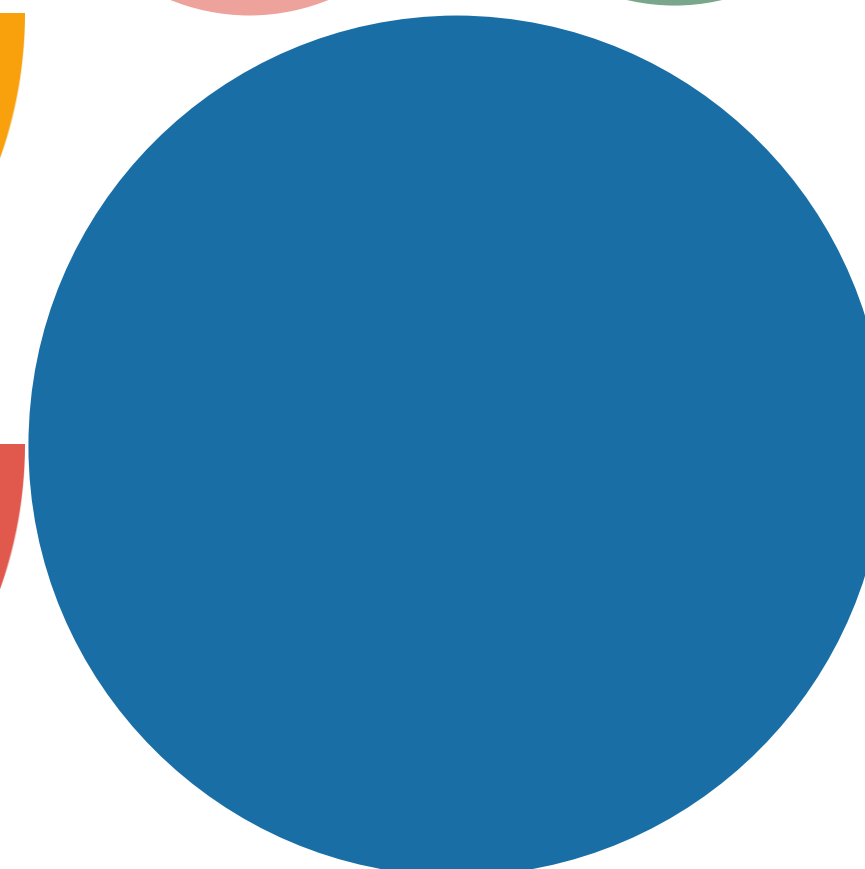
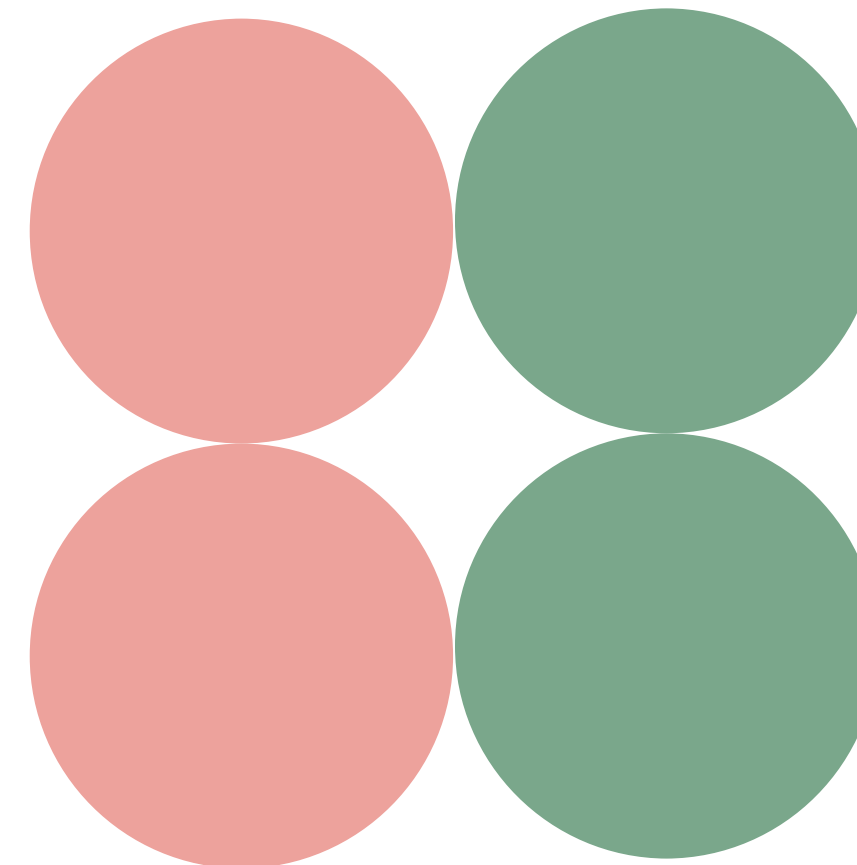




5. Stock Value



Departament de finances empresarials

VNIVERSITAT
DE VALÈNCIA

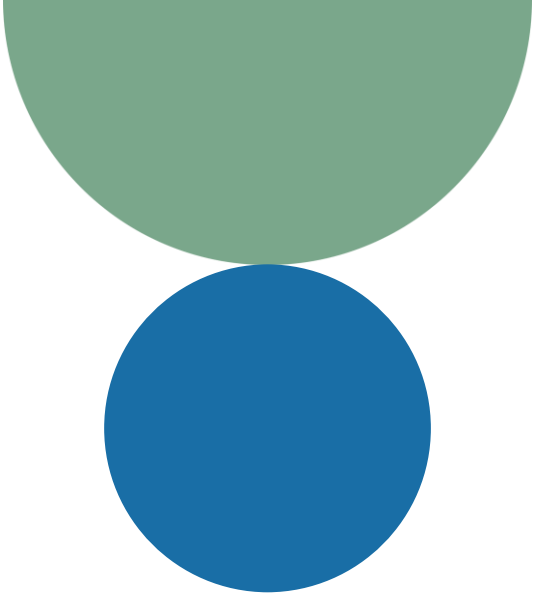
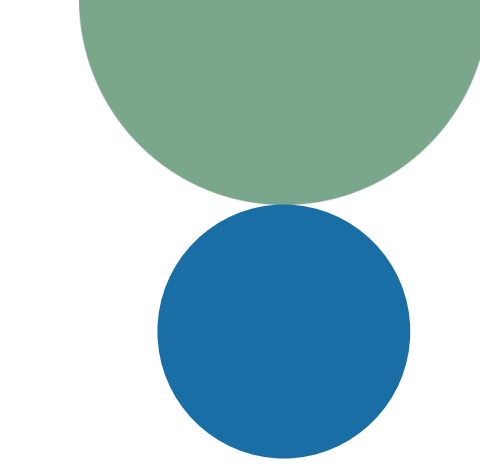
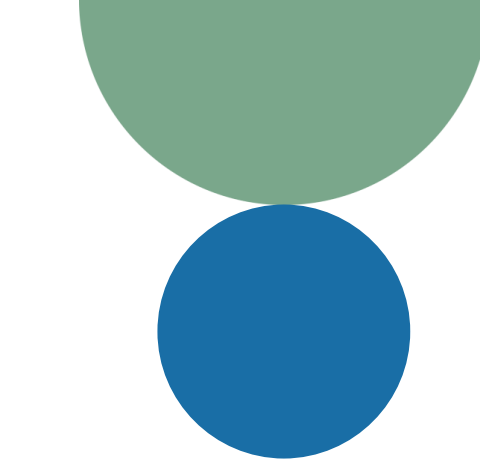


