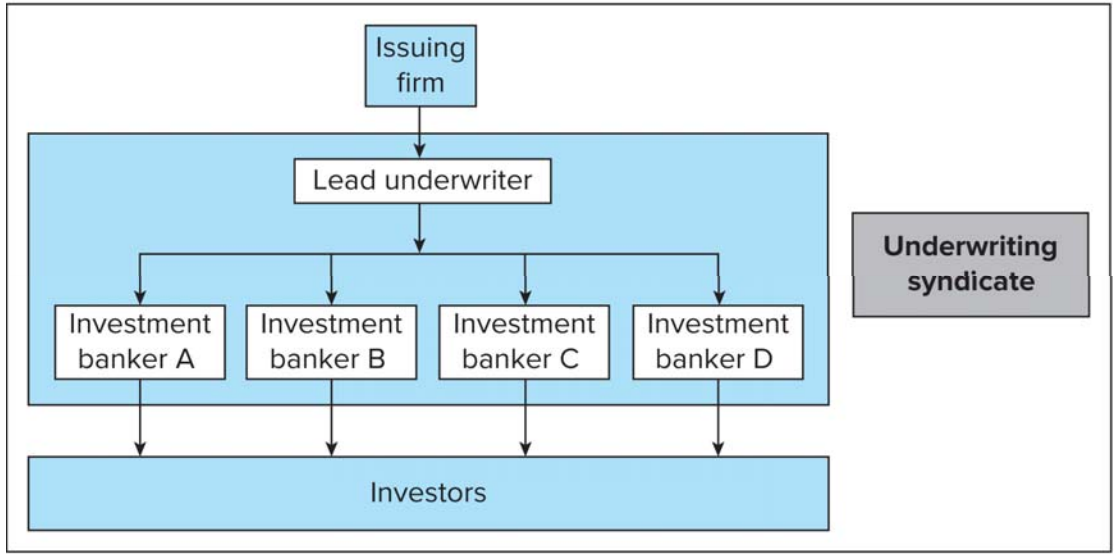
Public Traded Companies

- When a private firm decides that it wishes to raise capital from a wide range of investors, it may decide to *go public*.
  - This means that it will sell its securities to the general public and allow those investors to freely trade those shares in established securities markets.
  - The first issue of shares to the general public is called the firm's **initial public offering (IPO).**
  - Later, the firm may go back to the public and issue additional shares.
    - ✓ A *seasoned equity offering* is the sale of additional shares in firms that already are publicly traded.

- ✓ For example, a sale by Apple of new shares of stock would be considered a seasoned new issue.

- Public offerings of both stocks and bonds typically are marketed by investment bankers who in this role are called **underwriters.**
  - ◆ More than one investment banker usually markets the securities.
  - ◆ A lead firm forms an underwriting syndicate of other investment bankers to share the responsibility for the stock issue. 聯合組織
- Investment bankers advise the firm regarding the terms 條款 on which it should attempt to sell the securities.
  - ◆ A preliminary registration statement must be filed with the Securities and Exchange Commission (SEC), describing the issue and the prospects of the company.
  - ◆ When the statement is in final form, and approved by the SEC, it is called the **prospectus.**

- In a typical underwriting arrangement, the investment bankers purchase the securities from the issuing company and then resell them to the public.
  - The issuing firm sells the securities to the underwriting syndicate for the public offering price less a spread that serves as compensation to the underwriters.
    - ✓ This procedure is called a *firm commitment*.
  - In addition to the spread, the investment banker also may receive shares of common stock or other securities of the firm.
- Figure 3.1 depicts the relationships among the firm issuing the security, the lead underwriter, the underwriting syndicate, and the public.



Shelf Registration

- An important innovation in the issuing of securities was introduced in 1982 when the SEC approved Rule 415, which allow firms to register securities and gradually sell them to the public for two years following the initial registration.
  - Because the securities are already registered, they can be sold on short notice, with little additional paperwork.
    短時間内
  - Moreover, they can be sold in small accounts without incurring substantial flotation costs.
  - The securities are "on the shelf," ready to be issued, which has given rise to the term *shelf registration*.

Initial Public Offerings

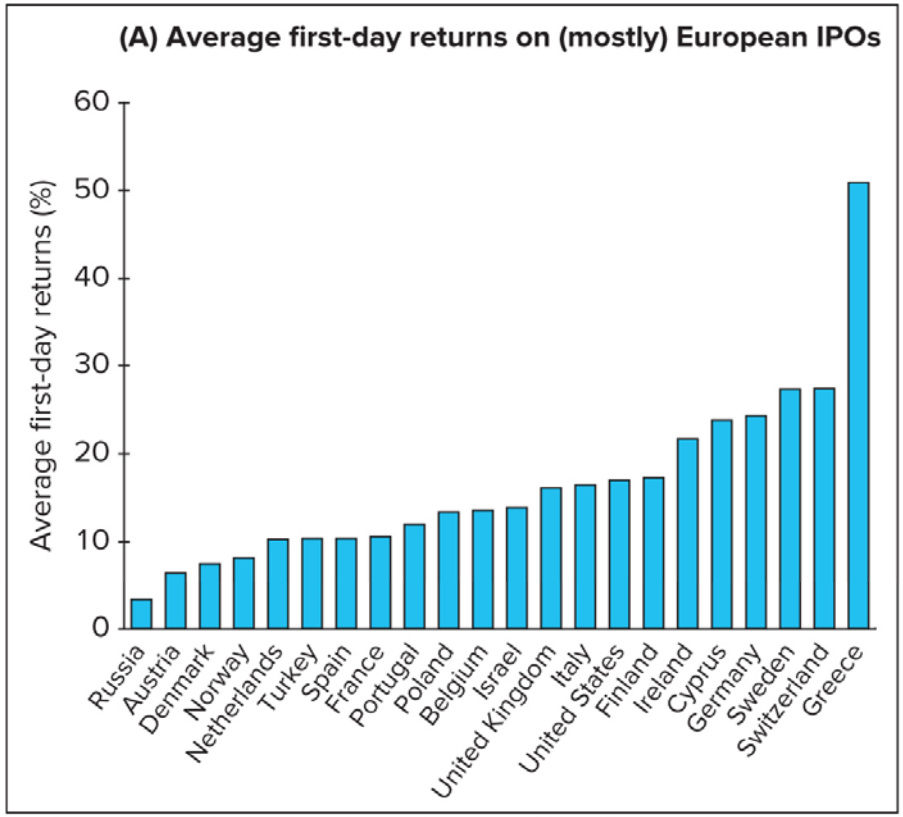
- Investment bankers manage the issuance of new securities to the public.
- Once the SEC has commented on the registration statement and a preliminary prospectus has been distributed to interested investors, the investment bankers organize *road shows* in which they travel around the country to publicize the imminent offering. These road shows serve two purposes.

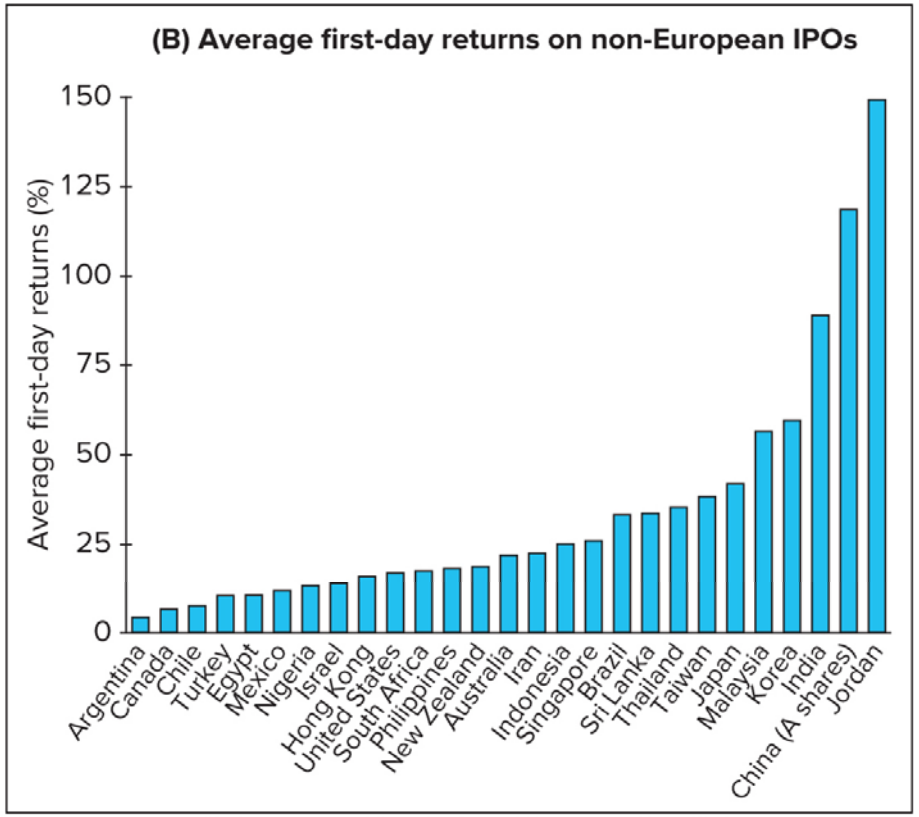
- First, they generate interest among potential investors and provide information about the offering.
- Second, they provide information to the issuing firm and its underwriters about the price at which they will be able to market the securities.
  - ✓ Large investors communicate their interest in purchasing shares of the IPO to the underwriters.
    - ➢ These indications of interest are called a *book*.
    - ➢ The process of polling potential investors is called *book building*.
  - ✓ The book provides valuable information to the issuing firm because institutional investors often will have useful insights about both the market demand for the security as well as the prospects of the firm and its competitors.
  - ✓ It is common for investment bankers to receive both their initial estimates of the offering price of a security and the number of shares offered based on feedback from the investing community.

