Chapter 3 - How Securities Are Traded

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Firms raise funds by borrowing money or selling ownership shares

- Primary market: Offers new securities to the public, and funds flow from buyers to firms
- Secondary market: Trades existing securities, and funds flow from buyers to sellers

Privately held firms: A small number of managers and investors hold all shares, which do not trade in public markets

- Pros
  - Private firms have weaker obligations to disclose information to the public than public firms
  - Less disclosure saves money, avoids revealing secrets to competitors, and may help private firms pursue long-term goals without the pressure of quarterly earnings announcements
  - Security and Exchange (SEC) Rule 144A private placements avoid lengthy and costly registration statements
- Cons
  - Private placements do not trade in public markets, reducing liquidity and valuations
  - Previously limited to 499 shareholders, but the JOBS Act of 2012 increased this limit to 1999 shareholders

Liquidity is the ability to trade an asset in the desired quantity and time at a fair price

- Liquid stocks can be traded in large volumes on short notice without substantially changing their prices
- Illiquid stocks may be difficult to buy or sell without causing price volatility

Publicly-traded companies: Shares continually trade in public markets

- Initial public offering (IPO): First sale of shares to the general public
- Seasoned equity offering (SEO): Sale of additional shares in an already-publicly-traded firm
- Syndicates of investment bankers typically market public offerings of stocks and bonds
    - Advise firms on the terms of the offering
    - Register the offering with the SEC
    - Firm-commitment underwriting: Investment bankers purchase all securities at a discount, compensating the underwriters and eliminating risk for the firm

“Shelf registrations” let public firms issue securities on short notice with little additional paperwork

- SEC Rule 415 for seasoned offerings lets already publicly traded firms register securities and gradually sell them to the public over the next three years
- These securities are “on the shelf” and ready for issue
- Shelf registrations let public firms sell securities in small amounts on short notice with little additional paperwork and low flotation costs

IPOs are a lengthy process for underwriters, who typically bear the risk

- Register security with SEC, and distribute preliminary prospectus to potential investors
- Travel the country to visit potential investors, generating interest and providing information
- Estimate investor demand (i.e., price and quantity) by “book building”
- Allocate security to investors, in part based on their expressed interest

IPOs are often underpriced compared to their market prices

- However, some IPO prices are too high and do not fully sell
- Firm-commitment underwriters bear this risk

There are four broad types of markets: Direct-search, brokered, dealer, and auction

- Direct search markets: Buyers and sellers search for each other directly
  - Sporadic participation and non-standard goods
  - Examples: Craiglist and newspaper ads
- Brokered markets: Brokers offer search services to connect buyers and sellers
  - Examples: Real estate and interdealer markets
- Dealer markets: Buyers and sellers trade with dealers
  - Dealers maintain inventories and profit from the spread between buy and sell prices
  - Examples: Bond and foreign exchange markets
- Auction markets: Buyers and sellers trade with each other directly
  - Designated market makers (DMM) maintain orderly markets
  - Examples: New York Stock Exchange (NYSE)

There are two broad types of orders: Market and price-contingent

- Market orders execute immediately at the best available price
  - Buy orders: Execute at the lowest ask price
  - Sell orders: Execute at the highest bid price
- Price-contingent orders
  - Limit orders specify the desired execution price
    - Buy limit orders: Specify the maximum price the buyer will pay
    - Sell limit orders: Specify the minimum price the seller will accept
    - Limit orders may not immediately execute
  - Stop orders become market orders when the price reaches a specified price
    - Buy stop orders: Become market orders when the price rises to or exceeds the specified price
    - Sell stop orders: Become market orders when the price falls to or below the specified price

Limit order books are collections of limit orders waiting to execute

Microsoft Corporation (MSFT) ★ **Watchlist**

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

286.97 –0.15 (–0.05%) As of 3:45PM EST. Market open.