TABLE OF CONTENTS

- 1. Stock Basics
- 2. Factors in Stock Price
- 3. The Dividend Discount Model
- 4. Other Stock Valuation Models

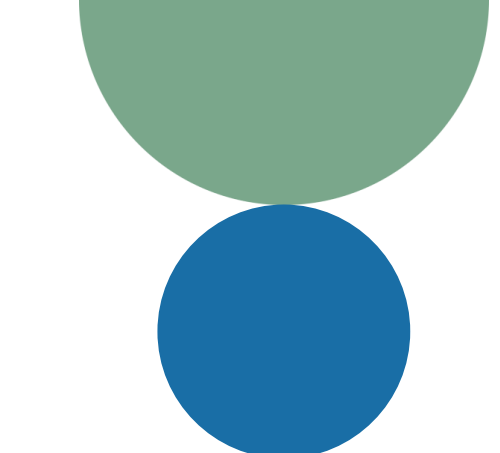


This unit's slides are based on chapter 9, "Stock valuation", of the book *Fundamentals of Corporate Finance* by Jonathan Berk et al. (Pearson 2019).



1. Stock Basics

- Company ownership is often divided into shares. So, a share is a financial asset that represents an aliquot part of the share capital of a public limited company.
 - Shares are therefore a company's **own resources**.
 - Shareholders are a company's owners. They have **economic rights** (the right to receive dividends) and **political rights** (the right to vote at shareholder meetings).
- Investors who acquire shares will receive uncertain income through:
 - **Dividends**: profits distributed to shareholders.
 - **Capital gains**: the difference between the sale price and the purchase price, which may be negative (loss).



1. Stock Basics

Nominal value:

The value of a share's participation in share capital, as recorded in a company's accounts.
(Share capital / Number of shares)

Book value:

The value obtained by dividing a company's net worth by its number of shares.
(Net worth / Number of shares)

Market value:

The price at which a share can be sold on the market. The market value of publicly traded shares is their trading price on the stock exchange.

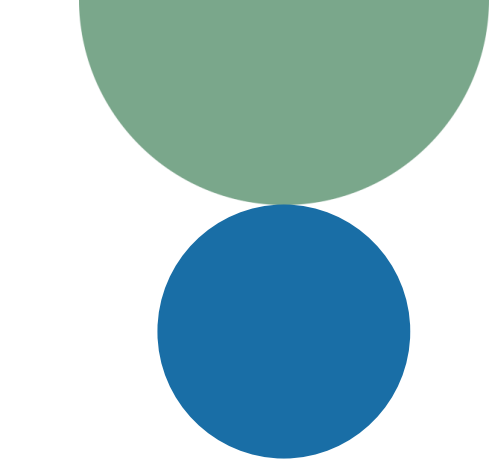
Theoretical value:

The value obtained by discounting the future cash flows a stock is expected to provide at the rate of return required by investors.

1. Stock Basics

NKE Overview





1. Stock Basics

Prev. Close	112.38	Day's Range	105.44 - 108.91	Revenue	46.71B
Open	108.84	52 wk Range	99.53 - 179.1	EPS	3.83
Volume	5,925,116	Market Cap	165.83B	Dividend (Yield)	1.22 (1.15%)
Average Vol. (3m)	6,933,485	P/E Ratio	28.28	Beta	1.02
1-Year Change	-33.73%	Shares Outstanding	1,568,555,905	Next Earnings Date	Sep 29, 2022

Prev. Close:

Stock price at the close of the previous day's session.

Open:

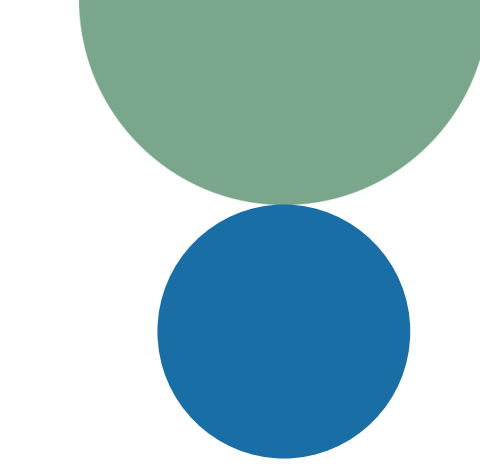
The price of the stock in the investment market at the beginning of the trading day.

Volume:

The number of shares bought/sold over the course of a day.

Average Vol. (3 m)

The average number of shares bought/sold daily in the last 3 months.



1. Stock Basics

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1-Year Change:

Price change in the last year.

Day's Range:

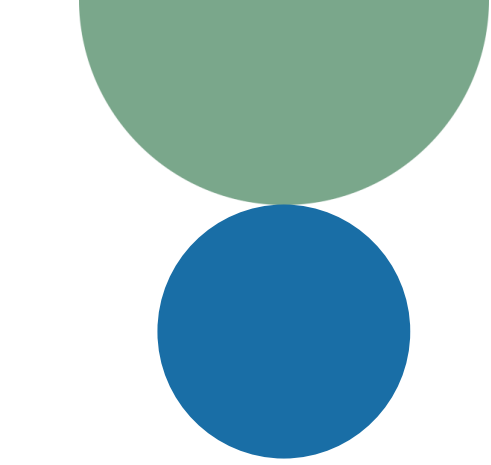
The maximum and minimum values at which the stock has traded in the session.

