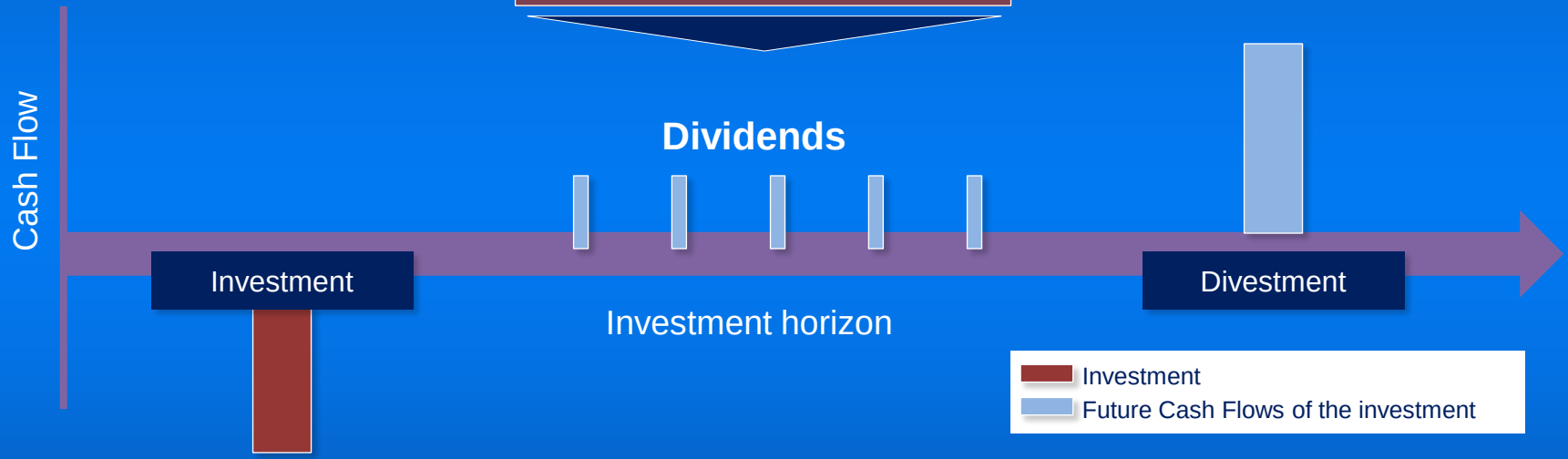
Company valuation

Why discounting future Cash Flows?

365 Careers

Let's consider that an investor wants to buy shares of a company

Primary goal? **Return on Investment**



The Investor buys the shares for a certain price based on his expectations for future Cash Flows deriving from the investment

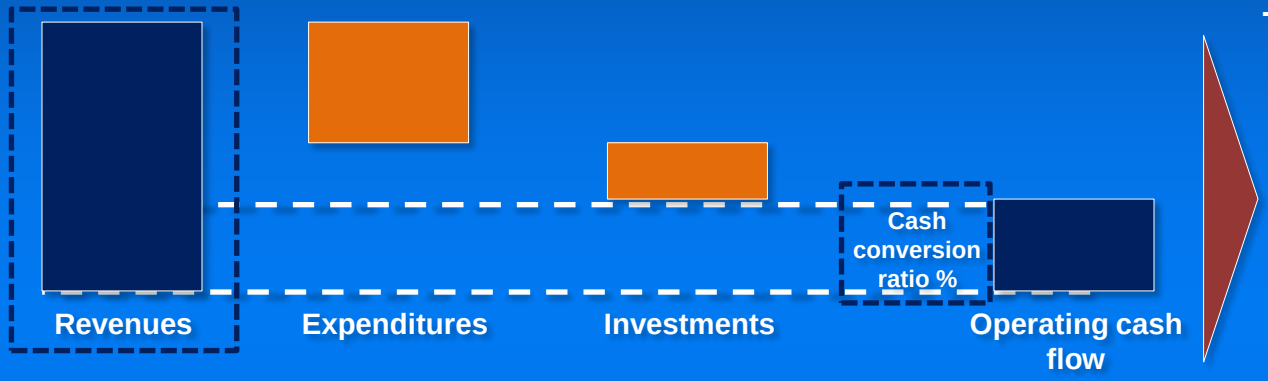
Dividends are a function of future Cash Flows

Divestment price is a function of future Cash Flows

What drives company value?