- Why do investors truthfully reveal their interest in an offering to the investment banker? Might they be better off expressing little interest, in the hope that this will drive down the offering prices?
  - Truth is the better policy in this case because truth telling is rewarded.
    - ✓ Shares of IPOs are allocated across investors in part based on the strength of each investor's expressed interest in the offering.
    - ✓ If a firm wishes to get a large allocation when it is optimistic about the security, it needs to reveal its optimism.
    - ✓ In turn, the underwriter needs to offer the security at a bargain price to these investors to induce them to participate in bookbuilding and share their information.
- Thus, IPOs commonly are underpriced compared to the price at which they could be marketed.
  - Such underpricing is reflected in price jumps that occur on the date when the shares are first traded in public security markets.

- The September 2014 IPO of the giant Chinese e-commerce firm Alibaba was a typical example of underpricing.
  - ✓ The company issued about 320 million shares to the public at a price of $68. The stock price closed that day at $93.89, a bit more than 38% above the offering price.

- While the explicit costs of an IPO tend to be around 7% of the funds raised, such underpricing should be viewed as another cost of the issue.
  - For example, if Alibaba had sold its shares for the $93.89 that investors obviously were willing to pay for them, its IPO would have raised 38% more money than it actually did.
  - The money “left on the table” in this case far exceeded the explicit cost of the stock issue.
- Nevertheless, underpricing seems to be a universal phenomenon.
  - For example, Figure 3.2 presents average first-day returns on IPOs of stocks across the world.





Source: Provided by Professor J. Ritter of the University of Florida, 2014. This is an updated version of the information contained in T. Loughran, J. Ritter, and K. Rydqvist, "Initial Public Offerings: International Insights," *Pacific-Basin Finance Journal* 2 (1994), pp. 165–199

- ✓ The results consistently indicate that IPOs are marketed to investors at attractive prices.

- Pricing of IPOs is not trivial and not all IPOs turn out to be underpriced.
  - ◆ Some do poorly after issue.

- ✓ Facebook's 2012 IPO was a notable disappointment. Within a week of its IPO, Facebook's share price was 15% below the $38 offer price, and five months later, its shares were selling at about half the offer price.
- ✓ In the end, however, those who held onto (堅持住) their shares profited; by late 2014, the share prices was near double the IPO offer price.

■ Interestingly, despite their dramatic attractive first-day returns, IPOs have been poor long-term investments.

◆ Ritter calculates the returns to a hypothetical investor who bought equal amounts of each U.S. IPO between 1980 and 2011 and held each position for three years.

- ✓ That portfolio would have underperformed the broad U.S. stock market on average by 18.7% for three-year holding periods and underperformed "style-matched" portfolios of firms with comparable size and ratio of book value to market value by 7.0%.

- Other IPOs cannot even be fully sold to the market.
  - Underwriters left with unmarketable securities are forced to sell them at a loss on the secondary market.
  - Therefore, the investment banker bears the price risk of an underwritten issue.

3.2 HOW SECURITIES ARE TRADED

Types of Markets

- We can differentiate four types of markets:
  - direct search markets
  - brokered markets
  - dealer markets
  - auction markets
- ***DIRECT SEARCH MARKETS***
  - A *direct search market* is the least organized market.
    - ✓ Buyers and sellers must seek each other out directly.
      - ➢ An example of a transaction in such a market is the sale of a used refrigerator where the seller advertises for buyers on Craigslist.
    - ✓ Such markets are characterized by sporadic participation and low-priced and nonstandard goods.
      零星的
    - ✓ It would not pay for most people or firms to seek profits to specialize in such markets.

■ *BROKERED MARKETS*

- ◆ The next level of organization is a *brokered market*.
  - ✓ In markets where trading in a good is active, brokers find it profitable to offer search services to buyers and sellers.
    - ➢ A good example is the real estate market, where economies of scale in searches for available homes and for prospective buyers make it worthwhile for participants to pay brokers to conduct the searches.
  - ✓ Brokers in particular markets develop specialized knowledge on valuing assets traded in that market.
- ◆ The *primary market*, where new issues of securities are offered to the public, is an example of a brokered market.
  - ✓ In the primary market, investment bankers who market a firm's securities to the public act as brokers; they seek investors to purchase securities directly from the issuing corporation.

■ *DEALER MARKETS*

- ◆ When trading activity in a particular type of asset increases, **dealer markets** arise.
  - ✓ Dealers specialize in various assets, purchase these assets for their own accounts, and later sell them for a profit from their inventory.
    - ➢ The spreads between dealers' buy (or "bid") prices and sell (or "ask") prices are a source of profit.
  - ✓ Dealer markets save traders on search costs because market participants can easily look up the prices at which they can buy from or sell to dealers.
  - ✓ A fair amount of market activity is required before dealing in a market is an attractive source of income.
  - ✓ Most bonds trade in over-the-counter dealer markets.

■ *AUCTION MARKETS*

- ◆ The most integrated market is an **auction market,** in which all traders converge at one place (either physically or electronically) to buy or sell an asset.
  - ✓ The New York Stock Exchange (NYSE) is an example of an auction market.

- ✓ An advantage of auction markets over dealer markets is that one need not search across dealers to find the best price for a good.
  - ➢ If all participants converge, they can arrive at mutually agreeable prices and save the bid-ask spread.

- Notice that both over-the-counter dealer markets and stock exchanges are secondary markets.
  - They are organized for investors to trade existing securities among themselves.

Types of Orders

- Broadly speaking, there are two types of orders:
  - market orders
  - orders contingent (附隨的) on price
- ***MARKET ORDERS***
  - Market orders are buy or sell orders that are to be executed immediately at current market prices.
    - ✓ For example, our investor might call her broker and ask for the market price of Facebook. The broker might report back that the best **bid price** is $76.40 and the

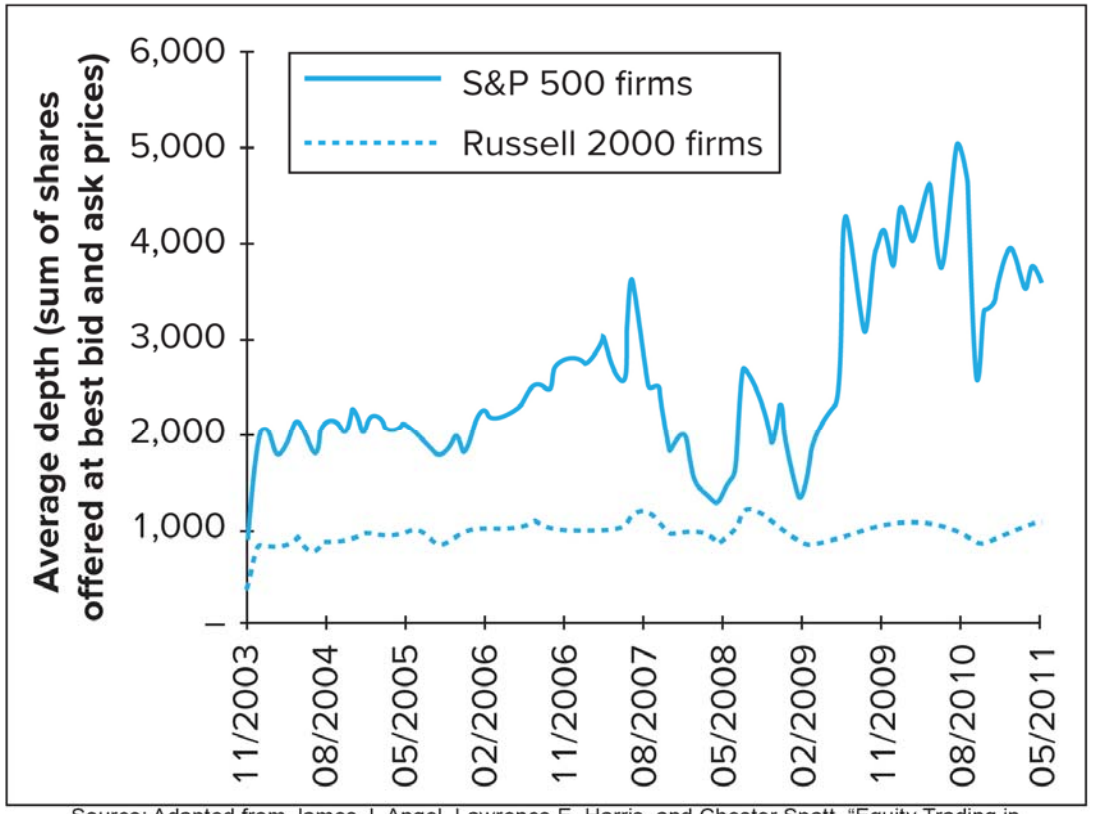
best **ask price** is $76.42, meaning that the investor would need to pay $76.42 to purchase a share, and could receive $76.40 a share if she wished to sell some of her own holdings of Facebook.

- The **bid-ask spread** in this case is $.02.
- So an order to buy l00 shares "at market" would result in purchase at $76.42, and an order to "sell at market" would be executed at $76.40.

◆ This simple scenario is subject to a few potential complications.

✓ First, posted price quotes actually represent commitments to trade up to a specified number of shares. If the market order is for more than this number of shares, the order may be filled at multiple prices.

- For example, if the asked price is good for orders up to 1,000 shares, and the investor wishes to purchase 1,500 shares, it may be necessary to pay a slightly higher price for the last 500 shares.
- Figure 3.3 shows the average *depth* of the market for shares of stock (i.e., the total number of shares offered for trading at the best bid and ask prices).



Source: Adapted from James J. Angel, Lawrence E. Harris, and Chester Spatt, "Equity Trading in the 21st Century," *Quarterly Journal of Finance* 1 (2011), pp. 1–53; Knight Capital Group

- Notice that depth is considerably higher for the large stocks in the S&P 500 than for the smaller stocks that constitute the Russell 2000 index.
- Depth is considered another component of liquidity.