Volume: 52 wk Range:

The maximum and minimum values at which the stock has traded in the last year.

Market Capitalisation

Number of outstanding shares * Price



1. Stock Basics

Prev. Close	112.38	Day's Range	105.44 - 108.91	Revenue	46.71B
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Price/Earnings Ratio (PER):

Price per share / Net earnings per share

Shares outstanding:

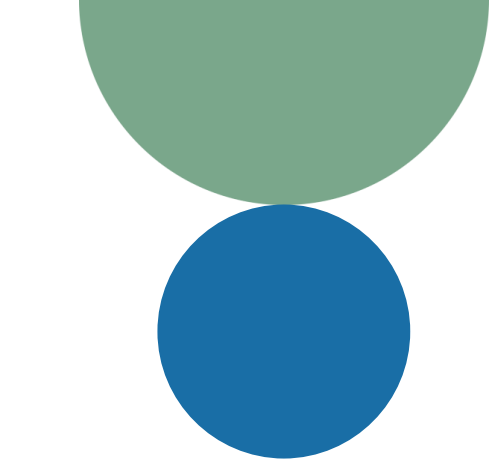
The number of outstanding shares.

Revenue:

The company's revenue.

EPS:

Earnings per share.



1. Stock Basics

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Dividend:

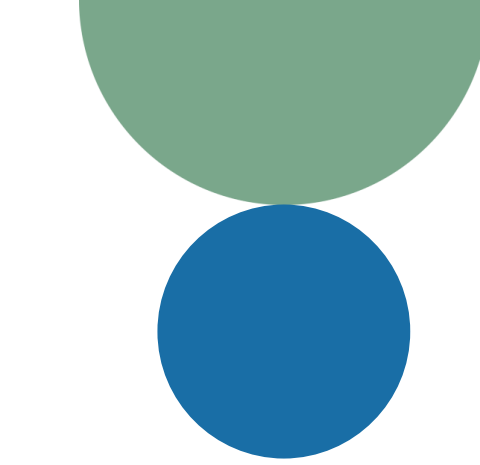
Dividend.

Beta:

A measurement of systematic risk (unit 6).

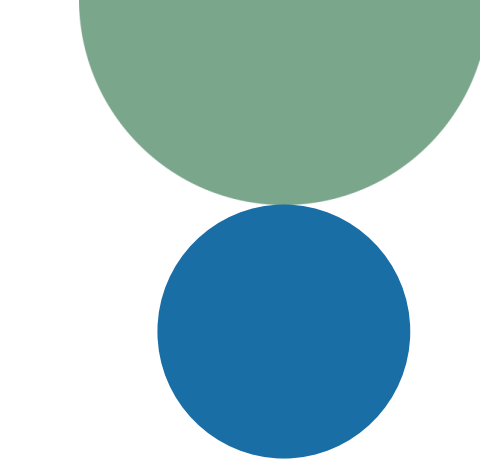
Next Earnings Date:

The date of the company's next earnings report.



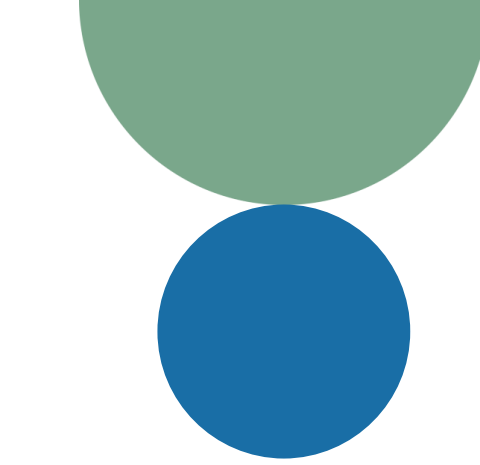
1. Stock Basics

- Stock index: an index is an indicator that tracks variation in the prices of a certain set of stocks or securities, which normally have characteristics in common. In other words, it reflects the aggregate value, with or without weighting, of a group of companies or assets. Indices are a quick and simple means of gauging the performance of a particular type of asset or even an entire country. They are mainly used to measure the general market sentiment in a region or sector.
- IBEX 35: a weighted index of Spain's 35 largest companies in terms of market capitalisation (Price * Number of shares).
- Similar indices around the world: EURO STOXX 50 (Europe), DAX 30 (Germany), FTSE 100 (UK), Nikkei 225 (Japan), S&P 500 (US, 500 companies), Dow Jones (US, 30 companies), Nasdaq (US, technology sector companies).
- Index funds and ETFs are designed to replicate the performance of their respective benchmark indices.



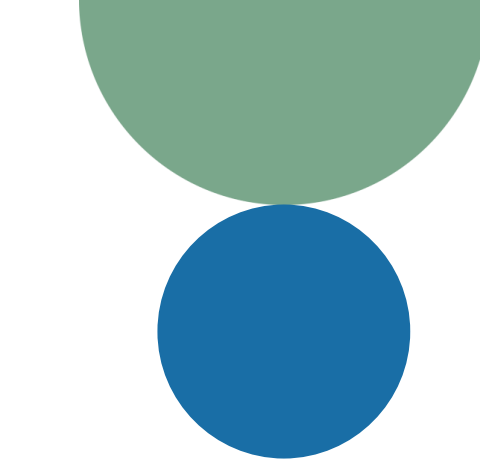
1. Stock Basics

- Index funds: collective investment schemes whose investment policy seeks to replicate the performance of a specific index. For example, an IBEX 35 index fund will aim to have an asset portfolio similar to that of the IBEX 35 stock index. If the composition of the IBEX changes at any time (i.e. if a company is included or excluded), the fund's manager will modify its assets to mirror the change.
- Exchange-traded funds (ETFs): ETFs also seek to replicate the performance of an index. Unlike index funds, however, they are traded on secondary securities markets (as if they were shares). An ETF does not involve buying the shares that make up the relevant index; it is a derivative financial product whose profitability depends on the index it replicates. If the EURO STOXX 35 rises by 5%, for example, the EURO STOXX ETF will do likewise.



