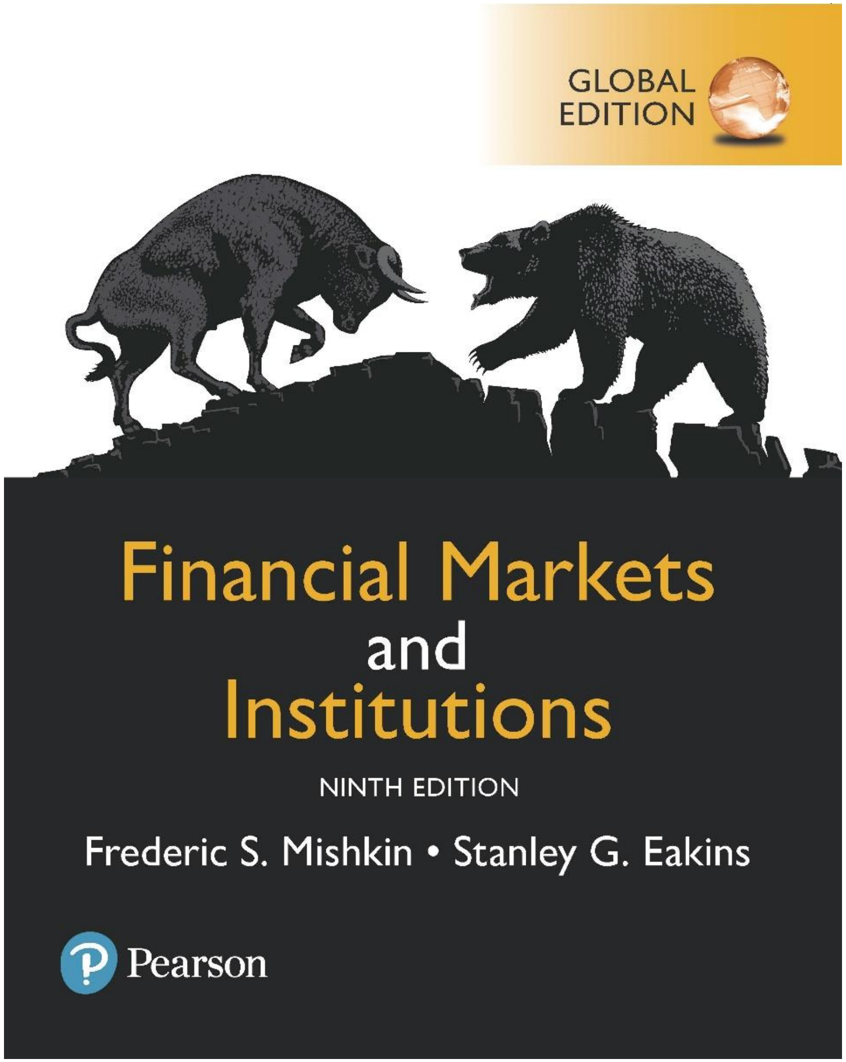
AcF 304 Financial Markets

The Stock Market

Financial Markets and Institutions

Ninth Edition, Global Edition



Reading – Chapter 13 The Stock Market

Pearson

The Stock Market – Topic Preview

- In August of 2004, Google went public, auctioning its shares in an unusual IPO format*. The shares originally sold for $85 / share, and closed at over $100 on the first day.

- End of 2012, shares are trading on Nasdaq at over $707 per share.
- March 2020, shares trade at $ 1,295 per share.
- March 2021 - $2021
- Feb 2022 – 20:1 stock split, before the split, the price was $2255.34

The Stock Market – Topic Preview

Topics Addressed

- Equities Long Term Performance (US & Non-US)
- Stock Market Indexes
- Buying Foreign Stocks
- Investing in Stocks
- How the Market Sets Security Prices
- Computing the Price of Common Stock
- Mechanics of an IPO

Equities

Analysis of returns from equities, gilts and cash 1899-2017 (real investment returns % p.a.)

Equities	5.1%
Gilts	1.4%
Cash	0.8%

Real annualized returns (%) on equities versus bonds and bills internationally, 1900–2017