✓ Second, another trader may beat our investor to the quote, meaning that her order would then be executed at a worse price.

- ✓ Finally, the best price quote may change before her order arrives, again causing execution at a different price than the one at the moment of the order.

■ *PRICE-CONTINGENT ORDERS*

- ◆ Investors also may place orders specifying prices at which they are willing to buy or sell a security.
  - ✓ A **limit buy order** may instruct the broker to buy some number of shares if and when they may be obtained at or below a stipulated price.
  - ✓ Conversely, a **limit sell order** instructs the broker to sell if and when the stock price rises *above* a specified limit.
  - ✓ A collection of limit orders waiting to be executed is called a *limit order book*.
- ◆ Figure 3.4 is a portion of the limit order book for shares in Facebook taken from the BATS exchange (one of several electronic exchanges; more on these shortly).
  - ✓ Notice that the best orders are at the top of the list: the offers to buy at the highest price and to sell at the lowest price.

Facebook, Inc. (FB) - NasdaqGS

76.37 ⬇1.54(1.98%) 3:13PM EDT - Nasdaq Real Time Price

Order Book

Top of Book

Bid		Ask	
Price	Size	Price	Size
76.40	600	76.42	400
76.39	900	76.43	600
76.38	817	76.44	700
76.37	964	76.45	1,300
76.36	710	76.46	764

BATS Making Markets Betters®

✓ The buy and sell orders at the top of the list—$76.40 and $76.42—are called the *inside quotes*; they are the highest buy and lowest sell orders. For Facebook, the inside spread at this time was only 2 cents.

The bid price is what buyers are willing to pay for it.

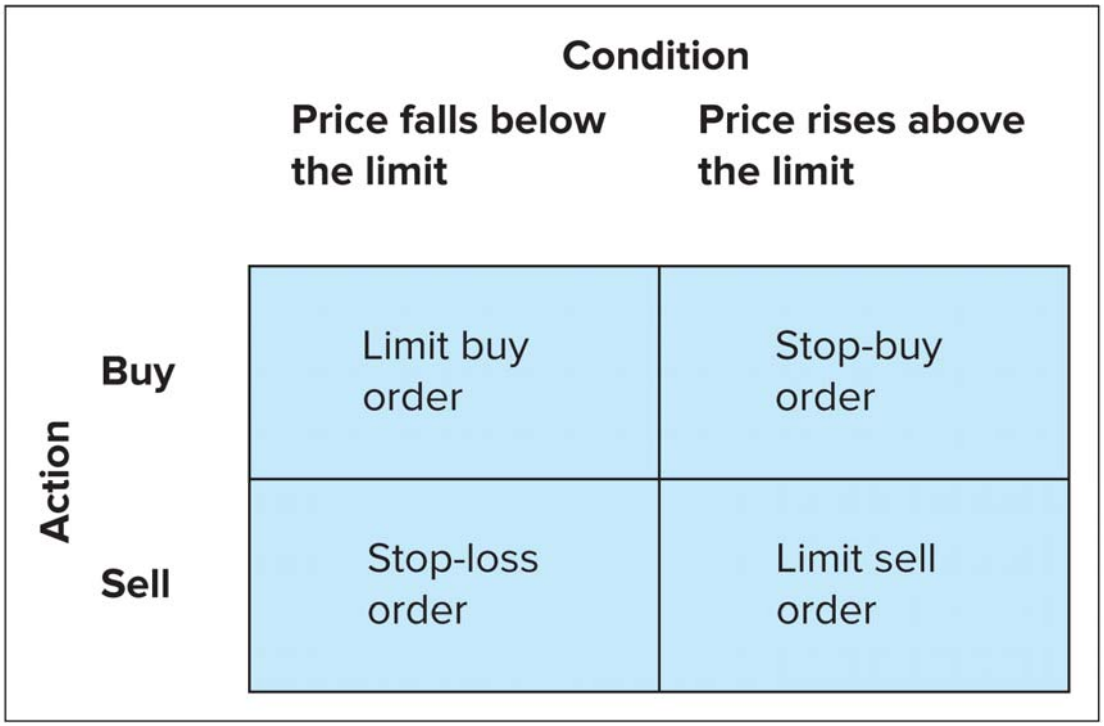
if you are buying a stock you are going to get the ask price.

- ✓ However, that order sizes at the inside quotes can be fairly small. Therefore, investors interested in larger trades face an *effective* spread greater than the nominal one since they cannot execute their entire trades at the inside price quotes.

◆ **Stop orders** are similar to limit orders in that the trade is not to be executed unless the stock hits a price limit.

- ✓ For *stop-loss orders*, the stock is to be *sold* if its price falls *below* a stipulated level.
  - ➢ As the name suggests, the order let the stock be sold to stop further losses from accumulating.
- ✓ Similarly, *stop-buy orders* specify that a stock should be bought when its price rises above a limit.
  - ➢ These trades often accompany *short sales* (sales of securities you don't own but have borrowed from your broker) and are used to limit potential losses from the short position.
  - ➢ Short sales are discussed in greater detail later in this chapter.

◆ Figure 3.5 organizes these types of trades in a convenient matrix.



● Trading Mechanisms

■ An investor who wishes to buy or sell shares will place an order with a brokerage firm.

◆ The broker charges a commission for arranging the trade on the client's behalf.

◆ Brokers have several avenues by which they can execute that trade, that is, find a buyer or seller and arrange for the shares to be exchanged.

- Broadly speaking, there are three trading systems employed in the United States:
  - Over-the-counter dealer markets
  - Electronic communication networks
  - Specialist markets
- ***DEALER MARKETS***
  - Roughly 35,000 securities trade on the **over-the-counter (OTC) market.** Thousands of brokers register with the SEC as security dealers.
  - Dealers quote prices at which they are willing to buy or sell securities. A broker then executes a trade by contacting a dealer listing an attractive quote.
  - Before 1971, all OTC quotations were recorded manually and published daily on so-called pink sheet.
  - In 1971, the National Association of Securities Dealers Automatic Quotations System, or NASDAQ, was developed to link brokers and dealers in a computer network where price quotes could be displayed and revised.
    - ✓ Dealers can use the network to display the bid price at which they are willing to purchase a security and the ask price at which they are willing to sell.

- ➢ The difference in these prices, the bid-ask spread, is the source of the dealer's profit.
  - ✓ Brokers representing clients may examine quotes over the computer network, contact the dealer with the best quote, and execute a trade.
- ◆ As originally organized, NASDAQ was more of a price quotation system than a trading system.
  - ✓ While brokers could survey bid and ask prices across the network of dealers in the search for the best trading opportunity, actual trades required direct negotiation (often over the phone) between the investor's broker and the dealer in the security.
- ◆ However, as we will see, NASDAQ has progressed far beyond a pure price quotation system.
  - ✓ While dealers still post bid and ask prices over the network, what is now called the **NASDAQ Stock Market** allows for electronic execution of trades at quoted prices without the need for direct negotiation, and the vast majority of trades are executed electronically.

ELECTRONIC COMMUNICATION NETWORKS (ECNs)

- **Electronic communication networks** allow participants to post market and limit orders over computer networks. The limit order book is available to all participants.
  - ✓ An example of such an order book from BATS, one of the leading ECNs, appears in Figure 3.4.
- Orders that can be "crossed," that is, matched against another order, are done so automatically without requiring the intervention of a broker.
  - ✓ For example, an order to buy a share at a price of $76 or lower will be immediately executed if there is an outstanding asked price of $76.
  - ✓ Therefore, ECNs are true trading systems, not merely price quotation systems.
- ECNs offer several attractions.
  - ✓ Direct crossing of trades without using a broker-dealer system eliminates the bid-ask spread that otherwise would be incurred. Instead, trades are automatically crossed at a modest cost, typically less than a penny per share.
  - ✓ ECNs are attractive as well because of the speed with which a trade can be executed.

- ✓ Finally, these systems offer investors considerable anonymity in their trades.

■ *SPECIALIST MARKETS*

- ◆ Specialist systems have been largely replaced by electronic communication networks, but as recently as two decades ago, they were still the dominant form of market organization for trading in stocks.
- ◆ In these systems, exchanges such as the NYSE assign responsibility for managing the trading in each security to a **specialist.**
  - ✓ Brokers wishing to buy or sell shares for their clients direct the trade to the specialist's post 岗位 on the floor of the exchange.
  - ✓ While each security is assigned to only one specialist, each specialist firm makes a market in many securities.
  - ✓ The specialist maintains the limit order book of all outstanding unexecuted limit orders.
  - ✓ When orders can be executed at market prices, the specialist executes or "crosses" the trade.

- ✓ The highest outstanding bid price and the lowest outstanding ask price “win” the trade.

◆ Specialists are also mandated to maintain a “fair and orderly” market when the book of limit buy and sell orders is so thin that the spread between the highest bid price and lowest ask price becomes too wide.

- ✓ In this case, the specialist firm would be expected to offer to buy and sell shares from its own inventory at a narrower bid-ask spread.
- ✓ In this role, the specialist serves as a dealer in the stock and provides liquidity to other traders.
- ✓ In this context, liquidity providers are those who stand willing to buy securities from or sell securities to other traders.

3.3 THE RISE OF ELECTRONIC TRADING

- When first established, NASDAQ was primarily an over-the-counter dealer market and the NYSE was a specialist market. But today both are primarily electronic markets.
  - These changes were driven by an interaction of new technologies and new regulations.
    - ✓ New regulations allowed brokers to compete for business, broke the hold that dealers once had on information about best-available bid and ask prices, forced integration of markets, and allowed securities to trade in ever-smaller price increments (called *tick sizes*).
    - ✓ Technology made it possible for traders to rapidly compare prices across markets and direct their trades to the markets with the best prices. The resulting competition drove down the cost of trade execution to a tiny fraction of its value just a few decades ago.
- In 1975, fixed commissions on the NYSE were eliminated, which freed brokers to compete for business by lowering their fees.

