

Chapter Three

How Securities are Traded

INVESTMENTS | BODIE, KANE, MARCUS

Chapter Overview

- Broad introduction to the many venues and procedures available for trading securities in the U.S. and international markets
 - Trading securities
 - Mechanics of trade execution
 - Essentials of some specific types of transactions
 - E.g., buying on margin and short-selling

How Firms Issue Securities

- Firms requiring new capital can raise funds by borrowing money or selling shares in the firm
 - **Primary market** is the market in which new issues of securities are offered to the public
 - **Secondary market** involves already existing securities being bought and sold on the exchanges or in the OTC market
- Shares of *publicly listed* firms trade continually in markets such as the NYSE or NASDAQ, but the shares of *private corporations* are held by small numbers of managers and investors

How Firms Issue Securities

Publicly Traded Companies

- **Initial public offering, or IPO**
 - A firm's first issue of shares to the public
- *Seasoned equity offering*
 - The sale of additional shares in firms that already are publicly traded
- Public offerings of both stocks and bonds typically are marketed by **underwriters**
 - Advises the firm regarding the terms on which it should attempt to sell the securities

How Firms Issue Securities

Initial Public Offerings

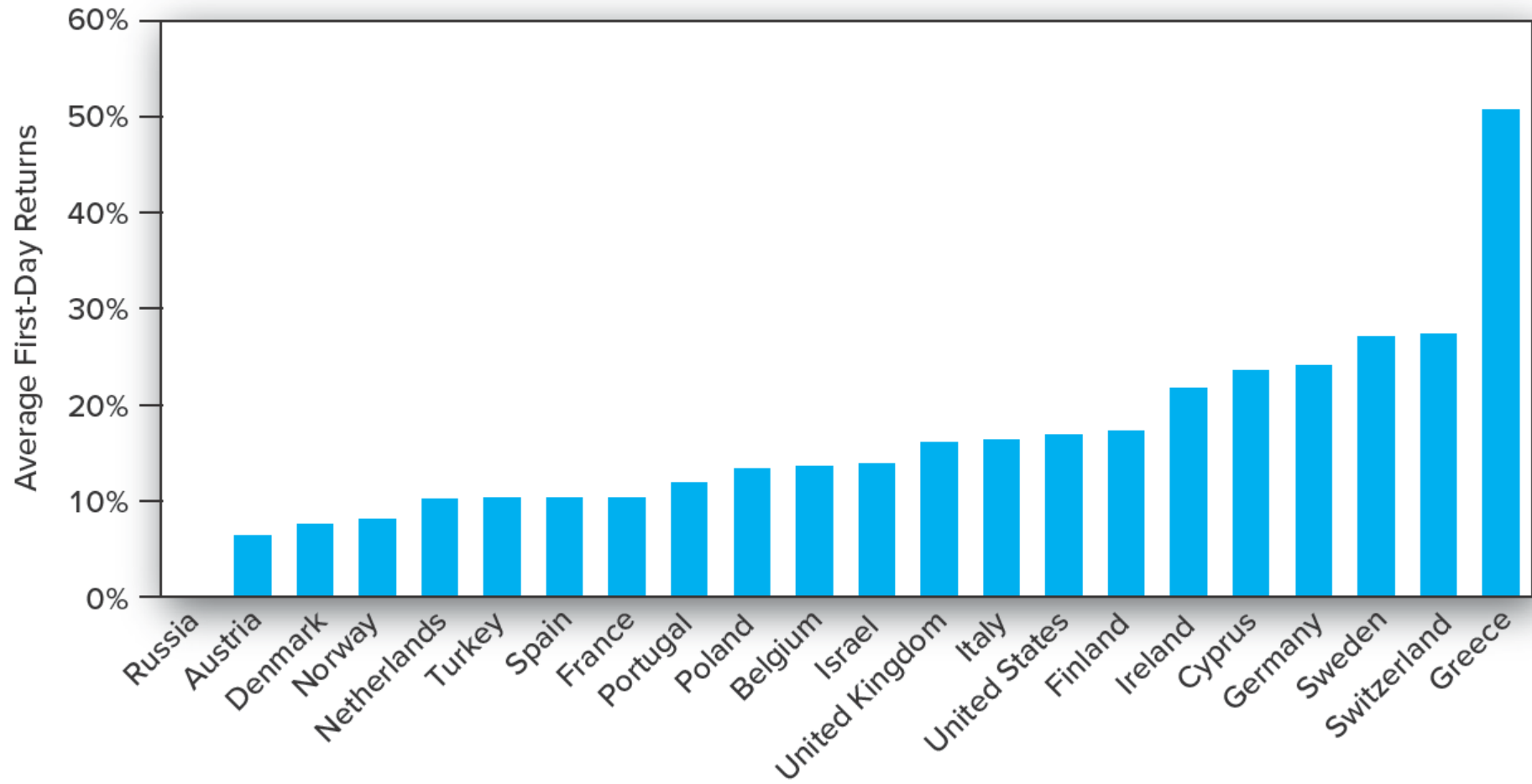
- Initial public offerings
 - *Road shows* to publicize new offering
 - *Bookbuilding* to determine demand
 - Degree of investor interest provides valuable pricing information
 - Shares of IPOs are allocated across investors in part based on the strength of each investor's expressed interest