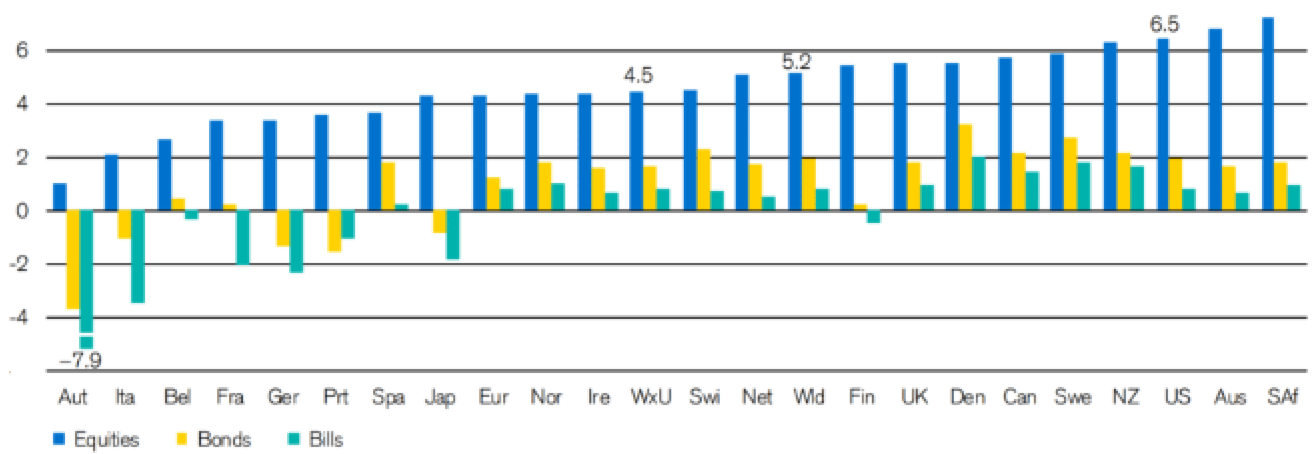
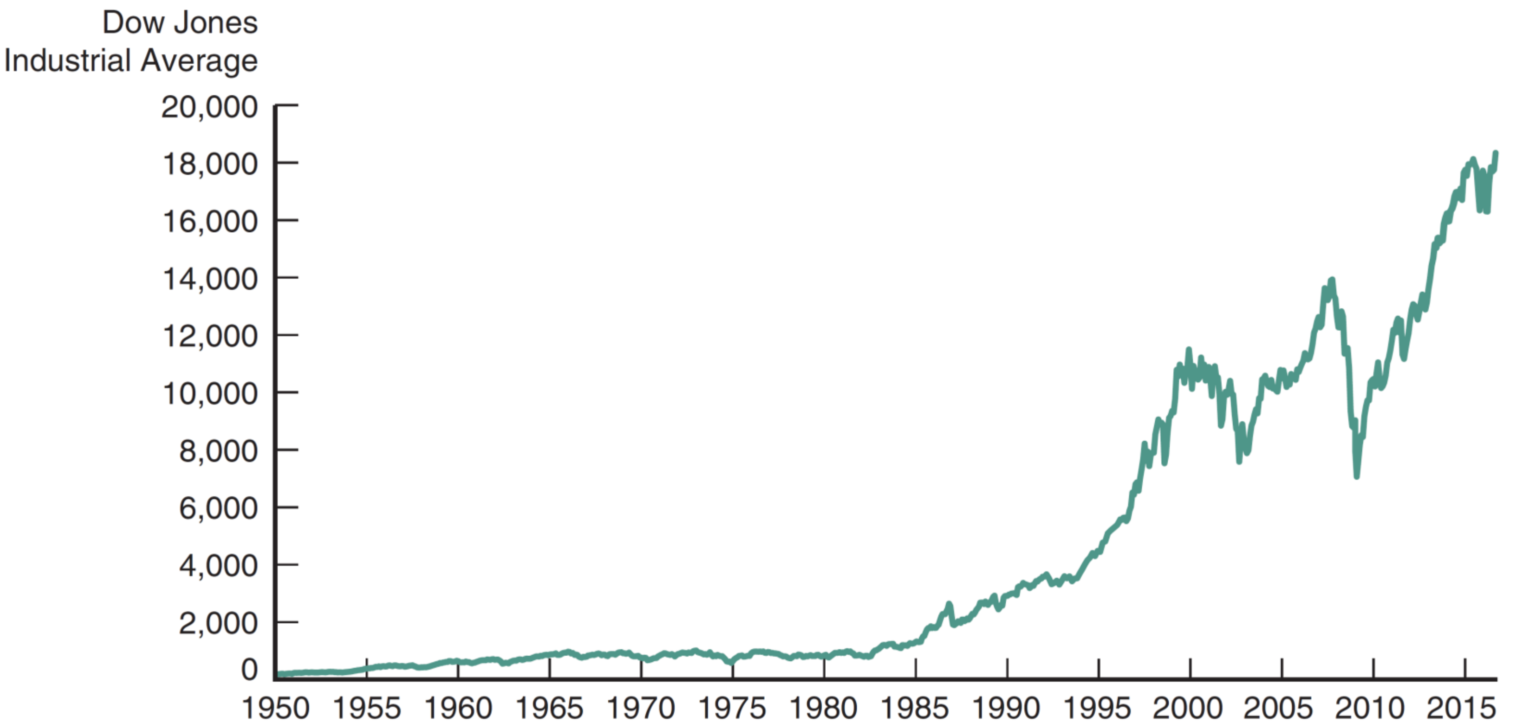


Figure 1.2 Stock Prices as Measured by the Dow Jones Industrial Average, 1950–2016



Source: Federal Reserve Bank of St. Louis, FRED database: https://fred.stlouisfed.org/series/DJIA.

Equity Volatility

During WWII, Japanese equities lost 96% in real terms; German equities lost 88%!

In the eleven years that followed (1949-59), German equities returned a whopping 4373% in real terms. Japan did 1565% real return.

If you didn't bail on your investments during the War, you got rich assuming you lived!

UK equities lost 71% in real terms in 1973/74. In 1975, the real return was 97%!

For 22 years between 1900-1921, the cumulative real return on UK equities was -4%!

But if you think that's bad, German equities recorded 55 years of negative real return between 1929 -1982!

In 4 trading days in March 2020 the DJII fell 26% !!

Investing in Stocks

1. Represents ownership in a firm
2. Earn a return in two ways
   - Price of the stock rises over time (capital gain)
   - Dividends are paid to the stockholder
3. Residual claimant: Stockholders have claim on all assets and income left over after all other claimants have been satisfied.
4. Right to vote for directors and on certain issues
5. Two types
   - Common stock
     - Right to vote
     - Receive dividends
   - Preferred stock
     - Receive a fixed dividend
     - Do not usually vote
     - ‘Bond-like’

Figure 13.1 Sapir Consolidated Airlines Stock

Investing in Stocks: How Stocks are Sold

- Organised exchanges
  - NYSE is best known, with daily volume around 4 billion shares, with peaks at 10 billion.
  - “Organized” used to imply a specific trading location. But computer systems (ECNs) have replaced this idea.
  - Others include the International exchanges includng Nikkei, LSE, DAX
  - Listing requirements* exclude small firms

*NYSE >$10 MM earnings amd $100 MM Market Value

Investing in Stocks: How Stocks are Sold

- Securities not listed on one of the exchanges trade in the OTC market. This market is not organized in the sense of having a building where trading takes place. Instead, trading occurs over sophisticated telecommunications networks.
- Over-the-counter markets
  - Best example is NASDAQ (*National Association of Securities Dealers Automated Quatation System)*