Order Book

Top of Book

Bid		Ask	
Price	**Shares**	**Price**	**Shares**
286.95	90	286.97	200
286.94	100	286.98	500
286.93	300	286.99	480
286.92	17	287.00	307
286.91	267	287.01	180

Figure 1: A portion of the limit order book for MSFT on the CBOE Global Markets, August 4, 2021 (BKM 2023, Figure 3.4)

Investors buy and sell shares via brokers, who execute trades on one of several market types

- Over-the-counter (OTC) dealer markets
  - Security dealers quote prices to buy or sell securities
  - Brokers contact dealers to facilitate trades between buyers and sellers
- Electronic communication networks (ECNs)
  - Participants electronically submit market and limit orders
  - Orders match automatically without broker intervention
  - Offers speed, anonymity, and cost advantages
- Specialist markets (largely replaced by ECNs)
  - Exchanges assign specialists to manage each security
  - Specialists maintain the limit order book, execute trades, provide liquidity, and maintain a fair and orderly market

a. Market orders get executed _____ at _____.

- whenever the stock price goes above the limit; the current price in the market
- whenever the stock price goes below the limit; the limit price
- immediately; the current price in the market
- immediately; the limit price

a. A limit order has _____.

- ○ price uncertainty and execution uncertainty
- ○ price uncertainty, but not execution uncertainty
- ○ execution uncertainty, but not price uncertainty
- ○ neither price uncertainty nor execution uncertainty

a. Which are costs of trading a security?

Check all that apply:

- [ ] Broker's commission
- [ ] Dealer's bid-ask spread
- [ ] Flotation costs
- [ ] The price concession an investor may be forced to make for trading in quantities greater than those associated with the bid-ask quote

ECNs are the dominant market type and have steadily increased their share in the U.S. I

- New regulations allowed brokers to compete, broke the hold of dealers on price information, forced market integration, and allowed smaller price increments (tick sizes)
- Technology enabled rapid price comparison and directed trades to markets with the best prices, leading to competition between markets and lower trade execution costs
- The SEC's Regulation National Market System (NMS) facilitated the electronic linkage of exchanges, creating an integrated electronic market
- Trading today is predominantly electronic, especially for stocks, with the share of electronic trading increasing significantly

ECNs are the dominant market type and have steadily increased their share in the U.S. II

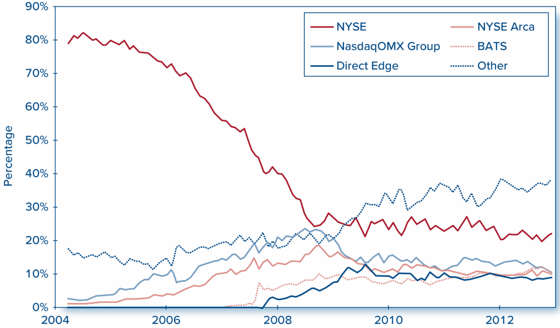

Figure 2: Market share of trading in NYSE-listed shares (BKM 2023, Figure 3.6)

Electronic trading allows unique strategies

- Algorithmic trading uses computer programs to make trading decisions
  - Exploits small price discrepancies
  - Strategies include short-term trend trading and pairs trading
- High-frequency trading is a subset of algorithmic trading based on rapid decision-making
  - Trade-execution times measured in milli- or micro-seconds
  - Strategies include market-making and cross-market arbitrage
- Dark pools are trading venues that provide anonymity
  - Execute large trades without revealing intentions
  - Controversial due to market fragmentation and liquidity impact
- Bond trading still occurs primarily in the OTC market among bond dealers

U.S. stock markets have about half of the worldwide stock market capitalization, but many markets have international allegiances

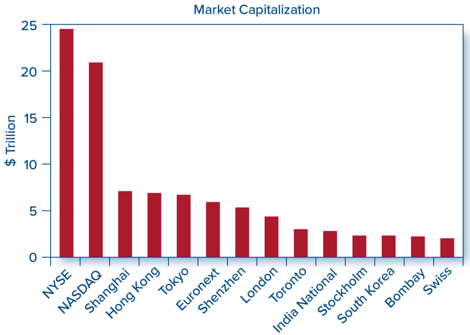

Figure 3: The biggest stock markets in the world by domestic market capitalization (BKM 2023, Figure 3.7)