How Firms Issue Securities

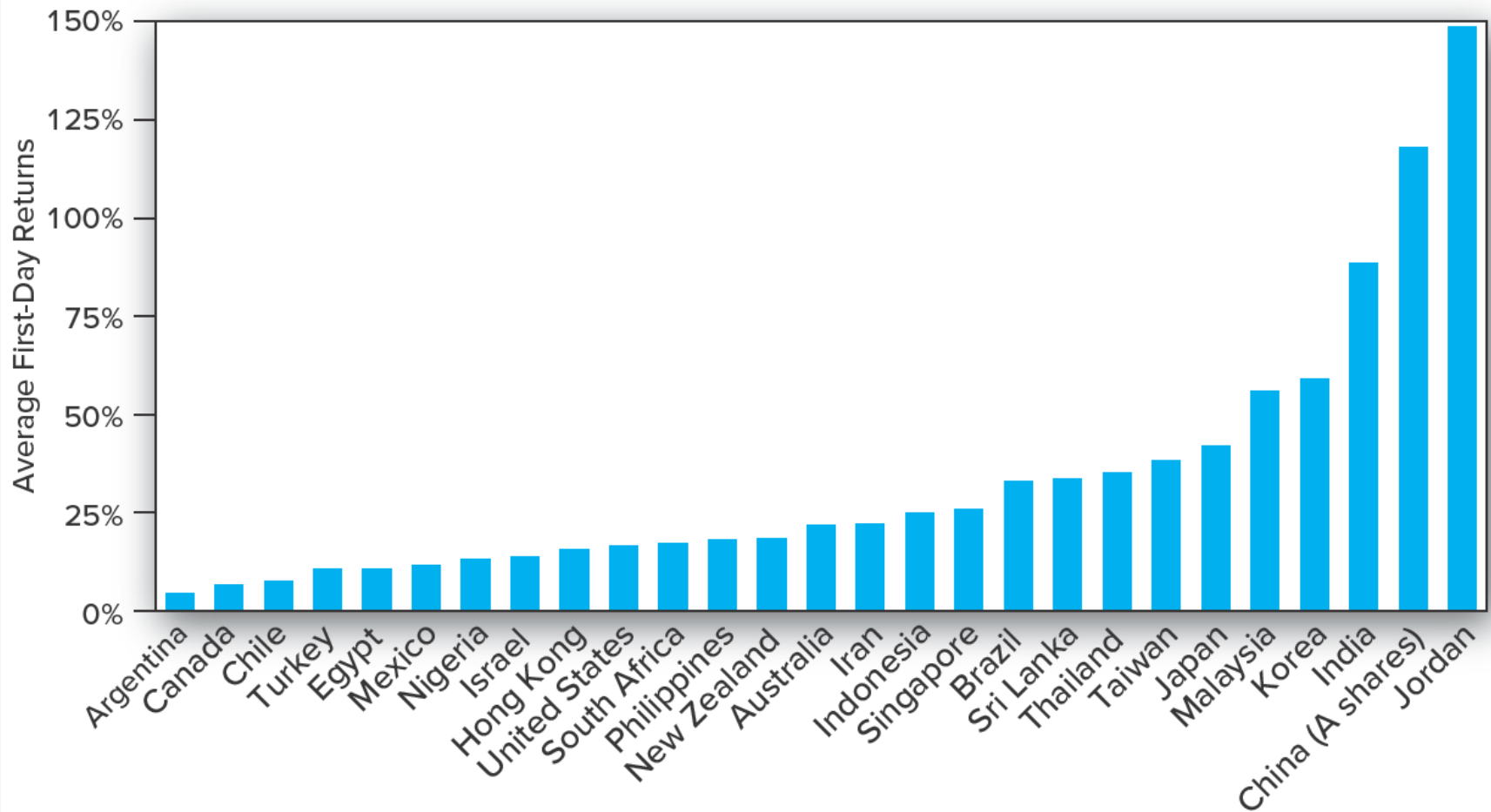
Initial Public Offerings (Continued)