NASDAQ is also an index. When you hear people say that the "the Nasdaq is up today" they are referring to the Nasdaq Composite Index

Today's Market Activity			
NASDAQ	7505.92	-70.44 ▼	0.93%
DJIA	25673.46	-133.17 ▼	0.52%
S&P 500	2771.45	-18.20 ▼	0.65%

Investing in Stocks: How Stocks are Sold

NASDAQ

- Dealers stand ready to make a market: buying for inventory when investors want to sell and selling from inventory when investors want to buy. These dealer provide small stock with the liquidity that is essential to their acceptance in the market.
- Today, about 3,000 different securities are listed on NASDAQ *inc. technology stocks.*
- Important market for thinly-traded / illiquid securities —securities that don't trade very often. Without a dealer ready to make a market, the equity would be difficult to trade.

Computing the Price of Common Stock: The Price Earnings Valuation Method

We will consider the PE Valuation Method (the most popular!) and the Gordon growth model.

$$\text{P/E Ratio} = \frac{\text{Market value per share}}{\text{Earnings per share}}$$

The price earnings (PE) ratio is a widely watched measure of how much the market is prepared for pay for $1 of earnings of a firm.

A high PE has two interpretations:

- A higher-than-average PE may mean that the market expects earnings to rise in the future .This would return the PE to a more normal level.
    - *e.g. Netflix's PE Ratio is 89.29., Amazon 143.83 (last 10-year average)*
- A high PE may alternatively mean that the market feels the firm's earnings are very low risk and is therefore willing to pay a premium for them.

Computing the Price of Common Stock: The Price Earnings Valuation Method

The PE ratio can be used to estimate the value of a firm's stock. The product of the PE ratio times expected earnings is the firm's stock price.

$$\frac{P}{E} \times E = P$$

Firms in the same industry are expected to have similar PE ratios.

The Price Earnings Valuation Method

The value of a firm's stock can be found by multiplying the average industry PE times the expected earnings per share.

If the industry PE ratio is 16, what is the current stock price for a firm with earnings for $1.13 / share?

- Answer: Price = 16 × $1.13 = $18.08

- **Strengths:** Useful for valuing privately held firms and firms that do not pay dividends.
- **Weakness:** Firm-specific factors are not taken into account.

Equity Returns

Suppose Microsoft, Inc. was trading at $27.29 per share. At that time, it pays an annual dividend of $0.32 per share, and analysts have set a 1-year target price around $33.30 per share. **What is the expected return on this stock?**

Solution:

$$\text{Expected return} = \frac{33.30 + 0.32 - 27.29}{27.29} = 0.2319 = 23.2\%$$

The Gordon Growth Model

- Stocks are valued (like bonds) as the present value of the cashflows /dividends. Unfortunately, we do not know what these dividends will be.
- The Gordon growth model is a simplified method of computing stock value that depends on the assumption that dividends are growing at a constant rate forever.

The Gordon Growth Model

- Useful for finding stock value assuming:
  - Dividends are assumed to continue growing at a constant rate forever
- *Relevant and used for companies with stable growth rates in dividends per share.*
- The growth is assumed to be less than the required return on investing in equity.
  - *Gordon in development of the model, demonstrated that this is a reasonable assumption. In theory, if the growth rate were faster than the rate demanded by holders of the firm's equity, in the long run the firm would grow impossibly large*

The Gordon Growth Model

- The price is simply:

$$P_0 = \frac{D_0(1+g)}{k_e - g}$$

P_0 = *the current price of the stock. The zero refers to time period zero, or the present*

D_0 = *most recent paid dividend*

g = *the expected constant rate of dividends*

k_e = *the required return on an investment in equity*

The Gordon Growth Model

Find the current market price of company's share, assuming D0 = $1.5, dividend growth rate 5% and required rate 12%.
Use Gordon Model for share value evaluation.

$$P_0 = D_0 \times (1 + g) / (k - g)$$

$$P_0 = 1.5 \times (1 + 0.05) / (0.12 - 0.05)$$

$$= 1.5 \times 1.05/0.07 = \$21.43$$

- P*0 = the current price of the stock.*
- *D0 = most recent paid dividend*
- *g = the expected constant rate of dividends*
- *k = the required return on an investment in equity*

- The main limitation of the Gordon growth model lies in its assumption of a constant growth in dividends per share.
- It is very rare for companies to show constant growth in their dividends due to business cycles and unexpected financial difficulties or successes.

The Gordon Growth Model

Find the current market price of Coca-Cola stock assuming dividends grow at a constant rate of 10.95%, D0 =$1, and the required return is 13%

$P_0 = D_0 \times (1 + g) / (k_e - g)$

$P_0 = D_0 \times (1 + 0.1095) / (0.13 - 0.1095)$

$P_0 = 1.0 \times (1.1095) / (0.0205)$

= $54.12

P*0 = the current price of the stock.*
D0 = most recent paid dividend
g = the expected constant rate of dividends
ke = the required return on an investment in equity

Comparing Stocks via PE Ratios

- Which is cheaper? - a stock trading on

  A) PE of 10

  B) PE of 12

- Mathematically A) of course but in reality it depends on the sector…

The Southern Company PE Ratio	**23.56**
Amazon PE Ratio	**74.05**

Stock Market Indexes

- Stock market indexes are frequently used to monitor the behavior of a groups of stocks.
- Major indexes include the Dow Jones Industrial Average, the S&P 500, and the NASDAQ composite.
- The securities that make up the (current) DJIA are included on the next three slides.