1. Stock Basics

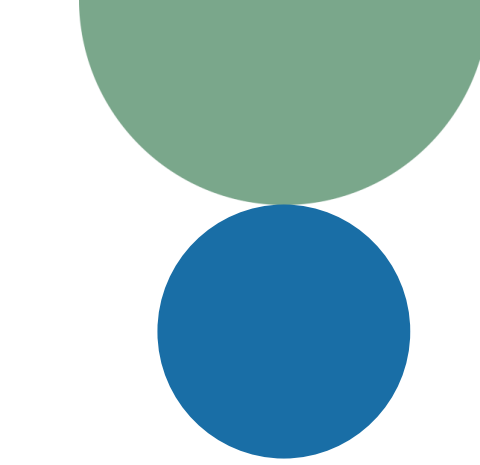
- A **primary securities market** is where fixed or variable-income securities (bonds, shares, etc.) are initially issued, along with the debt or rights they represent. In such markets, companies and government entities introduce financial instruments (i.e. offer them for sale for the first time) and raise funds by collecting savings from investors.
- A **secondary market** is a platform for investors to buy and sell pre-existing securities from and to other investors. Such markets thus provide liquidity for securities that have already been issued by facilitating their purchase and sale. Prices are determined based on supply and demand at the time of trading. Companies do not receive funds from such transactions, although they can benefit from them because the value of a company increases if its share price rises. The secondary market is where the vast majority of transactions are carried out.



1. Stock Basics

Spain's **regulated secondary markets** are as follows:

- The stock exchanges of Madrid, Barcelona, Bilbao, and Valencia, which participate in the capital of the Bolsas y Mercados Españoles (BME) group, the manager of the continuous market or Sistema de Interconexión Bursátil (SIB).
- MEFF, a regulated market for futures, options, and other derivative financial instruments (**unit 7**).
- AIAF, a regulated **fixed-income** market.
- The Comisión Nacional del Mercado de Valores (CNMV) is the body responsible for supervising and inspecting the Spanish securities markets and the activities of those involved in them.
- The CNMV's objective is to ensure the transparency of the markets in question, proper price formation and investor protection.



2. Factors in Stock Price

Factors that influence the price of stocks:

- **Corporate profits and the distribution of dividends:** the greater a company's profits and growth are expected to be, the higher its share price will be.
- **Interest rates:** increases in the profitability of fixed-income assets could discourage the purchase of variable-income assets.
- **Macroeconomic climate:** stock prices tend to rise during economic expansions and fall during recessions.
- **Psychological factors:** bubbles, bullish/bearish spirals, investors' perceptions of a company.

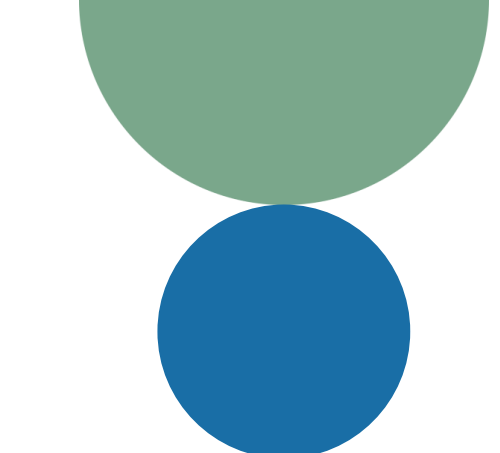
2. Factors in Stock Price



When there are more buy orders than sell orders, the share price goes up; when there are more sell orders than buy orders, the share price goes down.

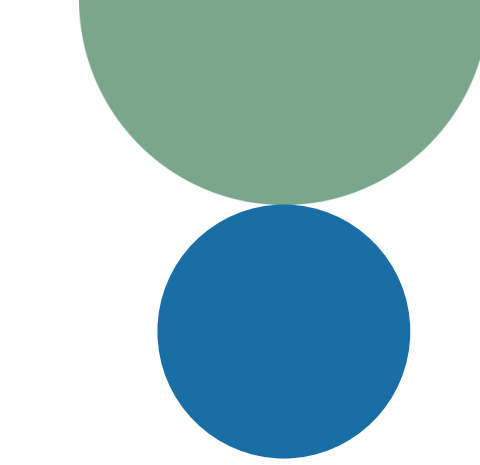
Solaria Energia y Medio Ambiente SA
Diario





3. The Dividend Discount Model

- The valuation principle implies that to value any security, it is necessary to determine the cash flows an investor can expect to receive from owning it.
- Owning a stock offers two potential sources of cash flows:
 - The firm might pay out cash to its shareholders in the form of a dividend.
 - The investor might generate cash by selling shares at a future date (sale of stock).
- Future dividend payments and stock prices are uncertain.
- These values are based on the investor's expectations at the time the stock is purchased.



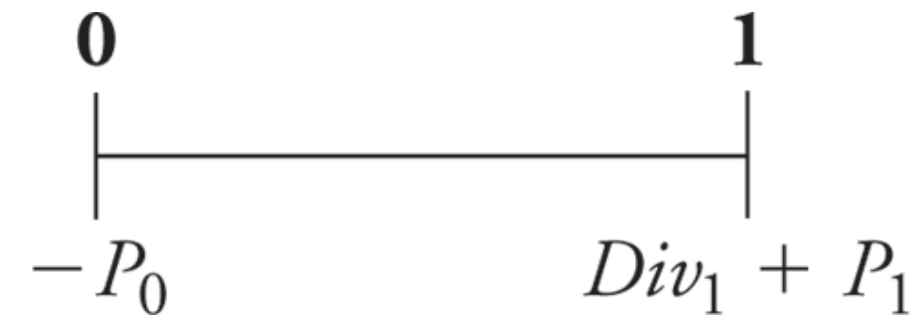
3. The Dividend Discount Model

- Given those expectations, the investor will be willing to pay a price today up to the point at which the benefits equal the cost; in other words, up to the point at which the current price equals the present value of the expected future dividend and sale price.
- The total amount received in dividends and from selling the stock will depend on the investor's investment horizon.

3. The Dividend Discount Model

A one-year investor

- Two potential sources of cash flows from owning a stock:
 - Dividends.
 - Selling shares.



- Since the cash flows are not without risk, they must be discounted at the equity cost of capital.