- Underwriter bears price risk
 - IPOs are commonly underpriced compared to the price they could be marketed
 - Example: Dropbox
 - Some IPOs are overpriced
 - Example: Facebook
- Others cannot be fully sold

A: Average First-Day Returns on (Mostly) European IPOs



B: Average First-Day Returns on Non-European IPOs



Bid and Ask Prices

Bid Price

- Bids are offers to buy
- In dealer markets, the bid price is the price at which the dealer is willing to buy
- Investors “sell to the bid”

Ask Price

- Ask prices are sell offers
- In dealer markets, the ask price is the price at which the dealer is willing to sell
- Investors must pay the ask price to buy the security

Bid-asked spread is the difference between a dealer’s bid and ask price

Price-Contingent Order: Example

Microsoft Corporation (MSFT)

NasdaqGS - NasdaqGS Real Time Price. Currency in USD

★ Watchlist

101.50 -0.07 (-0.07%) As of 1:21PM EST. Market open.

Order Book

Top of Book

Bld		Ask	
Price	Size	Price	Size
101.46	100	101.47	199
101.45	357	101.48	600
101.44	200	101.49	300
101.43	400	101.50	700
101.42	427	101.51	400

Types of Orders

- Market orders
 - Buy or sell orders that are to be executed immediately
 - Trader receives current market price
- Price-contingent orders
 - Traders specify buying or selling price
 - **Limit buy (sell) order** instructs the broker to buy (sell) shares if and when those shares are at or below (above) a specified price