Table 13.3 The Thirty Companies That Make Up the Dow Jones Industrial Average (1 of 3)

Company	**Stock Symbol**
3M Co.	MMM
Apple Inc.	AAPL
American Express Co.	AXP
Boeing Co.	BA
Caterpillar Inc.	CAT
Chevron	CVX
Cisco Systems	CSCO
Coca-Cola Co.	KO
E.I. DuPont de Nemours	DD
Exxon Mobil Corp.	XOM

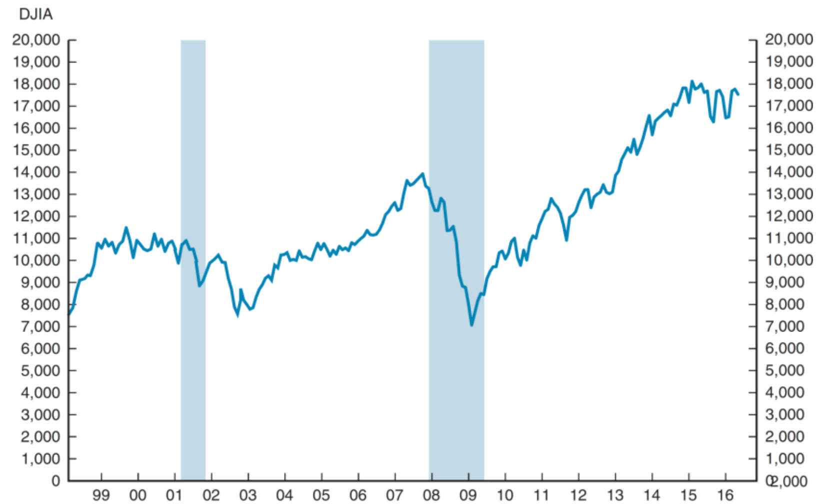
Table 13.3 The Thirty Companies That Make Up the Dow Jones Industrial Average (2 of 3)

Company	**Stock Symbol**
General Electric Co.	GE
Goldman Sachs	GS
Home Depot Inc.	HD
International Business Machines	IBM
Intel Corp.	INTC
Johnson & Johnson	JNJ
JP Morgan Chase & Co.	JPM
McDonald's Corp.	MCD
Merck & Co. Inc.	MRK
Microsoft Corp.	MSFT

Table 13.3 The Thirty Companies That Make Up the Dow Jones Industrial Average (3 of 3)

Company	**Stock Symbol**
Nike	NKE
Pfizer Inc.	PFE
Procter & Gamble Co.	PG
Travelers Corp.	TRV
United Technologies Corp.	UTX
United Health Group	UNH
Verizon Communications Inc.	VZ
Visa International	V
Wal-Mart Stores Inc.	WMT
Walt Disney Co.	DIS

Figure 13.2 Dow Jones Industrial Averages, 1980–2016



25,450.24
Delayed Data
As of Mar 08

-22.99 / -0.09%
Today's Change

With an average annualised return of 7 %, the Dow moves from roughly 25,800 today to 75,000 in 2036, before reaching 150,000 in 2046 !?!

Table 13.3 The Thirty Companies That Make Up the Dow Jones Industrial Average

- 30 ‘Blue Chip’* industrial firms
- History of successful growth and wide investor interest
- Index constituents chosen by *Wall St Journal*
- It is not the best indicator of the US economy or stock market
- Followed because it is the oldest index and tracks the markets reasonably well over the longer term
- S&P 500 is more representative