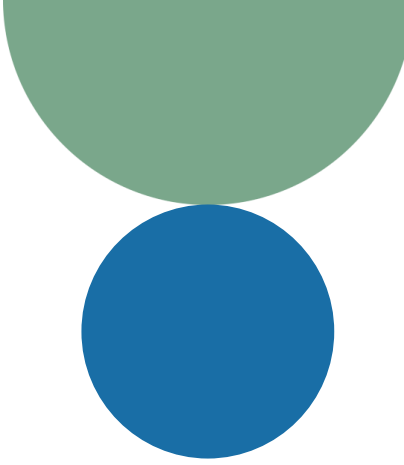
$$P_0 = \frac{Div_1 + P_1}{1 + r_E}$$

3. The Dividend Discount Model

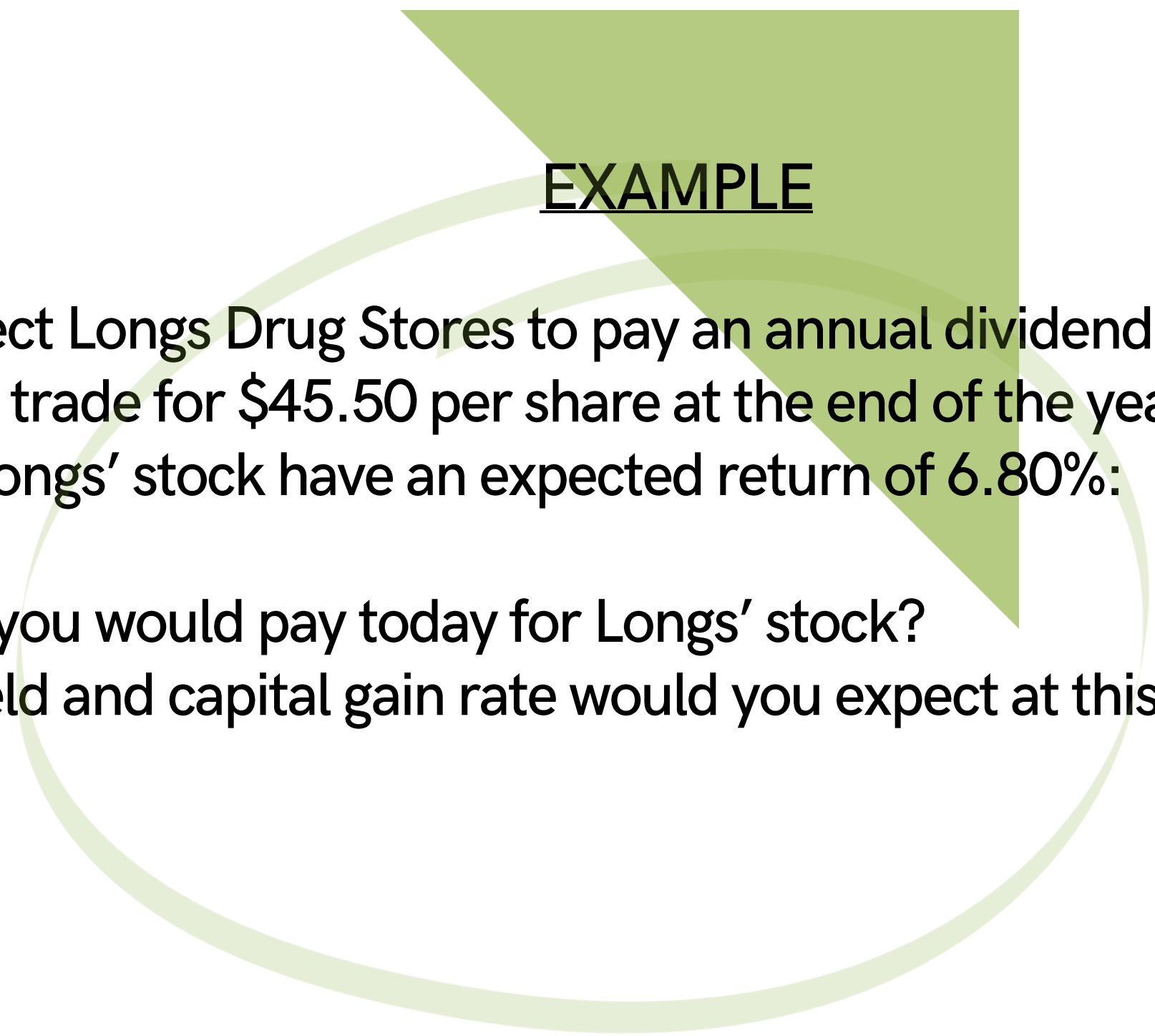
Dividend yields, capital gains and total returns

$$\begin{array}{c} \text{Total Return} \\ r_E = \frac{Div_1 + P_1}{P_0} - 1 = \underbrace{\frac{Div_1}{P_0}}_{\text{Dividend Yield}} + \underbrace{\frac{P_1 - P_0}{P_0}}_{\text{Capital Gain Rate}} \end{array}$$

- The expected total return of a share should equal the expected return of other investments available in the market with equivalent risk.
- Dividend yield: the expected annual dividend of a stock divided by its current price; the percentage return an investor expects to obtain from dividends paid per share.
- Capital gain rate: the difference between the purchase price and the expected sale price of a stock (capital gain), expressed as a percentage of the asset's initial price.

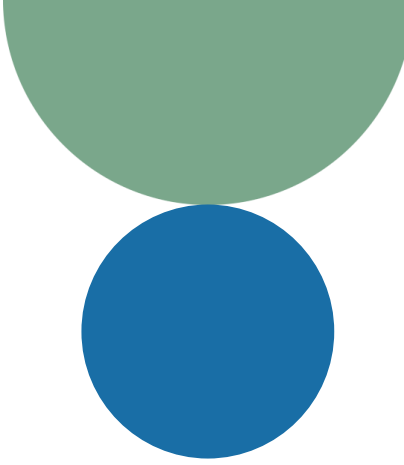


3. The Dividend Discount Model



EXAMPLE

- Suppose you expect Longs Drug Stores to pay an annual dividend of \$0.56 per share in the coming year and to trade for \$45.50 per share at the end of the year. If investments with equivalent risk to Longs' stock have an expected return of 6.80%:
- What is the most you would pay today for Longs' stock?
- What dividend yield and capital gain rate would you expect at this price?