365 Careers

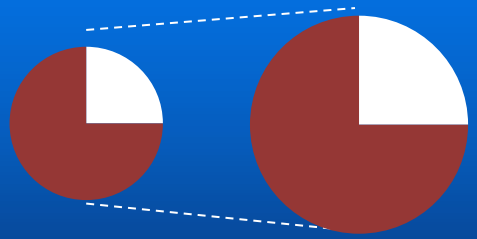
Given that a company's value is a function of its future cash flows we need to determine what drives future cash flows.



Two functions drive a firm's value in the future:

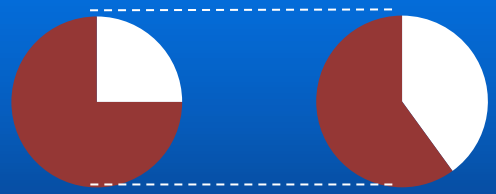
- **Growth**
- **Profitability**

1 Why growth?



- Bigger size
- Same conversion ratio

2 Why profitability?



- Same size
- Stronger conversion ratio

Higher future cash flows, higher valuation

Calculating Cash Flow: NOPAT

365 Careers

1 **NOPAT (Net Operating Profit After Taxes) :**

$ in million	Year 1	Year 2	Year 3
Net Sales	17,022	18,341	18,549
Cost of goods sold	(9,483)	(9,822)	(9,857)
Gross Margin	**7,539**	**8,519**	**8,692**
Operating expenses	(3,492)	(4,394)	(4,123)
D&A	(487)	(511)	(693)
EBIT	**3,560**	**3,614**	**3,876**
Tax rate	35%	35%	35%
Operating taxes	(1,246)	(1,265)	(1,356)
NOPAT **1**	**2,314**	**2,349**	**2,520**

NOPAT is a measure of operating profitability. It does not take into consideration financial structure. Interest expense is not included in the calculation above.

Calculating Cash Flow: Working Capital & Capex

365 Careers

2 Working Capital

$ in million	Year 1	Year 2	Year 3	DeltaY1-Y2	Calculate cash effect
Account receivables	3,621	4,174	3,492	-553	-(Receivables Y2-Receivables Y1)
Inventories	2,311	1,813	2,104	-498	-(InventoriesY2-InventoriesY1)
Trade payables*	(3,383)	(4,207)	(3,212)	824	-(PayablesY2-PayablesY1)
Working Capital 2	**2,549**	**1,780**	**2,384**	**-227**	

*Please note that Trade Payables are with a negative sign because they are a liability

3 Capital Expenditures

Capital expenditure is the cost which the company sustains in order to replace old PP&E or Acquire new PP&E.

A reasonable assumption is that a growing business will need additional PP&E investments.

4 Other assets and liabilities

Operating → Used for the generation of Operating Cash Flows; Could be modeled as a % of revenues

vs.

Non-operating → Not used for the generation of Operating Cash Flows; Their value (positive or negative) should be added/(subtracted) to Enterprise Value

Calculating Cash Flow

$ in million

NOPAT

Add-back D&A

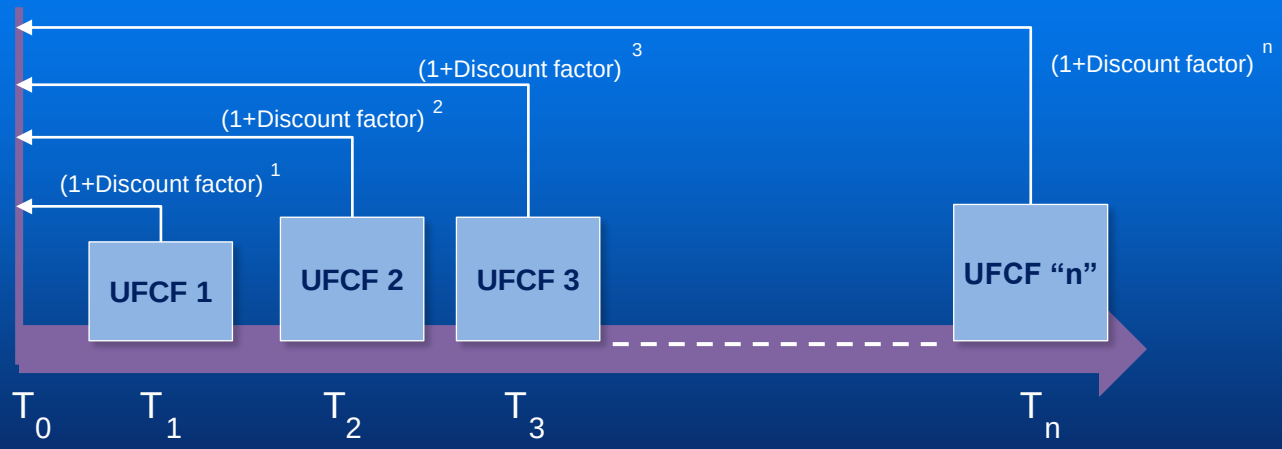
- ▲ Working capital
- ▲ Net other assets, liabilities