**The name "blue chip" came about from the game of poker in which the blue chips have the highest value.*

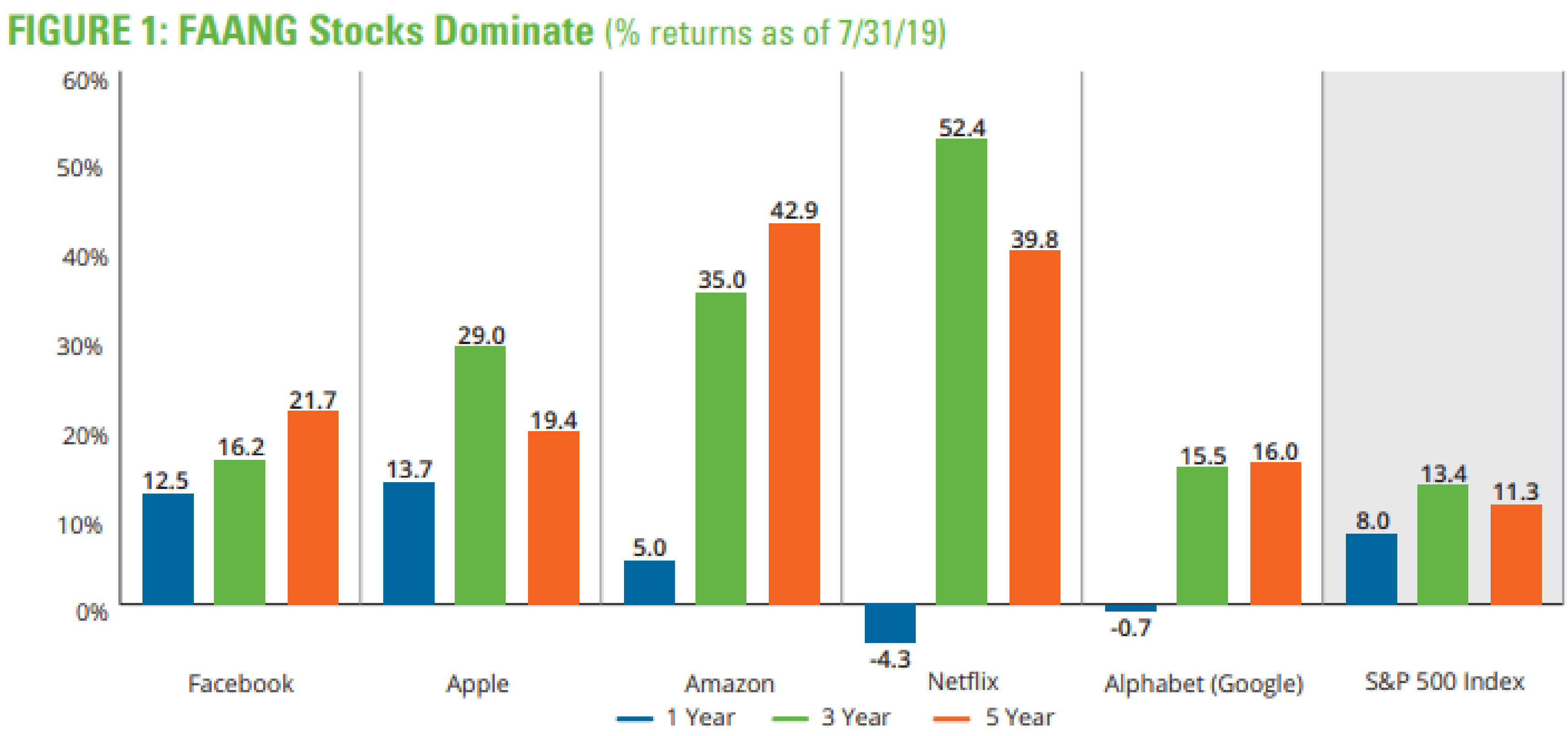
NASDAQ – the technology index

FAANGS

- Facebook
- Amazon
- Apple
- Netflix
- Google (Alphabet)

- Account for 12% of S&P
- Account for 27% of NASDAQ Index

NASDAQ – FAANG Outperformance



Buying Foreign Stocks

- US investors buying foreign stocks is useful from a diversification perspective. However, the purchase may be complicated if the shares are not traded in the U.S.
- American depository receipts (ADRs) allow foreign firms to trade on U.S. exchanges.
- ADRs: A U.S. bank buys the shares of a foreign company and places them in its vault/ The bank then issues receipts against these shares, and these receipts can be traded domestically, usually on NASDAQ.
- Trade in DRS is conducted entirely in US dollars, and the bank converts stock dividend into US currency.
- Advantage: allows foreign firms to trade in the US without the firms having to meet the disclosure rules required by the SEC.

Equity - Mechanics of an Initial Public Offering - IPO

Select Underwriter

- the issuing company to choose underwriter to advise the company on its IPO and to provide underwriting services.

Due diligence & Filings

- Underwriting is the process through which an investment bank (the underwriter) acts as a broker between the issuing company and the investing public to help the issuing company sell its initial set of shares.

Pricing

- After the IPO is approved by the SEC, the effective date is decided. On the day before the effective date, the issuing company and the underwriter decide the offer price (i.e., the price at which the shares will be sold by the issuing company) and the precise number of shares to be sold.

Stabilization

- After the issue has been brought to the market, the underwriter has to provide analyst recommendations, after-market stabilization, and create a market for the stock issued.

Transition

- The transition to market competition, starts 25 days after the initial public offering, once the "quiet period" mandated by the SEC ends. During this period, investors transition from relying on the mandated disclosures and prospectus to relying on the market forces for information regarding their shares.

https://corporatefinanceinstitute.com/resources/knowledge/finance/ipo-process/

Equity - The Mechanics of an Initial Public Offering (IPO)

Underwriters and the Syndicate

- Lead Underwriter
  - The primary investment banking firm responsible for managing a security issuance
- Syndicate
  - A group of underwriters who jointly underwrite and distribute a security issuance

Equity - The Mechanics of an IPO (cont'd)

SEC Filings

- Registration Statement
  - A legal document that provides financial and other information about a company to investors prior to a security issuance
- Preliminary Prospectus (Red Herring)
  - Part of the registration statement prepared by a company prior to an IPO that is circulated to investors before the stock is offered
- Final Prospectus
  - Part of the final registration statement prepared by a company prior to an IPO that contains all the details of the offering, including the number of shares offered and the offer price

Equity - The Mechanics of an IPO (cont'd)

- Valuation
  - There are two ways to value a company.
    - Compute the present value of the estimated future cash flows.
    - Estimate the value by examining comparables (recent IPOs).

Equity IPO –Valuing Using Comparables

- Wagner is a private company with revenues of $325 million and earnings of $15 million last year.
- Company has filed a registration statement with SEC for IPO
- Before the stock is offered Wagner's investment bankers would like to estimate the value of the company using comparable companies.
- The IB has assembled the following information based on data for other companies in the same industry who have recently gone public.

Equity IPO –Valuing Using Comparables

Company	Price/Earnings	Price/Revenues
Ray Products Corp.	18.8×	1.2×
Byce-Frasier, Inc.	19.5×	0.9×
Fashion Industries Group	24.1×	0.8×
Recreation International	22.4×	0.7×
Mean	21.2×	0.9×

After the IPO Wagner will have 20 million shares outstanding. Estimate the IPO price for Wagner using the price/earnings ratio and the price/revenue ratio.

Note: To determine the Price / Revenue ratio, divide the current stock price by the sales per share

Equity IPO –Valuing Using Comparables

Company	Price/Earnings	Price/Revenues
Ray Products Corp.	18.8×	1.2×
Byce-Frasier, Inc.	19.5×	0.9×
Fashion Industries Group	24.1×	0.8×
Recreation International	22.4×	0.7×
Mean	21.2×	0.9×

- If industry PE mean is 21.2. Given Wagner earnings of $15 million, the total value of Wagner's stock will be…

$15 million x 21.2 = $318 million.