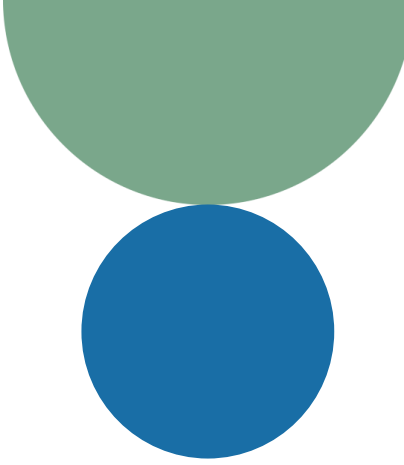


3. The Dividend Discount Model

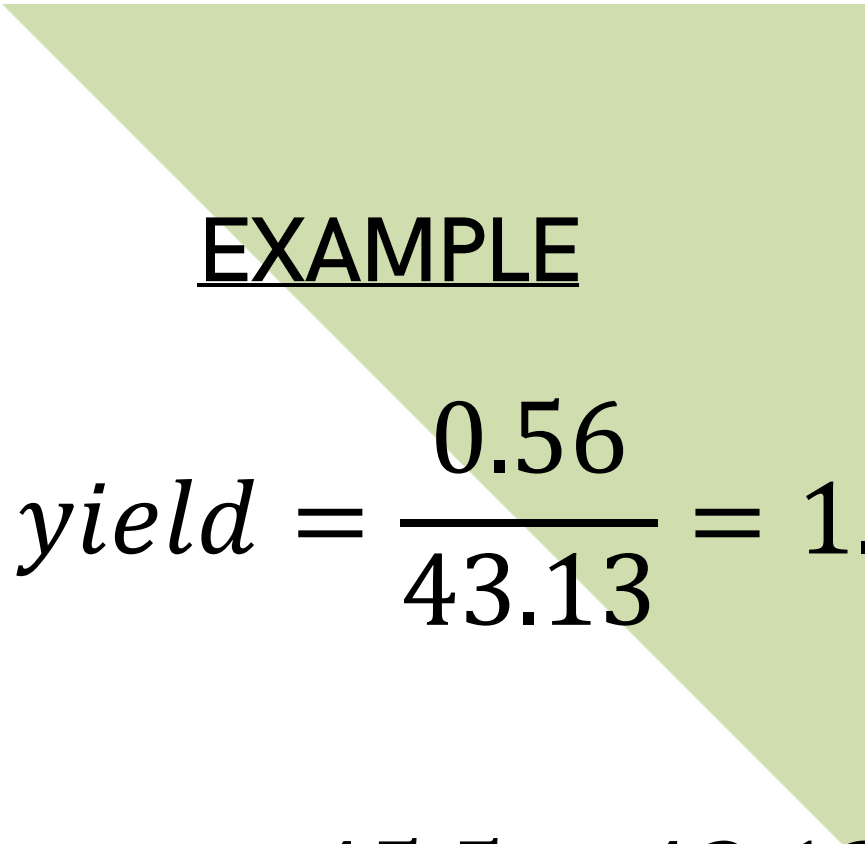
EXAMPLE

$$P_0 = \frac{Div_1 + P_1}{1 + r_E}$$

$$P_0 = \frac{0.56 + 45.5}{1 + 0.068} = 43.13$$



3. The Dividend Discount Model



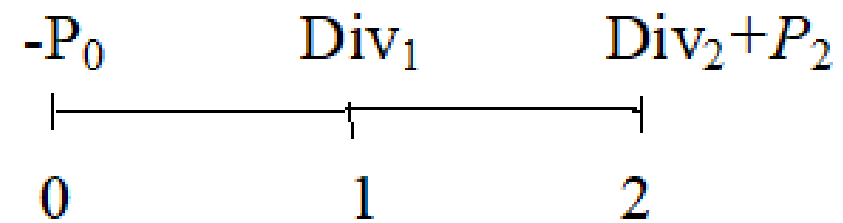
EXAMPLE

$$\textit{Dividend yield} = \frac{0.56}{43.13} = 1.3\%$$

$$\textit{Capital gain rate} = \frac{45.5 - 43.13}{43.13} = 5.5\%$$

3. The Dividend Discount Model

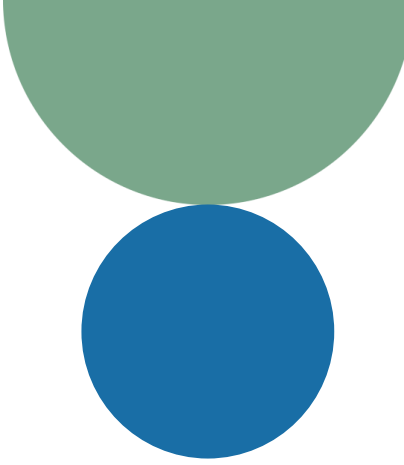
A multiyear investor



$$P_0 = \frac{Div_1}{1+r_F} + \frac{Div_2 + P_2}{(1+r_F)^2}$$

Suppose an investor planned to hold the stock for two years.

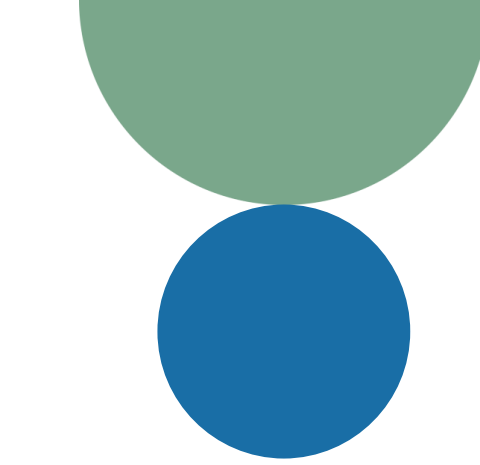
A two-year investor cares about the dividend and stock price in year 2.



3. The Dividend Discount Model

The price of the stock is equal to the present value of all the expected future dividends it will pay, along with the cash flow from the sale in year N.