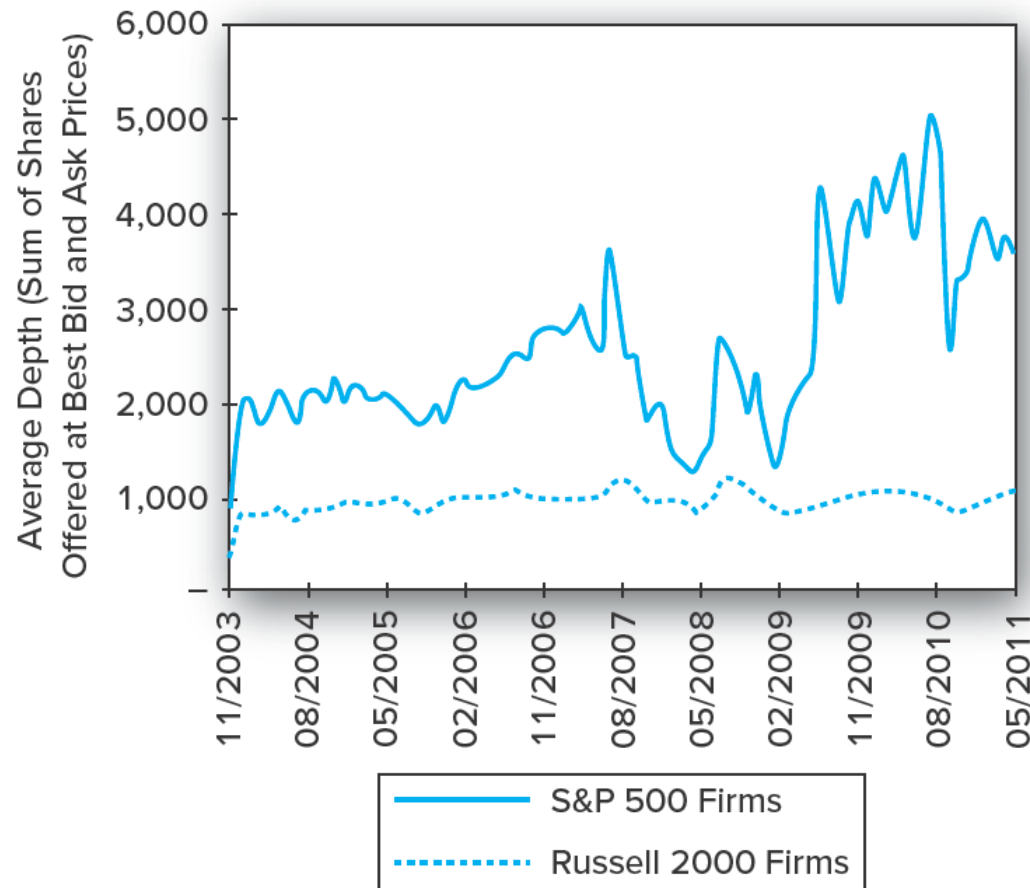


Figure 3.3 Average market depth for large (S&P 500) and small (Russell 2000) firms

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; Knight Capital Group.

U.S. Markets: NASDAQ

- NASDAQ
 - Lists about 3,000 firms
 - NASDAQ's Market Center consolidates NASDAQ's previous electronic markets into one integrated system
 - Three levels of subscribers

U.S. Markets: NYSE

- Largest U.S. **stock exchange**, as measured by market value of listed stocks
- Automatic electronic trading runs side-by-side with broker/specialist system
 - 1976 (and later) – DOT and SuperDot
 - 2000 - Direct+
 - 2006 – NYSE Hybrid
 - Allowed NYSE to qualify as a fast market for the purposes of Regulation NMS, but still offered advantages of human interaction for complex trades

New Trading Strategies

(1 of 2)

- **Algorithmic trading** is the use of computer programs to make trading decisions
- **High-frequency trading** is a subset of algorithmic trading that relies on computer programs to make extremely rapid decisions
- **Dark pools** are private trading systems in which participants can buy or sell large blocks of securities without showing their hand

New Trading Strategies

(2 of 2)

- Bond trading
 - Vast majority of bond trading takes place in the OTC market among bond dealers
 - Market for many bond issues is “thin” and is subject to liquidity risk
 - One impediment to heavy electronic trading is lack of standardization in the bond market
 - A single company may have dozens of outstanding bond issues, differing by coupon, maturity and seniority

Trading Costs

- Explicit cost - brokerage commissions
 - Full-service versus discount brokers
 - Execute orders, hold securities for safe-keeping, extend margin loans, facilitate short sales, and provide information and advice about investment alternatives
- Implicit costs
 - Dealer's bid-ask spread
 - Price concession an investor may be forced to make for trading in quantities greater than those associated with the posted bid or ask price