With 20 million shares outstanding, the price per share would be $15.90

Equity IPO –Valuing Using Comparables

Company	Price/Earnings	Price/Revenues
Ray Products Corp.	18.8×	1.2×
Byce-Frasier, Inc.	19.5×	0.9×
Fashion Industries Group	24.1×	0.8×
Recreation International	22.4×	0.7×
Mean	21.2×	0.9×

- Similarly if Wagner's IPO price implies a price/revenues ratio equal to the recent average of 0.9, then using revenues of $325 million, total market value will be

$325 million x 0.9 = $292.5 million or

($292.5/20) = $14.63 per share

Note: To determine the Price / Revenue ratio, divide the current stock price by the sales per share

Equity IPO –Valuing Using Comparables

- Price /Earnings estimate $15.90 per share
- Price /Revenues estimate $14.63 per share

- Based on these estimates, the underwriters will probably establish an initial price range for Wagner stock of $13 to $17 per share to take on the road show

Equity Greenshoe Provision

- Allows the underwriter to issue more shares up to an agreed %
  - e.g. Issue 3,000,000 at 12.50
- Greenshoe (Over-Allotment) provision 15% or 450,000
  - e.g. Sell full 3,450,000
- If IPO successful and initial offer price met and share price rises then exercise Greenshoe provision
- If unsuccessful and share price falls no need to exercise Greenshoe Provision – an IB can buy back any oversold shares in the market so supporting the price

Equity IPO Puzzles

Underpricing

Generally, underwriters set the issue price so that the average first-day return is positive.

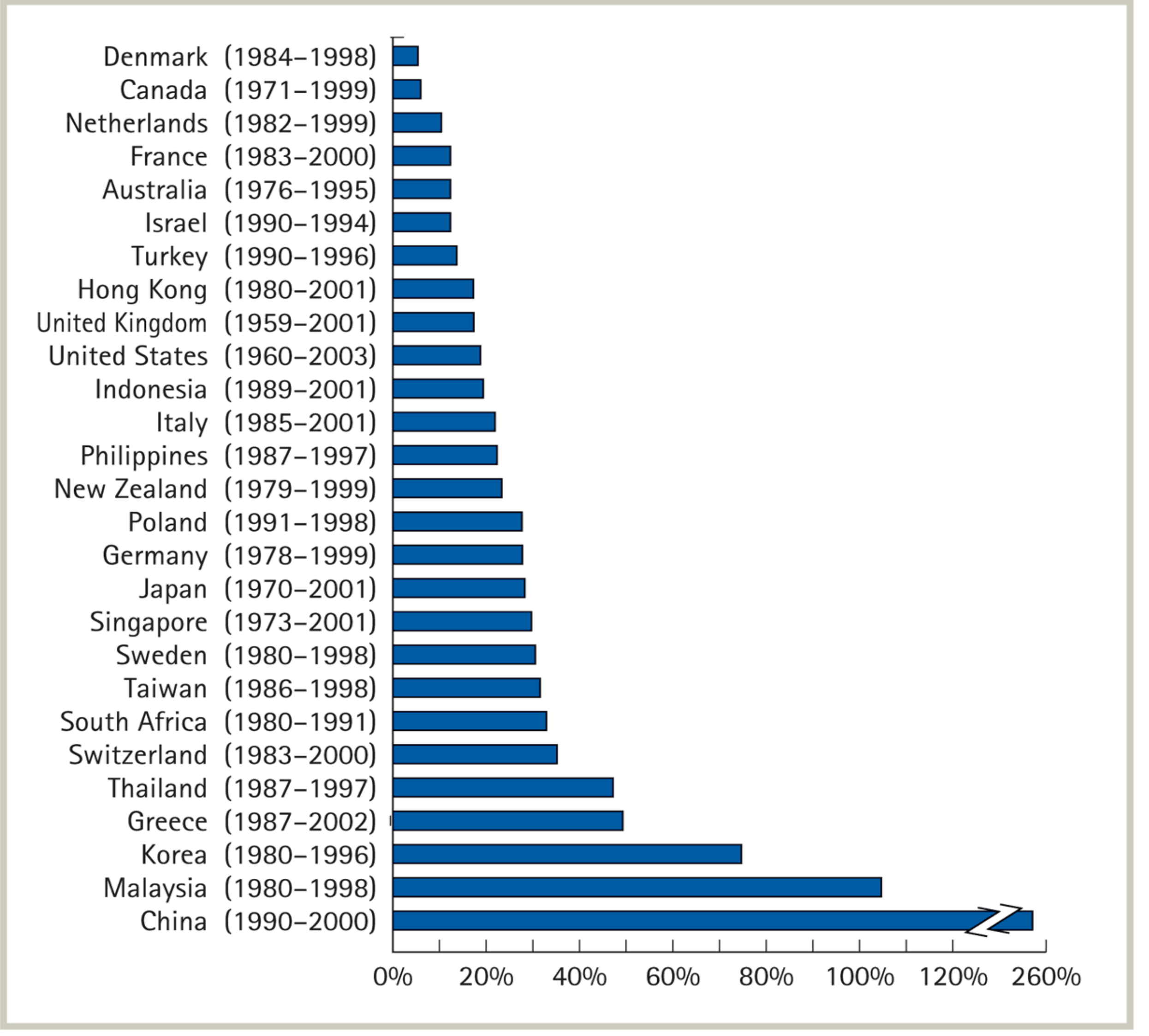
- Research has found that 75% of first-day returns are positive.
- The average first day return in the United States is 18.3%.

Equity IPO Puzzles (cont'd)

Underpricing

- The underwriters benefit from the underpricing as it allows them to manage their risk.
- The pre-IPO shareholders bear the cost of underpricing. In effect, these owners are selling stock in their firm for less than they could get in the aftermarket.

International Comparison of First Day IPO Returns



Equity IPO Puzzles (cont'd)

Underpricing

Although IPO returns are attractive, all investors cannot earn these returns.