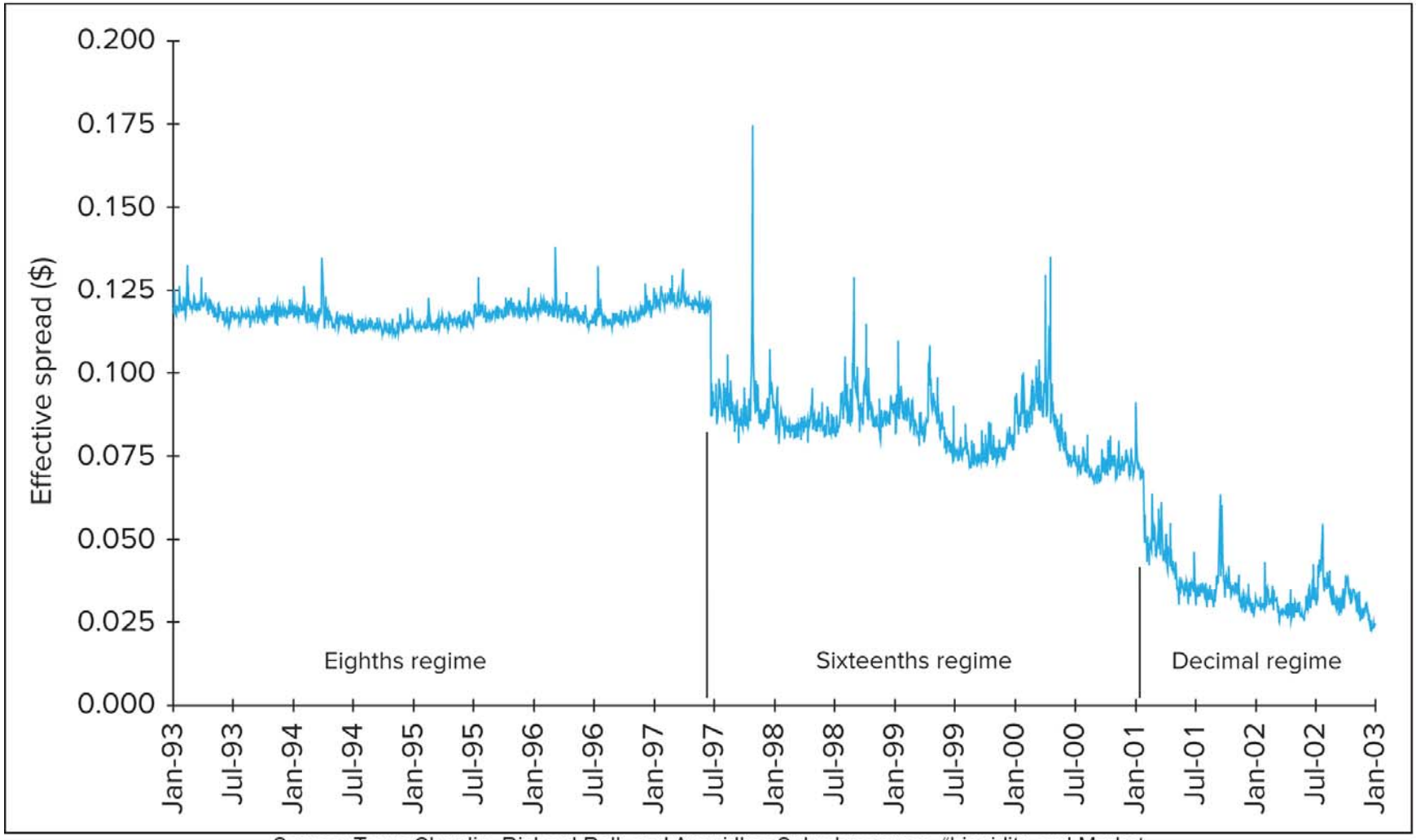
- It that year also, Congress amended the Securities Exchange Act to create the National Market System to ~~as~~ at least partially centralize trading across exchanges and enhance competition among different market makers.
  - The idea was to implement centralized reporting of transactions as well as centralized price quotation system to give traders a broader view of trading opportunities across markets.
- The aftermath of a 1994 scandal at NASDAQ turned out to be a major impetus (原動力) in the further evolution and integration of markets.
  - NASDAQ dealers were found to be colluding (勾結) to maintain wide bid-ask spreads.
    - ✓ For example, if a stock was listed at \$30 bid–\$30 $\frac{1}{2}$ ask, a retail client who wished to buy shares from a dealer would pay \$30 $\frac{1}{2}$ while a client who wished to sell shares would receive only \$30.
      - ➢ The dealer would pocket the $\frac{1}{2}$-point spread as profit.

- ✓ Other traders may have been willing to step in with better prices (e.g., they may have been willing to buy shares for $30 1/8 or sell them for $30 3/8), but those better quotes were not made available to the public, enabling dealers to profit from artificially wide spreads at the public's expense.
  - ➢ When these practices came to light, an antitrust lawsuit was brought against NASDAQ.

■ In response to the scandal, the SEC instituted new order-handling rules.
- ◆ Published dealer quotes now had to reflect limit orders of customers, allowing them to effectively compete with dealers to capture trades.
- ◆ As part of the antitrust settlement, NASDAQ agreed to integrate quotes from ECNs into its public display, enabling the electronic exchanges to also compete for trades.
- ◆ Shortly after this settlement, the SEC adopted Regulation ATS (Alternative Trading Systems), giving ECNs the right to register as stock exchanges.
  - ✓ Not surprisingly, they captured an ever-larger market share, and in the wake of this new competition, bid-ask spreads narrowed.

- Even more dramatic narrowing of trading costs came in 1997, when the SEC allowed the minimum tick size to fall from one-eighth of a dollar to one-sixteenth.
  - Not long after, in 2001, "decimalization" allowed the tick size to fall to 1 cent. Bid-ask spreads again fell dramatically.
  - Figure 3.6 shows estimates of the "effective spread" (the cost of a transaction) during three distinct time periods defined by the minimum tick size.
    - ✓ Notice how dramatically effective spread falls along with the minimum tick size.
- Technology was also changing trading practices.
  - The first ECN, Instinet, was established in 1969.
  - By the 1990s, exchanges around the world were rapidly adopting fully electronic trading systems.
    - ✓ Europe led the way in this evolution, but eventually American exchanges followed suit.
  - The National Association of Securities Dealers (NASD) spun off the NASDAQ Stock Market as a separate entity in 2000, which quickly evolved into a centralized limit-order matching system—effectively a large ECN.

- The NYSE acquired the electronic Archipelago Exchange in 2006 and renamed it NYSE Arca.



Source: Tarun Chordia, Richard Roll, and Avanidhar Subrahmanyam, "Liquidity and Market Efficiency," *Journal of Financial Economics* 87 (2008), pp. 249–268

- In 2005, the SEC adopted Regulation NMS (National Market System), which was fully implemented in 2007.
  - The goal was to link exchanges electronically, thereby creating in effect one integrated electronic market.
  - The regulation required exchanges to honor quotes of other exchanges when they could be executed automatically.
  - An exchange that could not handle a quote electronically would be labeled a “slow market” under Reg NMS and could be ignored by other market participants.
  - The NYSE, which was still devoted to the specialist system, was particularly at risk of being passed over, and in response to this pressure, it moved aggressively toward automated execution of trades.
  - Electronic trading networks and the integration of markets in the wake of Reg NMS made it much easier for exchanges around the world to compete; the NYSE lost its effective monopoly in trading its own listed stocks, and by the end of the decade, its share in the trading of NYSE-listed stocks fell from about 75% to 25%.