Capex

Unlevered Free Cash Flow

!Free Cash Flows are available to both debt and equity investors!

NOPAT	Net Operating Profit After Taxes is a measure of operating profitability
Add-back D&A	D&A is added back as it is not a Cash expense
Delta Working Capital	Growing a business requires investments in Receivables and Inventory and generates more Payables
Delta Net Other Operating assets	Similar to Working Capital. As a business grows it needs more other operating assets
Capex	Expenditure for PP&E used to replace old PP&E or acquire new PP&E in order to support the growth of the business



Finding a proper discount factor: WACC

365 Careers

There are two types of financial investors in a firm

- **Debt investors**
- **Equity investors**

Free cash flow is available to both debt and equity investors

WACC
(*Weighted average cost of capital*)

Takes into consideration both debt and equity investors

WACC (*Weighted Average Cost of Capital*) represents the opportunity cost that investors sustain for investing their funds in the firm

$$WACC = \left(\frac{D}{D+E}\right) * k_d * (1-t) + \left(\frac{E}{D+E}\right) * k_e$$

D = Amount of debt financing

E = Amount of equity financing

k_d = Cost of debt

k_e = Cost of equity

t = Tax rate

Finding cost of equity and cost of debt

365 Careers

	Methodology	Needed data	Practical implementation
Cost of debt	▪ Market value of debt	▪ Bond current pricing	Use the bond's Yield to Maturity
	▪ Book value of debt	▪ Book value of Financial debt in BS ▪ Interest expense in P&L	Divide Interest expense to the amount of Financial debt
Cost of equity	▪ CAPM (Capital Asset Pricing Model) $k_e = r_f + \beta * Market\ risk\ Premium$	▪ Risk-free rate	Use a 10 year government bond
		▪ Market Risk Premium	Studies show it is between 4.5% and 5.5%
		▪ Company beta	A measure of the stock's volatility in relation to the market. Available in financial platforms such as Bloomberg, Thomson Reuters etc.

Two stages of DCF

365 Careers

Stage 1 *Stage 2*

Present Value of Free Cash Flows = **Cash Flows in the Forecast period** (5-10 years) + **Continuing value** (After forecast)

	Description	Needed data	Math formula
Forecast period (Stage 1)	The length of the explicit forecast period should allow the business to enter a steady state in its development	▪ Free Cash Flow Forecast (5 or 10 years ▪ WACC	$\frac{FCF_1}{(1+WACC)^1} + \frac{FCF_2}{(1+WACC)^2} + \frac{FCF_3}{(1+WACC)^3} + \frac{FCF_4}{(1+WACC)^4} + \frac{FCF_5}{(1+WACC)^5}$
Continuing Value (Stage 2)	Continuing Value is the period after the explicit forecast period. Often a large portion (>50%) of a company's valuation lies in its Continuing Value	▪ Free Cash Flow Forecast for 5th year ▪ WACC ▪ Perpetuity growth rate (g)	$\frac{\frac{FCF_5 * (1+g)}{(WACC-g)^1}}{(1+WACC)^5}$

From Enterprise Value to Equity Value

365 Careers

	Present Value of Free Cash Flows
+	Non-operating Assets (1)
	Enterprise Value
-	Net debt (2)
-	Debt-like items (3)
	Equity Value

1. **Non-operating Assets: These are assets which are not used for the operating business of the company.**
   - Non-operating real estate, personal cars, financial subsidiaries etc.
2. **Net debt: Interest-bearing financial debt minus cash**
   - Debt to banks, Bond issues, Leases etc.
3. **Debt-like items: Non-interest bearing liabilities which are not considered within Free Cash Flow**
   - Provisions, Unfunded Pension liabilities, Liabilities from litigation, etc.