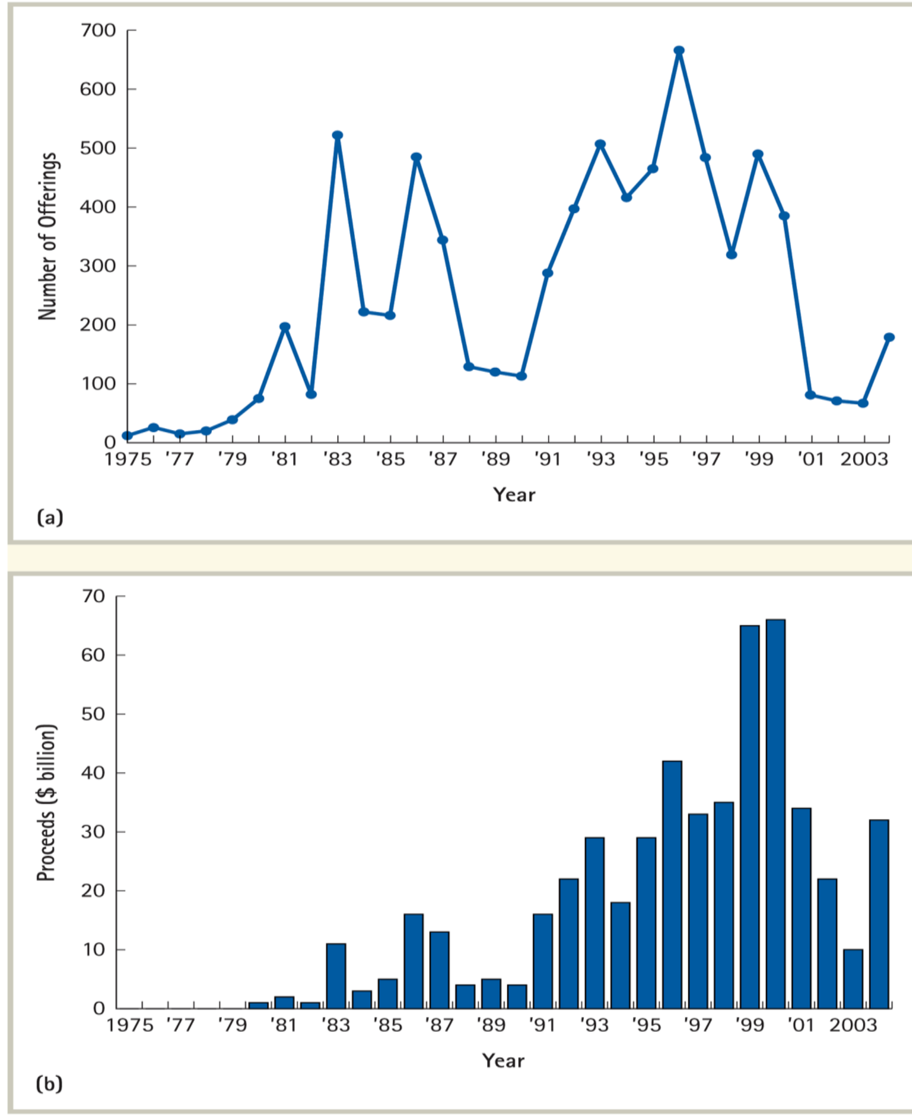
- When an IPO goes well, the demand for the stock exceeds the supply. Thus the allocation of shares for each investor is rationed.
- When an IPO does not go well, demand at the issue price is weak, so all initial orders are filled completely.
- Thus, the typical investor will have their investment in “good” IPOs rationed while fully investing in “bad” IPOs.

Equity Cyclicality of IPOs

The number of issues is highly cyclical.

- When times are good, the market is flooded with new issues; when times are bad, the number of issues dries up.

Cyclicality of Initial Public Offerings in the United States, (1975–2004)



IPOs 2019

FT "Sharp Drop in IPOs stirs fears for shrinking public markets"

- Despite surging 2019 global equity markets last year, the number of new listings fell by a fifth to 1,237…the lowest level in 3 years
- The drop in IPOs comes at a crictical juncture for public markets, which have shrunk over the past two decades, whilst private markets such as private equity and venture capital have expanded

Equity Cyclicality of IPOs

The challenges in listing in 2019 were highlighted by UBER which has suffered a share price fall of about a third since listing in May.

Equity Cyclicality of IPOs

The UK’s protracted exit from the EU has placed pressure on deals in Europe with listing on the LSE falling 62% in 2019.

Saudi Aramco $25.6 bn listing on the Tadawul stock exchange in November 2019 marked the largest of the year and the greatest sum raised in an IPO. That listing alone doubled the total raised in the EMEA region.

Equity Cyclicality of IPOs

UBER's $8.1 bn listing was second largest, followed by the $5.7 bn Hong Kong IPO for Budweiser APAC

Google Unusual IPO

- *The seller (Google) announces how many shares they are looking to sell.
- Any buyer can submit bids in terms of both quantity and price they are willing to pay (such as: I want 500 shares at a price of no more than 100$).
- All bids are ranked from highest price to lowest. Shares are sold to the highest price bids up to the bid which clears the market of shares.
- The price buyers actually pay is the price of the bid that exactly cleared the market.

Equity Costs of Issuing an IPO

- A typical spread is 7% of the issue price.
  - By most standards this fee is large, especially considering the additional cost to the firm associated with underpricing.
  - It is puzzling that there seems to be a lack of sensitivity of fees to issue size.
    - One possible explanation is that by charging lower fees, an underwriter may risk signaling that its services are not the same quality as its higher-priced competitors.

Equity Costs of Issuing an IPO

- Two common statistics in IPOs are ***underpricing*** and ***money left on the table (MLOT)***.
- **Underpricing** is defined as percentage change between the offering price and the first day closing price.
- **Money left on the table** is the difference between the first day closing price and the offering price, multiplied by the number of shares offered.