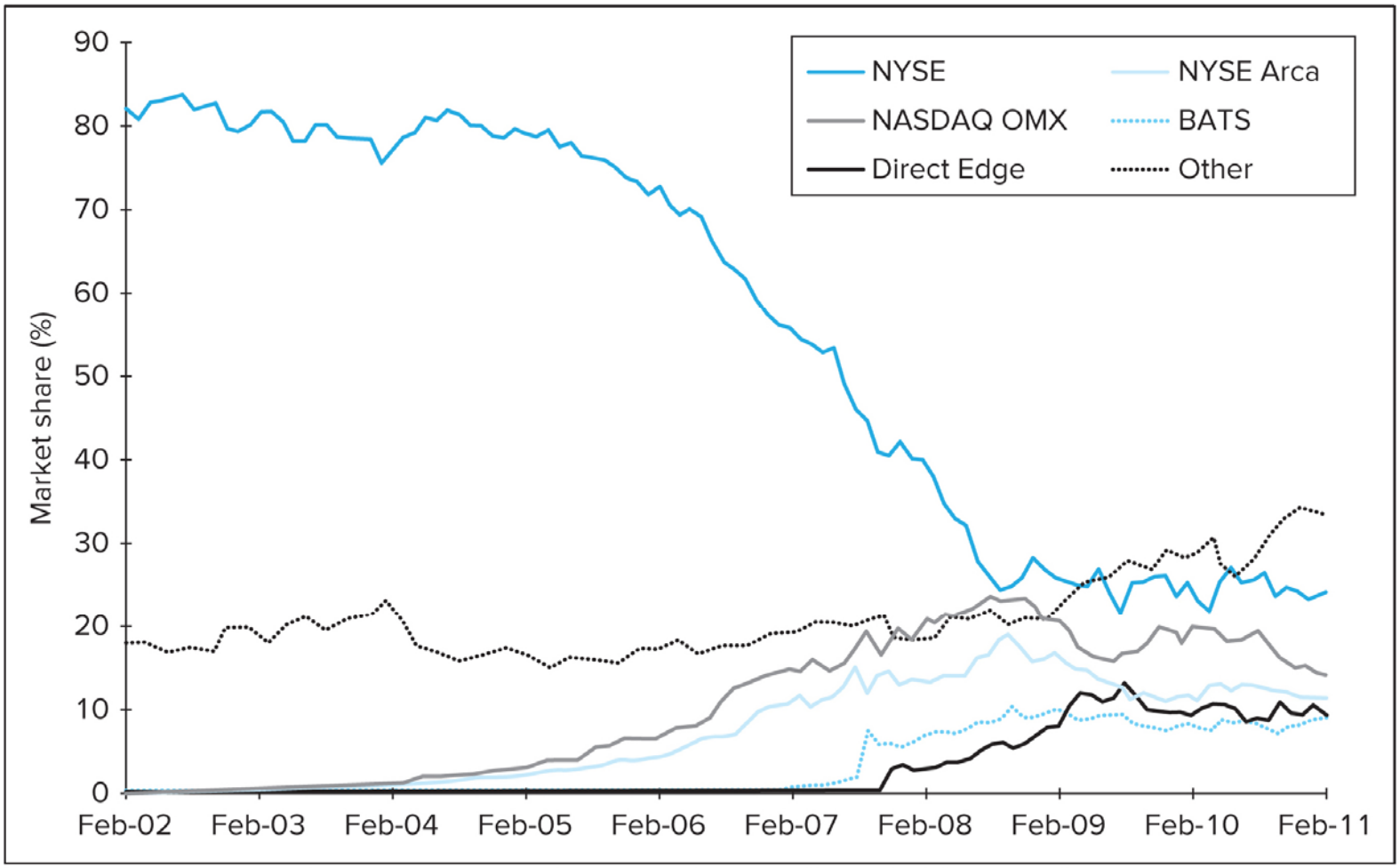
- While specialists still exist, trading today is overwhelmingly electronic, at least for stocks. Bonds are still traded in more traditional dealer markets.

3.4 U.S. MARKETS

- The NYSE and NASDAQ Stock Market remain the best-known U.S. stock markets. But electronic communication networks have steadily increased their market share.
- Figure 3.7 shows the comparative trading volume of NYSE-listed shares on the NYSE and NASDAQ as well as on the major ECNs, namely, BATS, NYSE Arca, and Direct Edge.
  - Since this study was published, BATS and Direct Edge merged, creating one of the world's largest stock exchanges, called BATS Global Markets.
  - The "Other" category, which recently has risen above 30%, includes so-called dark pools, which we will discuss shortly.

NASDAQ

- The NASDAQ (National Association of Security Dealers Automated Quotations System) Stock Market lists around 3,000 firms. It has steadily introduced ever-more sophisticated trading platforms, which today handle the great majority of its trades.
  - The current version, called the NASDAQ Market Center, consolidated NASDAQ's previous electronic markets into one integrated system.



Source: James J. Angel, Lawrence E. Harris, and Chester Spatt, "Equity Trading in the 21st Century," *Quarterly Journal of Finance* 1 (2011), pp. 1–53

- NASDAQ merged in 2007 with OMX, a Swedish-Finnish company that controls seven Nordic and Baltic stock exchanges, to form NASDAQ OMX Group.

- In addition to maintaining the NASDAQ Stock Market, it also maintain several stock markets in Europe as well as an options and futures exchange in the U.S.

- NASDAQ has three levels of subscribers.
  - The highest, level 3 subscribers, are registered market makers.
    - ✓ These are firms that make a market in securities, maintain inventories of securities, and post bid and ask prices at which they are willing to buy or sell shares.
    - ✓ Level 3 subscribers may enter and change bid-ask quotes continually and have the fastest execution of trades.
      - ➢ They profit from the spread between the bid and ask prices.
  - Level 2 subscribers receive all bid and ask quotes but cannot enter their own quotes.
    - ✓ They can see which market makers are offering the best prices.
    - ✓ These subscribers tend to be brokerage firms that execute trades for clients but do not actively deal in the stocks on their own account.

- Level 1 subscribers receive only the inside quotes (i.e., the best bid and ask prices) but do not see how many shares are being offered.
  - ✓ These subscribers tend to be investors who are not actively buying or selling securities but want information on current prices.

The New York Stock Exchange

- The New York Stock Exchange is the largest U.S. **stock exchange** as measured by the market value of listed firms.
  - In 2006, the NYSE merged with the Archipelago Exchange to form a publicly held company called the NYSE Group, and then in 2007, it merged with the European exchange Euronext to form NYSE Euronext.
  - The firm acquired the American Stock Exchange in 2008, which was renamed NYSE Amex and focuses on small firms.
  - More than 3 billion shares trade daily on the NYSE.
  - NYSE Arca is the firm's electronic communications network.

- In 2013, NYSE Euronext was acquired by Intercontinental Exchange (ICE), whose main business to date had been energy-futures trading.
  - ✓ ICE has retained the NYSE Euronext name.

■ The NYSE was long committed to its specialist trading system, which relied heavily on human participation in trade execution.

- It began its transition to electronic trading for smaller trades in 1976 with the introduction of its DOT (Designated Order Turnaround) and later SuperDOT system, which could route orders directly to the specialist.
- In 2000, the exchange launched Direct+, which could automatically cross smaller trades (up to 1,099 shares) without human intervention, and in 2014, it began eliminating the size restrictions on Direct+ trades.
- The change of emphasis dramatically accelerated in 2006 with the introduction of the YNSE Hybrid Market, which allowed brokers to send orders either for immediate electronic execution or to the specialist, who could seek price improvement from another trader.

- ✓ The Hybrid system allowed the NYSE to qualify as a fast market for the purposes of Regulation NMS (National Market System) but still offer the advantages of human intervention for more complicated trades.
- ✓ In contrast, NYSE's Arca marketplace is fully electronic.

Electronic Communication Networks (ECNs)

- Over time, more fully automated markets have gained market share at the expense of less automated one, in particular, the NYSE.
- Some of the biggest ECNs today are NASDAQ, BATS, and NYSE Arca.
- Brokers that have affiliation with an ECN have computer access and can enter orders in the limit order book.
  - ◆ As orders are received, the system determines whether there is a matching order, and if so, the trade is immediately crossed.
- Originally, ECNs were open only to other traders using the same system. But following the implementation of Regulation NMS, ECNs began listing limit orders on other networks.

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- Traders could use their computer systems to sift through the limit order books of many ECNs and instantaneously route orders to the market with the best prices.
- Those cross-market links have become the impetus for one of the more popular strategies of so-called high-frequency traders, which seek to profit from even small, transitory discrepancies in prices across markets.

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  - ✓ Speed is obviously of the essence here, and ECNs compete in terms of the speed they can offer.
  - ✓ **Latency** refers to the time it takes to accept, process, and deliver a trading order.
    - ➢ BATS exchange, for example, advertises (in 2015) average latency times of less than 200 microseconds, that is, .0002 second.

3.5 NEW TRADING STRATEGIES

Algorithmic Trading

- **Algorithmic** trading is the use of computer programs to make rapid trading decisions.
  - Well more half of all equity volume in the U.S. is believed to be initiated by computer algorithms.
  - Many of these trades exploit very small discrepancies in security prices and entail numerous and rapid cross-market price comparisons that are well suited to computer analysis.
    - ✓ These strategies would be have been feasible before decimalization of minimum tick size.
- Some algorithmic trades attempt to exploit very short-term trends (as short as a few seconds) as new information about a firm or, more controversially, about the intentions of others traders, becomes available.
- Others use versions of *pairs trading* in which normal price relations between pairs (or large groups) of stocks seem temporarily disrupted and offer small profit opportunities as they move back into alignment.

- Still others attempt to exploit discrepancies between stock prices and prices of stock-index futures contracts.
- Some algorithmic trading involves activities akin to traditional market making.
  - The traders seek to profit from the bid-ask spread by buying a stock at the bid price and rapid selling it at the ask price before the price can change.
    - ✓ While this mimics the role of a market maker who provides liquidity to other traders in the stock, these algorithmic traders are not registered market makers and so do not have an affirmative obligation to maintain both bid and ask quotes.
    - ✓ If they abandon a market during a period of turbulence, the shock to market liquidity can be disruptive.
    - ✓ This seems to have been a problem during the flash crash of May 6, 2010, when the stock market encountered extreme volatility, with the Dow Jones average falling by 1,000 points before recovering around 600 points in intraday trading.
      - ➢ The nearby box discusses this amazing and troubling episode.

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occurring within one day

High-Frequency Trading

- It is easy to see that many algorithmic trading strategies require extremely rapid trade initiation and execution.
- **High-frequency trading** is a subset of algorithmic trading that relies on computer programs to make extremely rapid decisions.
  - High-frequency traders compete for trades that offer very small profits. But if those opportunities are numerous enough, they can accumulate to big money.
- We pointed out that one high-frequency strategy attempts to profit from the bid-ask spread.
- Another relies on cross-market arbitrage, 套利 in which even tiny price discrepancies across markets allow the firm to buy a security at one price and simultaneously sell it at a slightly higher price.
  - The competitive advantage in these strategies lies with the firms that are quickest to identify and execute these profit opportunities.
  - There is a tremendous premium on being the first to "hit" a bid or ask price.

- Trade execution times for high-frequency traders are now measured in milliseconds, even microseconds.
  - This has induced trading firms to “co-locate” their trading centers next to the computer systems of the electronic exchanges.
  - When execution or latency periods are less than a millisecond, the extra time it takes for a trade order to travel from a remote location to a New York exchange would be enough to make it nearly impossible to win the trade.