Trading costs are both explicit and implicit

- Explicit costs include fees and commissions
  - Full-service brokers provide a wide range of services and advice
  - Discount brokers provide low-cost, no-frills service
- Implicit costs include bid-ask spreads and price concessions for large orders
  - Bid-ask spreads compensate for providing liquidity and facing adverse selection
  - Spreads are wider for stocks with smaller market capitalization, lower liquidity, and fewer analysts
  - To trade large orders, buyers and sellers may need to accept less attractive prices

Investors can access debt financing with “broker’s call loans”

- “Buying on margin” is borrowing part of the purchase price
- The *margin* is the portion of the purchase price contributed by the investor, where:

$$\text{Margin} = \frac{\text{Equity in account}}{\text{Value of stock}}$$

- The *initial margin* requirement is 50%, set by the Board of Governors of the Federal Reserve System
- The *maintenance margin* is the minimum equity that investors must keep in the margin account
- A *margin call* occurs if the margin falls below the maintenance level

. You buy 180 shares of stock at a price of $41.25. The initial margin requirement is 50% and the maintenance margin is 30%.

a. How much do you borrow?

b. At what price will you first receive a margin call?

. The stock price of Apple is $106. You have $10,000 to invest. The monthly interest rate is 0.2%.

a. You think the stock price will go up soon, and want to trade 130 shares. What should you do? Enter 130 for buying 130 shares (on margin if necessary), or -130 for selling or short-selling 130 shares.

b. What is your initial percentage margin (entered as a decimal number)?

c. Two months later, the stock price is $126. What is your percentage margin (entered as a decimal number)?

The price of Walmart stock is currently $36.32 and you decide to buy 100 shares on margin. The inital margin is 60% and the broker's maintenance margin is 50%. The broker charges an effective interest rate of 6% on the margin loan.

a. How much money do you borrow if you borrow as much as possible?

b. After the 2 months, the stock price has changed to $33.26 and the stock has paid dividends of $1.57 per share. What is the new percentage margin in the account?

c. What is your effective annual return?

Short sales let an investor profit from security price declines by selling high and *then* buying low

- Investor borrows a stock from a broker and then sells it, expecting to repurchase it at a lower price
- Short sale proceeds must be kept on account with the broker, per exchange rules
- Investor "covers the short position" by purchasing a share and returning it (plus any dividends paid during the short sale)

Comparison of cash flows from long and short positions

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)		

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

Figure 4: Cash flows from purchasing versus short-selling shares of stock (BKM 2023, Table 3.2)

a. Which of the following statements are true about short selling?

Check all that apply:

- [ ] The investor involved in short selling anticipates that the share price will fall.
- [ ] Short selling is the sale of a security that is not owned by the seller.
- [ ] Short selling means that an investor purchases securities using funds borrowed from her broker.
- [ ] Short sellers borrow securities and sell them immediately.
- [ ] The investor involved in short selling anticipates that the share price will increase.

. You decide to short sell 310 shares at a price of $54.49 each. The initial margin requirement is 50%.

a. How much money do you have to contribute to the account?

b. If the price rises to $66.78 after 6 months, what is the new percentage margin?

The stock price of Google is $557. You have $10,000 saved in a savings account. The monthly interest rate is 0.7%.

a. You think the stock price will go down soon, and want to trade 20 shares. What should you do? Enter 20 for buying 20 shares (on margin if necessary), or -20 for selling or short-selling 20 shares.

b. If the initial margin is 50%, what is the minimum additional dollar amount that you have to deposit in your brokerage account?

c. What is your initial percentage margin (entered as a decimal number) once you've completed the deposit calculated in part 2?

d. Two months later, the stock price is $577. Google paid a dividend of $6 per share just before the two months were over. What is your percentage margin (entered as a decimal number)?