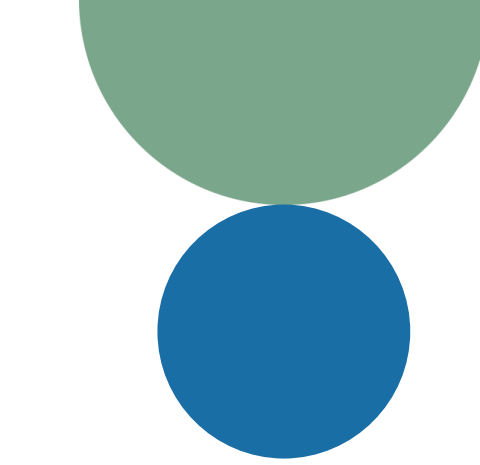
$$P_0 = \frac{Div_1}{1 + r_E} + \frac{Div_2}{(1 + r_E)^2} + \dots + \frac{Div_N}{(1 + r_E)^N} + \frac{P_N}{(1 + r_E)^N}$$



3. The Dividend Discount Model

- In a perpetuity scheme, the price of a stock is equal to the present value of all the expected future dividends it will pay.

$$P_0 = \frac{Div_1}{1 + r_E} + \frac{Div_2}{(1 + r_E)^2} + \frac{Div_3}{(1 + r_E)^3} + \dots$$



3. The Dividend Discount Model

- Constant dividend growth

This model assumes that dividends will grow at a constant rate, g , forever.
The value of the firm depends on the dividend level of next year, divided by the equity cost of capital adjusted by the growth rate.

$$P_0 = \frac{Div_1}{r_E - g} \quad \text{Or} \quad r_E = \frac{Div_1}{P_0} + c$$

3. The Dividend Discount Model

EXAMPLE

- Consolidated Edison, Inc. (Con Edison), is a regulated utility company that services the New York City area. Suppose Con Edison plans to pay \$2.30 per share in dividends in the coming year. If its equity cost of capital is 7% and dividends are expected to grow by 2% per year in the future, estimate the value of Con Edison's stock.

$$P_0 = \frac{2.3}{0.07 - 0.02} = 46$$

3. The Dividend Discount Model

Dividends versus INVESTMENT and GROWTH

- The dividend each year is equal to the firm's earnings per share (EPS) multiplied by its dividend payout rate.

$$Div_t = \underbrace{\frac{\text{Earnings}_t}{\text{Shares Outstanding}_t}}_{EPS_t} \times \text{Dividend Payout Rate}_t$$

The firm can increase its dividend in three ways:

- ▶ It can increase its earnings.
- ▶ It can increase its dividend payout rate.
- ▶ It can decrease its number of shares outstanding.

3. The Dividend Discount Model

- Is it better to increase net profit (retaining profit, paying less dividend and investing in the company) or to distribute more dividend?

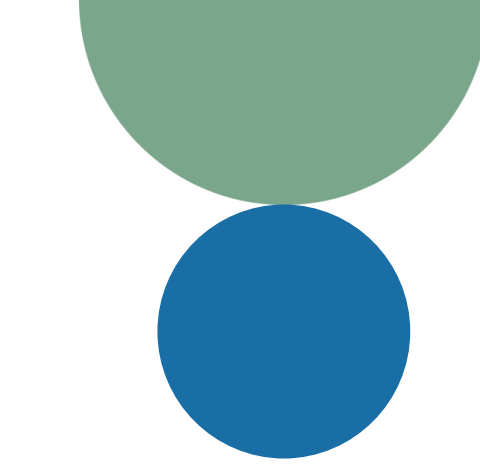
If all increases in future earnings result exclusively from new investment made with retained earnings, then:

$$\text{Change in earnings} = \text{New investment} \times \text{Return on new investment}$$

New investment equals the firm's earnings multiplied by its retention rate, or the fraction of current earnings that the firm retains:

$$\text{New investment} = \text{Earnings} \times \text{Retention rate}$$

$$\begin{aligned} \text{Earnings Growth Rate} &= \frac{\text{Change in Earnings}}{\text{Earnings}} \\ &= \text{Retention Rate} \times \text{Return on New Investment} \end{aligned}$$

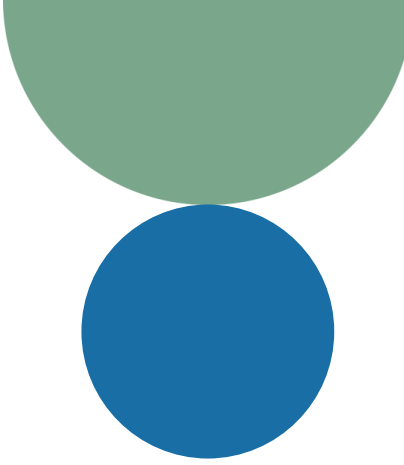


3. The Dividend Discount Model

- If the firm chooses to keep its dividend payout rate constant, then the growth in its dividends will equal the growth in its earnings:

$$g = \text{Retention rate} \times \text{Return on new investment}$$

- ▶ Firms can increase their growth rate by retaining more profit.
- ▶ If they want to increase the stock price, should they reduce the dividend and invest more or reduce their investments and increase the dividend?
- ▶ Reducing the dividend of companies to increase investment will increase the share price if, and only if, the new investments are profitable.



3. The Dividend Discount Model

EXAMPLE

- ▶ Crane Sporting Goods expects to have earnings per share of \$6 in the coming year. Rather than reinvest those earnings and grow, the firm plans to pay them all out as a dividend. With these expectations of no growth, Crane's current share price is \$60.
- ▶ Suppose Crane Sporting Goods decides to cut its dividend payout rate to 75% to invest in new stores and the return on these new investments is 12%. Given its expected earnings per share this year of \$6 and its equity cost of capital of 10% (assuming that the risk of the new investments is the same as that of its existing investments), what will happen to Crane's current share price?

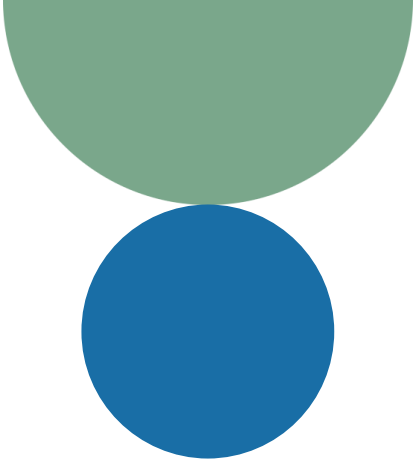


3. The Dividend Discount Model

$$g = 12\% * 25\% = 0.03$$

$$\text{New dividend} = 6 * 75\% = 4.5$$

$$P_0 = \frac{4.5}{10\% - 0.03} = 64.3$$



3. The Dividend Discount Model

Limitations of the dividend discount model

Value drivers and the dividend discount model

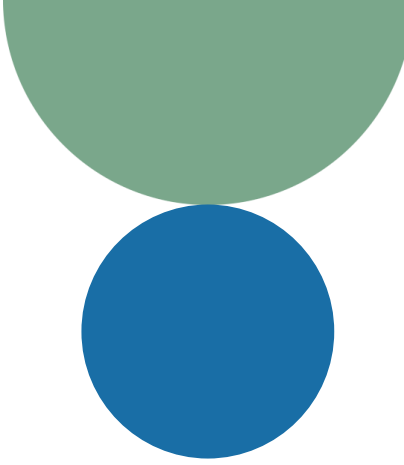
- The dividend discount model includes an implicit forecast of the firm's profitability which is discounted back at the firm's equity cost of capital.