Dark Pools

- Many large traders seek anonymity.
  - They fear that if others see them executing a buy or a sell program, their intentions will become public and prices will move against them.
- Very large trades (called **blocks,** usually defined as a trade of more than 10,000 shares) were traditionally brought to “block house,” brokerage firms specializing in matching block buyers and sellers.
  - Part of the expertise of block brokers was in identifying traders who might be interested in a large purchase or sale if given an offer.

- These brokers discreetly arranged large trades out of the public eye, and so avoided moving prices against their clients.

- Block trading today has been displaced to a great extent by **dark pools,** trading systems in which participants can buy or sell large blocks of securities without showing their hand.
  - **Dark pools** are electronic trading networks where participants can anonymously buy or sell large blocks of securities.
  - Not only are buyers and sellers in dark pools hidden from the public, but even trades may not be reported, or if they are reported, they may be lumped with other trades to obscure information about particular participants.
- Dark pools are somewhat controversial because they contribute to the fragmentation of markets.
  - When many orders are removed from the consolidated limited order book, there are fewer orders left to absorb fluctuations in demand for the security, and the public price may no longer be “fair” in the sense that it reflects all the potentially available information about security demand.

- Another approach to dealing with large trades is to split them into many small trades, each of which can be executed on electronic markets, attempting to hide the fact that the total number of shares ultimately to be bought or sold is large.
  - This trend has led to rapid decline in average trade size, which today is less than 300 shares.

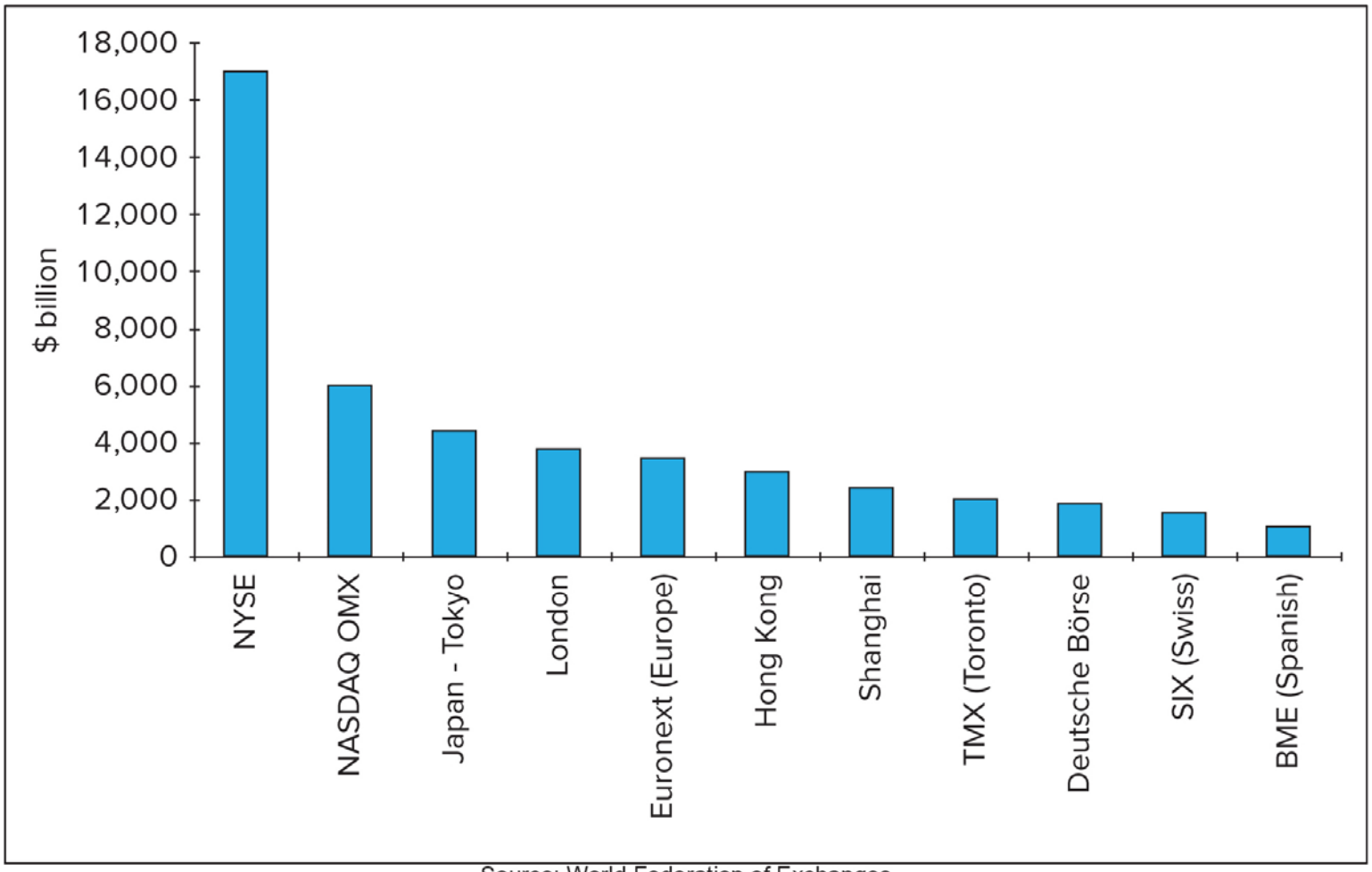
Bond Trading

- In 2006, the NYSE obtained regulatory approval to expand its bond trading system to include the debt issues of any NYSE-listed firm.
  - In the past, each bond needed to be registered before listing; such a requirement was too onerous to justify listing most bonds.
  - In conjunction with these new listings, the NYSE has expanded its electronic bond-trading platform, which is now called NYSE Bonds, and is the largest centralized bond market of any U.S. exchange.

- Nevertheless, the vast majority of bond trading occurs in the OTC market among bond dealers, even for bonds that are actually listed on the NYSE.
  - This market is a network of bond dealers such as Merrill Lynch, Salomon Smith Barney (a division of Citigroup), or Goldman Sachs that is linked by a computer quotation system.
  - Because these dealers do not carry extensive inventories of the wide range of bonds that have been issued to the public, they cannot necessarily offer to sell bonds from their inventory to clients or even buy bonds for their own inventory.
    - ✓ They may instead work to locate an investor who wishes to take the opposite side of a trade.
  - In practice, however, the corporate bond market often is quite “thin,” in that there may be few investors interested in trading a bond at any particular time.
    - ✓ As a result, the bond market is subject to a type of liquidity risk, for it can be difficult to sell one’s holdings quickly if the need arises.

3.6 GLOBALIZATION OF STOCK MARKETS

- Figure 3.8 shows that the NYSE Euronext is by far the largest equity market, as measured by the total market value of listed firms.



Source: World Federation of Exchanges

- Securities markets have come under increasing pressure in recent years to make international alliances or mergers.
  - Much of this pressure is due to the impact of electronic trading.
  - To a growing extent, traders view stock markets as networks that line them to other traders, and there are increasingly fewer limits on the securities around the world that they can trade.
  - Against this background, it becomes more important for exchanges to provide the cheapest and most efficient mechanism by which trades can be executed and cleared.
  - This argues for global alliances that can facilitate the nuts and bolts of cross-border trading and can benefit from economies of scale.
  - Exchanges feel that they eventually need to offer 24-hour global markets.

  - Finally, companies want to be able to go beyond national borders when they wish to raise capital.

- These pressures have resulted in a broad trend toward market consolidation.
  - Many mergers have been “local,” that is, involving exchanges operating in the same continent.
    - ✓ In the U.S., the NYSE merged with the Archipelago ECN in 2006, and in 2008 acquired the American Stock Exchange. NASDAQ acquired Instinet (which operated the other major ECN, INET) in 2005 and the Boston Stock Exchange in 2007. In the derivatives market, the Chicago Mercantile Exchange acquired the Chicago Board of Trade in 2007.
    - ✓ In Europe, Euronext was formed by the merger of the Paris, Brussels, Lisbon, and Amsterdam exchanges and shortly thereafter purchased LIFFE, the derivatives exchange based in London. The LSE merged in 2007 with Borsa Italiana, which operates the Milan exchange.
    - ✓ In 2013, the Tokyo Stock Exchange merged with the Osaka exchange, creating the world’s third-largest exchange, measured by market capitalization of traded shares.

- There has also been a wave of intercontinental consolidation.
  - The NYSE Group and Euronext merged in 2007, and that international firm ~~was~~ acquired ~~by~~ ICE in 2013.
  - Germany's Deutsche Börse and the NYSE Euronext agreed to merge in late 2011.
    - ✓ The merged firm would have been able to support trading in virtually every type of investment.
    - ✓ However, in early 2012, the proposed merger ran into trouble when European Union antitrust regulators recommended that the combination be blocked.
  - Still, the attempt at the merger indicates the thrust 推力 of market pressures, and other combinations continue to develop.
    - ✓ The NYSE and the Tokyo stock exchange have linked their networks to give customers of each access to both markets.
    - ✓ In 2007, the NASDAQ Stock Market merged with OMX, which operates seven Nordic and Baltic stock exchanges, to form NASDAQ OMX Group.
    - ✓ In 2008, Euronext took over International Securities Exchange (ISE), to form a major options exchange.

3.7 TRADING COSTS

Commision

- Part of the cost of trading a security is obvious and explicit.
  - Your broker must be paid a commission.
- Individuals may choose from two kinds of brokers: full-service or discount brokers.
  - Full-service brokers who provide a variety of services often are referred to as account executives or financial consultants.
- Besides carrying out the basic services of executing orders, holding securities for safekeeping, extending margin loans, and facilitating short sales, brokers routinely provide information and advice relating to investment alternatives.
- Full-service brokers usually depend on a research staff that prepares analyses and forecasts of general economic as well as industry and company conditions and often makes specific buy or sell recommendations.