You short sell 300 shares at a price of $26.28 each. The inital margin requirement is 50% and you use as little of your own money as possible.

a. If the price changes to $23.46 after 8 months and the stock paid dividends of $1.87 per share, what is the new percentage margin?

b. What is your effective annual return?

c. If the broker's maintenance margin is 40%, what is the maximum value the stock price can take before you are issued a margin call (assuming the dividends have been paid already)?

A handful of laws and organizations regulate U.S. securities markets I

- The Securities Act of 1933 mandates disclosure for new issues
- The Securities and Exchange Act of 1934
  - Establishes the SEC to administer the 1933 act
  - Extends the disclosure mandate to existing issues
  - Empowers the SEC to register and regulate
- The Securities Investor Protection Act of 1970 protects investors from brokerage failures
- *Blue sky laws* are state laws that give investors clearer views of investments
- The Sarbanes-Oxley Act responds to accounting scandals during 2000 to 2002
  - Public Company Accounting Oversight Board
  - Independent financial experts must serve on audit committees
  - CEOs and CFOs must personally certify financial reports
  - Auditors cannot provide several other services to clients
  - Boards must have independent directors
- Organizations that *self* regulate the financial industry
  - Financial Industry Regulatory Authority (FINRA)
  - Chartered Financial Analyst (CFA) Institute

A handful of laws and organizations regulate U.S. securities markets II

Regulations prohibit trading on inside information

- Officers, directors, and major stockholders must report all inside transactions
- Still, we have evidence that insiders exploit their knowledge
  - Well-publicized convictions of inside traders
  - Considerable evidence of leakage
  - Insider trades earn abnormal returns

Summary

Page 93

1. Firms issue securities to raise the capital necessary to finance their investments. Investment bankers market these securities to the public on the primary market. Investment bankers generally act as underwriters who purchase the securities from the firm and resell them to the public at a markup. Before the securities may be sold to the public, the firm must publish an SEC-approved prospectus that provides information on the firm's prospects.
2. Already-issued securities are traded on the secondary market, that is, on organized stock markets; on the over-the-counter market; and occasionally, for very large trades, through direct negotiation. Brokerage firms with access to exchanges sell their services to individuals, charging commissions for executing trades on their behalf.
3. Trading may take place in dealer markets, via electronic communication networks, or in specialist/designated market maker markets. In dealer markets, security dealers post bid and ask prices at which they are willing to trade. Brokers execute trades for their clients at the best available prices. In electronic markets, the existing book of limit orders provides the terms at which trades can be executed. Mutually agreeable offers to buy or sell securities are automatically crossed by the computer system operating the market.
4. NASDAQ was traditionally a dealer market in which a network of dealers negotiated directly over sales of securities. The NYSE was traditionally a specialist market. Today, however, trading in both markets is overwhelmingly electronic.
5. Buying on margin means borrowing money from a broker to buy more securities than can be purchased with one's own money alone. By buying securities on margin, an investor magnifies both the upside potential and the downside risk. If the equity in a margin account falls below the required maintenance level, the investor will get a margin call from the broker.
6. Short-selling is the practice of selling securities that the seller does not own. The short-seller borrows the securities from a broker, sells them, and may be required to cover the short position at any time on demand. The cash proceeds of a short sale are kept in escrow by the broker, and the broker usually requires that the short-seller deposit additional cash or securities to serve as margin (collateral).
7. Securities trading is regulated by the Securities and Exchange Commission, by other government agencies, and through self-regulation of the exchanges. Many of the important regulations have to do with full disclosure of relevant information concerning the securities in question. Insider trading rules also prohibit traders from attempting to profit from inside information.

Figure 5: Chapter 3 summary from BKM (2023)

References I

Bodie, Zvi, Alex Kane, and Allan J. Marcus (2023). *Investments*. 13th ed. New York: McGraw Hill.