Uncertain dividend forecasts

- The dividend discount model values a stock based on a forecast of future dividends, but a firm's future dividends carry a tremendous amount of uncertainty.

Non-dividend-paying stocks

- Many companies do not pay dividends, so the dividend discount model must be modified.
- Alternative methods are necessary.



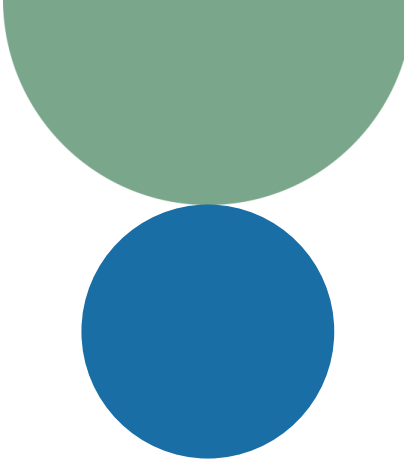
4. Other Stock Valuation Models

The **discounted free cash flow model** focuses on the cash flows to all a firm's investors (debt and equity holders alike).

Enterprise value = Market value of equity + Debt – Cash

Valuing the enterprise

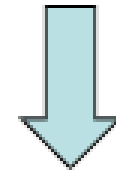
- To estimate a firm's enterprise value, we compute the present value of its free cash flow available to pay all investors.



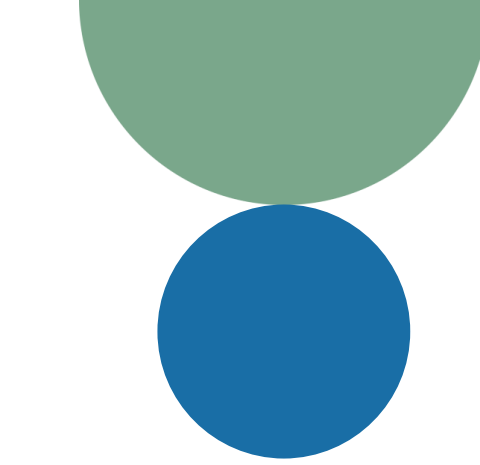
4. Other Stock Valuation Models

Discounted free cash flow model

$V_0 = \text{PV}(\text{Expected Future Free Cash Flow of Firm})$



$$P_0 = \frac{V_0 + \text{Cash}_0 - \text{Debt}_0}{\text{Shares Outstanding}}$$



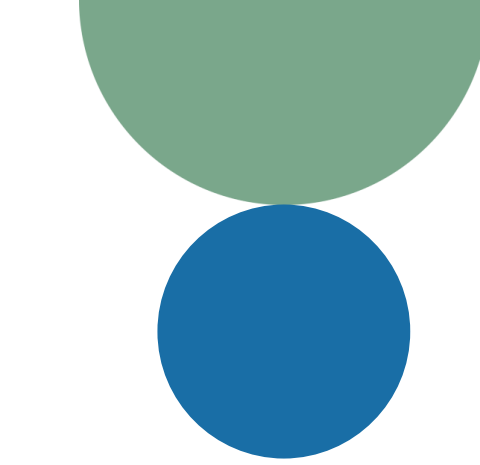
4. Other Stock Valuation Models

Discounted free cash flow model

Since we are discounting the cash flows to all investors, we use the weighted average cost of capital (WACC), denoted by r_{wacc} .

Forecast free cash flow up to some horizon, together with a terminal value of the enterprise:

$$V_0 = \frac{FCF_1}{1 + r_{wacc}} + \frac{FCF_2}{(1 + r_{wacc})^2} + \dots + \frac{FCF_N}{(1 + r_{wacc})^N} + \frac{V_N}{(1 + r_{wacc})^N}$$



4. Other Stock Valuation Models

Discounted free cash flow model

Estimate the terminal value by assuming a constant long-run growth rate g_{FCF} for free cash flows beyond year N .

The long-run growth rate g_{FCF} is typically based on expected long-run growth rate of revenues.

$$V_N = \frac{FCF_{N+1}}{r_{wacc} - g_{FCF}} = \left(\frac{1 + g_{FCF}}{r_{wacc} - g_{FCF}} \right) \times FCF_N$$

SUMMARY

DIVIDEND DISCOUNT MODEL	DISCOUNTED FREE CASH FLOW MODEL
$P_0 = \frac{Div_1 + P_1}{1 + r_E}$	$P_0 = \frac{V_0 + Cash_0 - Debt_0}{Shares\ Outstanding}$
Total Return $r_E = \frac{Div_1 + P_1}{P_0} - 1 = \underbrace{\frac{Div_1}{P_0}}_{\text{Dividend Yield}} + \underbrace{\frac{P_1 - P_0}{P_0}}_{\text{Capital Gain Rate}}$	$V_N = \frac{FCF_{N+1}}{r_{wacc} - g_{FCF}} = \left(\frac{1 + g_{FCF}}{r_{wacc} - g_{FCF}} \right) \times FCF_N$
$P_0 = \frac{Div_1}{1 + r_E} + \frac{Div_2 + P_2}{(1 + r_E)^2}$	$V_0 = \frac{FCF_1}{1 + r_{wacc}} + \frac{FCF_2}{(1 + r_{wacc})^2} + \frac{FCF_3}{(1 + r_{wacc})^3} + \dots + \frac{V_N}{(1 + r_{wacc})^N}$
$P_0 = \frac{Div_1}{1 + r_E} + \frac{Div_2}{(1 + r_E)^2} + \dots + \frac{Div_{n-1}}{(1 + r_E)^{n-1}} + \frac{Div_n + P_n}{(1 + r_E)^n}$	
$P_0 = \frac{Div_1}{r_E - g}$	