- Some customers take the ultimate leap of faith and allow a full-service broker to make buy and sell decisions for them by establishing a *discretionary account.*
  - In this account, the broker can buy and sell prespecified securities whenever deemed fit. (The broker cannot withdraw any funds, though.) 認為
  - This action requires an unusual degree of trust on the part of the customer, for an unscrupulous broker can "churn" an account, that is, trade securities excessively with the sole purpose of generating commissions. 不擇手段 攪動
- Discount brokers, on the other hand, provide "no-frills" services.
  - They buy and sell securities, hold them for safekeeping, offer margin loans, facilitate short sales, and that is all.
  - The only information they provide about the securities they handle is price quotations.
  - Discount brokerage services have become increasingly available in recent years.
  - Many banks, thrift institutions, and mutual fund management companies now offer such services to the investing public as part of a general trend toward the creation of one-stop "financial supermarkets."

3.7 BUYING ON MARGIN

- When purchasing securities, investors have easy access to a source of debt financing called *broker's call loans*.
  - The act of taking advantage of broker's call loans is called *buying on margin*.
- Purchasing stocks on margin means the investor borrows part of the purchase price of the stock from a broker.
  - The **margin** in the account is the portion of the purchase price contributed by the investor; the remainder is borrowed from the broker.
  - The brokers in turn borrow money from banks at the call money rate to finance these purchases; they then charge their clients that rate (defined in Chapter 2), plus a service charge for the loan.
  - All securities purchased on margin must be maintained with the brokerage firm in street name, for the securities are collateral for the loan.

- The Board of Governors of the Federal Reserve System limits the extent to which stock purchases can be financed using margin loans.
  - The current initial margin requirement is 50%, meaning that at least 50% of the purchase price must be paid for in cash, with the rest borrowed.
- Example 3.1: *Margin*
  - The percentage margin is defined as the ratio of the net worth, or the "equity value," of the account to the market value of the securities.
  - To demonstrate, suppose an investor initially pays $6,000 toward the purchase of $10,000 worth of stock (100 shares at $100 per share), borrowing the remaining $4,000 from a broker. The initial balance sheet looks like this:

Assets		Liabilities and Owners' Equity	
Value of stock	$10,000	Loan from broker	$4,000
		Equity	$6,000

- ✓ The initial percentage margin is

$$\text{Margin} = \frac{\text{Equity in account}}{\text{Value of stock}} = \frac{\text{Value of stock} - \text{Loan from broker}}{\text{Value of stock}}$$

$$= \frac{\$6{,}000}{\$10{,}000} = .60, \text{ or } 60\%$$

- ◆ If the price declines to $70 per share, the account balance becomes:

Assets		Liabilities and Owners' Equity	
Value of stock	$7,000	Loan from broker	$4,000
		Equity	$3,000

- ✓ The assets in the account fall by the full decrease in the stock value, as does the equity. The percentage margin is now

$$\text{Margin} = \frac{\text{Equity in account}}{\text{Value of stock}} = \frac{\$3{,}000}{\$7{,}000} = .43, \text{ or } 43\%$$

- If the stock value in Example 3.1 were to fall below $4,000, owners' equity would become negative, meaning the value of the stock is no longer sufficient collateral to cover the loan from the broker.
  - To guard against this possibility, the broker sets a *maintenance margin*.
- If the percentage margin falls below the maintenance level, the broker will issue a *margin call*, which requires the investor to add new cash or securities to the margin account.
  - If the investor does not act, the broker may sell securities from the account to pay off enough of the loan to restore the percentage margin to an acceptable level.

- Example 3.2: *Maintenance Margin*
  - Suppose the maintenance margin is 30%. How far could the stock price fall before the investor would get a margin call?
  - Let P be the price of the stock. The value of the investor's 100 shares is then $100P$, and the equity in the account is $100P - \$4{,}000$. The percentage margin is $(100P - \$4{,}000)/100P$.
  - The price at which the percentage margin equals the maintenance margin of .3 is found by solving the equation

$$\frac{100P - 4{,}000}{100P} = .3$$

    which implies that $P = \$57.14$. If the price of the stock were to fall below \$57.14 per share, the investor would get a margin call.
- Why do investors buy securities on margin?
  - They do so when they wish to invest an amount greater than their own money allows.
    - ✓ Thus, they can achieve greater upside potential, but they also expose themselves to greater downside risk.

- To see how, let's suppose an investor is bullish on Fincorp stock, which is selling for $100 per share. An investor with $10,000 to invest expects the share price to rise by 30% during the next year.
  - Ignoring any dividends, the expected rate of return would be 30% if the investor invested $10,000 to buy 100 shares.
  - But now assume the investor borrows another $10,000 from the broker and invests it in Fincorp, too. The total investment in IBM would be $20,000 (for 200 shares).
  - Assuming an interest rate on the margin loan of 9% per year, what will the investor's rate of return be now (again ignoring dividends) if IBM stock goes up 30% by year's end?
    - ✓ The 200 shares will be worth $26,000. Paying off $10,900 of principal and interest on the margin loan leaves $15,100 (i.e., $26,000 – $10,900).
    - ✓ The rate of return in this case will be

$$\frac{\$15{,}100-\$10{,}000}{\$10{,}000}=.51=51\%>30\%$$

- The investor has parlayed a 30% rise in the stock's price into a 51% rate of return on the $10,000 investment.
- Doing so, however, magnifies the downside risk. Suppose that, instead of going up by 30%, the price of IBM stock goes down by 30% to $70 per share.
  - ✓ In that case, the 200 shares will be worth $14,000, and the investor is left with $3,100 after paying off the $10,900 of principal and interest on the loan.
  - ✓ The result is a disastrous return of

$$\frac{\$3{,}100-\$10{,}000}{\$10{,}000}=-.69=-69\%<-30\%$$

◆ Table 3.1 summarizes the possible results of these hypothetical transactions.

TABLE 3.1 Illustration of buying stock on margin

Change in Stock Price	End-of-Year Value of Shares	Repayment of Principal and Interest*	Investor's Rate of Return
30% increase	$26,000	$10,900	51%
No change	20,000	10,900	−9
30% decrease	14,000	10,900	−69

*Assuming the investor buys $20,000 worth of stock by borrowing $10,000 at an interest rate of 9% per year.

✓ If there is no change in the stock price, the investor loses 9%, the cost of the loan.

3.8 SHART SALES

- Normally, an investor would first buy a stock and later sell it. With a short sale, the order is reversed. First, you sell and then you buy the shares.
  - In both cases, you begin and end with no shares.
- A **short sale** allows investors to profit from a decline in a security's price.
  - An investor borrows a share of stock from a broker and sells it.
  - Later, the short-seller must purchase a share of the same stock in order to replace the share that was borrowed.
    - ✓ This is called *covering the short position.*
- N*aked short-selling* is a variation on conventional short-selling.
  - In a naked short, a trader sells shares that have not yet been borrowed, assuming that the shares can be acquired and delivered whenever the short sale needs to be closed out.

- Table 3.2 compares stock purchases to short sales.

TABLE 3.2 Cash flows from purchasing versus short-selling shares of stock

Purchase of Stock

Time	Action	Cash Flow*
0	Buy share	−Initial price
1	Receive dividend, sell share	Ending price + Dividend

Profit = (Ending price + Dividend) − Initial price

Short Sale of Stock

Time	Action	Cash Flow*
0	Borrow share; sell it	+Initial price
1	Repay dividend and buy share to replace the share originally borrowed	−(Ending price + Dividend)

Profit = Initial price − (Ending price + Dividend)

*Note: A negative cash flow implies a cash *outflow*.

- The short-seller anticipates the stock price will fall, so that the share can be purchased later at a lower price than it initially sold for.
  - ◆ If so, the short-seller will reap a profit.

- Short-sellers must not only replace the shares but also pay the lender of the security any dividends paid during the short sale.
- In practice, the shares loaned out for a short sale are typically provided by the short-seller's brokerage firm, which holds a wide variety of securities of its other investors in street name (i.e., the broker holds the shares registered in its own name on behalf of the client).

  the name of a brokerage firm, bank, or dealer in which stock is held on behalf of a purchaser.

  - The owner of the shares need not know that the shares have been lent to the short-seller.
  - If the owner wishes to sell the shares, the brokerage firm will simply borrow shares from another investor.
    - ✓ Therefore, the short sale may have an indefinite term.
  - However, if the brokerage firm cannot locate new shares to replace the ones sold, the short-seller will need to repay the loan immediately by purchasing shares in the market and turning them over to the brokerage house to close out the loan.

- Finally, exchange rules require that proceeds from a short sale must be kept on account with the broker.
  - The short-seller cannot invest these funds to generate income, although large or institutional investors typically will receive some income from the proceeds of a short sale being held with the broker.
  - Short-sellers also are required to post margin (cash or collateral) with the broker to cover losses should the stock price rise during the short sale.
- Example 3.3: *Short Sales*
  - To illustrate the mechanics of short-selling, suppose you are bearish (pessimistic) on Dot Bomb stock, and its market price is $100 per share.
  - You tell your broker to sell short 1,000 shares. The broker borrows 1,000 shares either from another customer's account or from another broker.
  - The $100,000 cash proceeds from the short sale are credited to your account.
  - Suppose the broker has a 50% margin requirement on short sales.
    - ✓ This means you must have other cash or securities in your account worth at least $50,000 that can serve as margin on the short sale.