Buying on Margin

(1 of 2)

- Investors have easy access to a source of debt financing called *broker's call loans*
 - *Buying on margin* means the investor borrows part of the purchase price of the stock
 - **Margin** in the account is the portion of the purchase price contributed by the investor; remainder is borrowed from the broker
- Board of Governors of the Federal Reserve System limits the use of margin loans

Buying on Margin

(2 of 2)

- Why do investors buy securities on margin?
 1. To achieve greater upside potential
 2. But also expose themselves to greater downside risk

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, borrowing \$10,000 of the purchase price at an interest rate of 9% per year.

Buying on Margin

- The current initial margin requirement is 50%, meaning that at least 50% of the purchase price must be paid in cash, with the rest borrowed.
- Percentage margin: the ratio of the net worth, or the “equity value”, of the account to the market value of the securities.

Buying on Margin

- Suppose an investor
 - 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 percentage margin is:

$$\frac{\textit{Equity in account}}{\textit{Value of stock}} = \frac{6000}{10000} = 60\%$$

Buying on Margin

- If the price declines to \$70 per share,
$$\frac{\text{Equity in account}}{\text{Value of stock}} = \frac{3000}{7000} = 43\%$$
- If the stock value were to fall below \$4,000, owners' equity would become negative.
- To guard against the possibility, the broker sets a *maintenance margin*.

Buying on Margin

- If the percentage margin falls below the maintenance margin, the broker will issue a *margin call*, which requires the investor to add new cash or securities to the margin account.

Buying on Margin

- Suppose the maintenance margin is 30%, how far could the stock price fall before the investor would get a margin call?

$$\frac{100P - 4000}{100P} = 30\%$$

$$P = \$57.14$$

Buying on Margin - Exercise

- An investor with \$10,000 to invest buys 100 shares at \$100 per share. If the stock price goes up by 30% during the next year, the expected rate of return (ignoring dividends) would be _____.
- Assume an investor with \$10,000 borrows \$10,000 to buy 200 shares at \$100 per share. Interest rate on the margin loan = 9% p.a.. What is the rate of return (ignoring dividends) if stock price increases 30%? Drops by 30%?

Short Sales

- **Short sales** allows investors to profit from a decline in a security's price
- Mechanics
 1. Investor borrows stock from a broker and sells it
 2. Must then purchase a share of the same stock in order to replace the one that was borrowed
 - Referred to as *covering the short position*
- Proceeds from a short sale must be kept on account with the broker, per exchange rules
- Short-sellers must not only replace the shares but also pay the lender any dividends paid during the short sale.

Short Sale Mechanics

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)		

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

Short Sales

- Short-sellers also are required to post margin (cash or securities) with the broker to cover losses should the stock price rise during the short sale.

Short Sales

- You tell your broker to sell short 1,000 shares for \$100 per share:
 - 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.
 - Initial percentage margin:

$$\frac{\text{Equity}}{\text{Value of stock owed}} = \frac{50,000}{100,000} = 0.5$$

Short Sales

- If the price falls to \$70 per share

- The percentage margin is:

$$\frac{\text{Equity}}{\text{Value of stock owed}} = \frac{150,000 - 70,000}{70,000} = 1.14$$

- You choose to cover the short positions. That is, you buy 1,000 shares to replace the ones you borrowed.
 - Your profit is \$30,000.

Short Sales

- If the price rises to P

- The percentage margin will fall:

$$\frac{\text{Equity}}{\text{Value of stock owed}} = \frac{150,000 - 1,000 * P}{1,000 * P}$$

- Suppose the broker has a maintenance margin of 30% on short sales.
 - How much can the price rise before you get a margin call?

- Set $\frac{150,000 - 1,000 * P}{1,000 * P} = 0.3$ and solve $P = 115.38$