Equity Costs of Issuing an IPO

- Ebay, Inc. went public in September of 1998. The following information on shares outstanding was listed in the final prospectus filed with the SEC.
- In the IPO, the Ebay issued 3,500,000 new shares. The initial price to the public was $18.00 per share.
  The final first-day closing price was $44.88.
- Calculate the underpricing and money left on the table for Ebay. What does this suggest about the efficiency of the IPO process?

Solution:

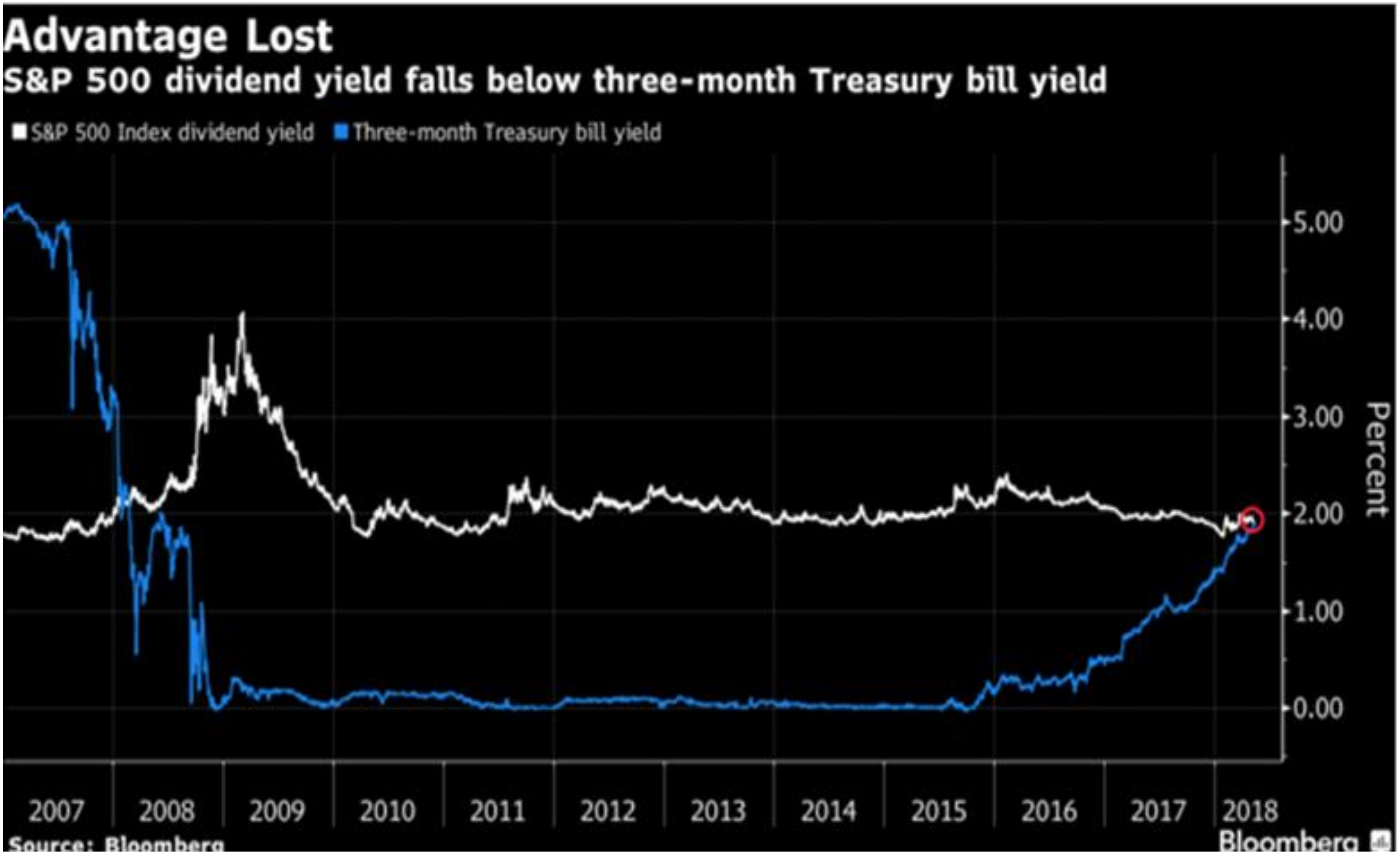
- Underpricing = ((44.88 - 18.00)/18.00) = 149.33%
- MLOT = (44.88 - 18.00) × 3,500,000 = $94,080,000

Miscellaneous - US Equity Volatility
The VIX Index

Why the Vix volatility index matters so much

The FT explains what the Vix is and why the equities volatility index, also known as the fear gauge, was created. This algorithmic measure of market volatility has been in the spotlight, highlighting its use in constructing speculative bets on volatility that have worsened recent market crashes.

- https://www.ft.com/video/b764a800-9438-4b18-835c-9e0312555029?playlist-name=section-c91b1fad-1097-468b-be82-9a8ff717d54c&playlist-offset=80


Advantage Lost
S&P 500 dividend yield falls below three-month Treasury bill yield
S&P 500 Index dividend yield
Three-month Treasury bill yield
5.00
4.00
3.00
2.00
1.00
0.00
Percent
2007
2008
2009
2010
2011
2012
2013
2014
2015
2016
2017
2018
Source: Bloomberg
Bloomberg

Topic Summary (1 of 3)

- Investing in Stocks: we developed an understanding the structure of the various trading systems, including exchanges and OTC markets
- Computing the Price of Common Stock via Price Earnings Valuation & Gordon growth model.

Topic Summary (2 of 3)

- How the Market Sets Security Prices: the basic idea that prices are set by the “highest bidder” was reviewed
- Stock Market Indexes: a way to track changes in valuation for a broad group of stocks
- Buying Foreign Stocks: potential benefits for diversifications, simplified by the use of ADRs.

Topic Summary (3 of 3)

- The Mechanics of an IPO
- IPO Pricing
- VIX
- US Dividend Yields v T-Bills