- Let's say that you have $50,000 in Treasury bills. Your account with the broker after the short sale will then be:

Assets		Liabilities and Owners' Equity	
Cash	$100,000	Short position in Dot Bomb stock (1,000 shares owed)	$100,000
T-bills	$50,000	Equity	$50,000

- Your initial percentage margin is the ratio of the equity in the account, $50,000, to the current value of the shares you have borrowed and eventually must return, $100,000:

$$\text{Percentage margin} = \frac{\text{Equity}}{\text{Value of stock owed}} = \frac{\text{Assets} - \text{Short position in Dot Bomb stock}}{\text{Value of stock owed}} = \frac{\$50{,}000}{\$100{,}000} = .50$$

- Suppose you are right and Dot Bomb falls to $70 per share. You can now close out your position at a profit.
  - ✓ To cover the short sale, you buy 1,000 shares to replace the ones you borrowed. Because the shares now sell for $70, the purchase costs only $70,000.
  - ✓ Because your account was credited for $100,000 when the shares were borrowed and sold, your profit is $30,000.
    - ➢ The profit equals the decline in the share price times the number of shares sold short.

- A difference between buying on margin and short-selling:
  - When buying on margin, you borrow a given number of dollars from your brokers, so the amount of the loan is independent of the share price.
  - In contrast, when short-selling you borrow a given number of *shares*, which must be returned. Therefore, when the price of the shares changes, the value of the loan also changes.

- Like investors who purchase stock on margin, a short-seller must be concerned about margin calls.
  - If the stock price rises, the margin in the account will fall.
  - If margin falls to the maintenance level, the short-seller will receive a margin call.
- Example 3.4: *Margin Calls on Short Positions*
  - Suppose the broker has a maintenance margin of 30% on short sales.
    - ✓ This means the equity in your account must be at least 30% of the value of your short position at all times.
    - ✓ How much can the price of Dot Bomb stock rise before you get a margin call?
  - Let P be the price of Dot Bomb stock.
    - ✓ Then the value of the shares you must pay back is $1{,}000P$, and the equity in your account is $\$150{,}000 - 1{,}000P$.
    - ✓ Your short position margin ratio is equity/value of stock = $(150{,}000 - 1{,}000P)/1{,}000P$. The critical value of P is thus

$$\frac{\text{Equity}}{\text{Value of shares owed}} = \frac{150{,}000 - 1{,}000P}{1{,}000P} = .3 \Rightarrow P = \$115.38$$

- If Dot Bomb stock should *rise* above $115.38 per share, you will get a margin call, and you will either have to put up additional cash or cover your short position by buying shares to replace the ones borrowed.

- You can see now why stop-buy orders often accompany short sales.
  - Imagine that you short-sell Dot Bomb when it is selling at $100 per share.
    - ✓ If the share price falls, you will profit from the short sale.
    - ✓ On the other hand, if the share price rises, let's say to $130, you will lose $30 per share.
  - But suppose that when you initiate the short sale, you also enter a stop-buy order at $120.
    - ✓ The stop-buy will be executed if the share price surpasses $120, thereby limiting your losses to $20 per share.
      - ➢ The stop-buy order thus provides protection to the short-seller if the share price moves up.
    - ✓ If the stock price drops, the stop-buy will never be executed.

3.10 REGULATION OF SECURITIES MARKETS

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- Trading in securities markets in the United States is regulated by a myriad of laws. The major governing legislation includes the Securities Act of 1933 and the Securities Exchange Act of 1934.
- The 1933 act requires full disclosure of relevant information relating to the issue of new securities.
  - This is the act that requires registration of new securities and issuance of a prospectus that details the financial prospects of the firm.
  - SEC approval of a prospectus or financial report is not an endorsement of the security as a good investment.
    - ✓ The SEC cares only that the relevant facts are disclosed; investors must make their own evaluation of the security's value.
- The 1934 act established the Securities and Exchange Commission to administer the provisions of the 1933 act. It also extended the disclosure principle of the 1933 act by requiring periodic disclosure of relevant financial information by firms with already-issued securities on secondary exchanges.

規定

- The 1934 act also empowers the SEC to register and regulate securities exchanges, OTC trading, brokers, and dealers.
  - While the SEC is the administrative agency responsible for broad oversight of the securities markets, it shares responsibility with other regulatory agencies.
  - The Commodity Futures Trading Commission (CFTC) regulates trading in futures markets, while the Federal Reserve has broad responsibility for the health of the U.S. financial system.
    - ✓ In this role, the Fed sets margin requirements on stocks and stock options and regulates bank lending to securities markets participants.
- The Securities Investor Protection Act of 1970 established the Securities Investor Protection Corporation (SIPC) to protect investors from losses if their brokerage firms fail.
  - Just as the Federal Deposit Insurance Corporation provides depositors with federal protection against bank failure, the SIPC ensures that investors will receive securities held for their account in street name by a failed brokerage firm up to a limit of $500,000 per customer.

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- The SIPC is financed by levying an "insurance premium" on its participating, or member, brokerage firms.

- Security trading is also subject to state laws, known generally as *blue sky laws* because they are intended to give investors a clearer view of investment prospects.
  - State laws to outlaw fraud in security sales existed before the Securities Act of 1933.
  - Varying state laws were somewhat unified when many states adopted portions of the Uniform Securities Act, which was enacted in 1956.

Self-Regulation

- In addition to government regulation, there is considerable self-regulation of the securities market.
  - The most important overseer ~~is~~ this regard is the Financial Industry Regulation Authority (FINRA), which is the largest nongovernmental regulator of all securities firms in the United States.
    - ✓ FINRA was formed in 2007 through the consolidation of the National Association of Securities Dealers (NASD) with the self-regulatory arm of the New York Stock Exchange.

- ✓ It describes its broad mission as the fostering of investor protection and market integrity.
- ✓ It examines securities firms, writes and enforces rules concerning trading practices, and administers a dispute resolution forum for investors and registered firms.

- There is also self-regulation among the community of investment professionals.
  - For example, the CFA Institute has developed standards of professional conduct that govern the behavior of members with the Chartered Financial Analysts designation, commonly referred to as CFAs.

特許

The Sarbanes-Oxley Act

- The scandals of 2000-2002 centered largely on three broad practices:
  - allocations of shares in initial public offerings
  - tainted securities research and recommendations put out to the public
  - misleading financial statements and accounting practices

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- The Sarbanes-Oxley Act was passed by Congress in 2002 in response to these issues. Among the key reforms are:
  - Creation of a Public Company Accounting Oversight Board to oversee the auditing of public companies.
  - Rules requiring independent financial experts to serve on audit committees (審計委員會) of a firm's board of directors.
  - CEOs and CFOs must now personally certify that their firm's financial reports "fairly represent, in all material respects, the operations and financial condition of the company," and are subject to personal penalties if those reports turn out to be misleading.
    - ✓ Following the letter of GAAP rules may still be necessary, but it is no longer sufficient accounting practice.
  - Auditors may no longer provide several other services to their clients.
    - ✓ This is intended to prevent potential profits on consulting work from influencing the quality of their audit.

- The Board of Directors must be composed of independent directors and hold regular meetings of Directors in which company management is not present (and therefore cannot impede or influence the discussion).

- More recently, there has been a fair amount of push-back on Sarbanes-Oxley.
  - Many observers believe that the compliance costs associated with the law are too onerous, especially for smaller firms, and that heavy-handed regulatory oversight is giving foreign locales an undue advantage over the United States when firms decide where to list their securities.
  - Moreover, the efficacy of single-country regulation is being tested in the face of increasing globalization and the ease with which funds can move across national borders.
- One of the most contentious issues in regulation has to do with “rules” versus “principles.”
  - Rules-based regulation attempts to lay out specifically what practices are or are not allowed. This has generally been the American approach, particularly at the SEC.

- In contrast, principles-based regulation relies on a less explicitly defined set of understandings about risk taking, the goals of regulation, and the sorts of financial practices considered allowable.
  - ✓ This has been the dominant approach in the U.K. and seems to be the more popular model for regulators throughout the world.

Insider Trading

- Regulations also prohibit insider trading.
  - It is illegal for anyone to transact in securities to profit from **inside information,** that is, private information held by officers, directors, or major stockholders that has not yet been divulged (洩露) to the public.
- But the definition of insiders can be ambiguous.
  - It is obvious that the chief financial officer of a firm is an insider.
  - It is less clear whether the firm's biggest supplier can be considered an insider.
    - ✓ Yet a supplier may deduce the firm's near-term prospects from significant changes in orders. This gives the supplier a unique form of private information, yet the supplier is not technically an insider.

- These ambiguities plague security analysts, whose job is to uncover as much information as possible concerning the firm's expected prospects.
- The distinction between legal private information and illegal inside information can be fuzzy. 模糊

- The SEC requires officers, directors, and major stockholders to report all transactions in their firm's stock.
  - A compendium of insider trades is published monthly in the SEC's *Official Summary of Securities Transactions and Holdings*.
  - The idea is to inform the public of any implicit vote of confidence or no confidence made by insiders.
- Insiders *do* exploit their knowledge. Three forms of evidence support this conclusion.
  - First, there have been well-publicized convictions of principals in insider trading schemes.
  - Second, there is considerable evidence of "leakage" of useful information to some traders before any public announcement of that information.

- ✓ For example, share prices of firms announcing dividend increases (which the market interprets as good news concerning the firm's prospects) commonly increase in value a few days *before* the public announcement of the increase.
  - ➢ Clearly, some investors are acting on the good news before it is released to the public.
- ✓ Shares prices still rise substantially on the day of the public release of good news, however, indicating that insiders, or their associates, have not fully bid up the price of the stock to the level commensurate with the news.

◆ A third form of evidence on insider trading has to do with returns earned on trades by insiders.

- ✓ Researchers have examined the SEC's summary of insider trading to measure the performance of insiders.
  - ➢ In one of the best known of these studies, Jaffe (1974) examined the abnormal return of stocks over the months following purchases or sales by insiders.
    - ✧ For months in which insider purchasers of a stock exceeded insider sellers of the stock by three or more, the stock had an abnormal return in the

following eight months of about 5%.

- ✧ Moreover, when insider sellers exceeded insider buyers, the stock tended to perform poorly.