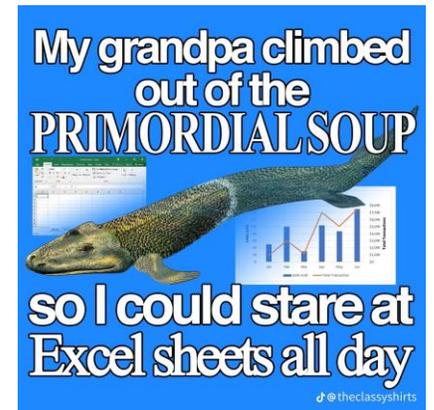
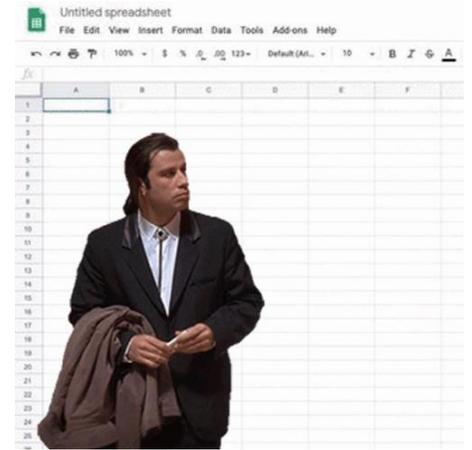


Business Valuation Voodoo

101





Scan to log your attendance

cybergoesbaarlo.nl/api/events/8XWS3MLS894WAWQ5/qr?scale=8&mode=png

What will you gain today?

How to get rich quick?!?

- + Knowledge of the ways you can value a business and why you would use which.
- + An understanding of how to use one of the most common valuation methods - Discounted Cash Flow (DCF) Analysis.
- + Free spreadsheet template
- + A strange 6th sense for shareholder value?

Content

1. Valuation methods and use cases
2. Discounted cashflow analysis (DCF) deep dive
 - Fundamentals
 - DCF walkthrough & Assumptions – Proctor & Gamble

1. Valuation methods and use cases

Valuing Valuation

Businesses are commonly valued by a combination of valuation methods.

Business valuation...

Can be understood as: *a comprehensive process of determining the economic value of a business or business unit.*

Is critical to: *various financial decisions, including mergers and acquisitions, investment analysis, capital budgeting, and financial reporting.*

Is commonly performed by (a combination of) various valuation methods:

Discounted Cash Flow (DCF)

This intrinsic valuation method involves forecasting the company's free cash flows and discounting them back to their present value using the company's weighted average cost of capital (WACC).

Comparable Companies (Comps)

This method involves valuing a company by comparing it to other publicly traded companies with similar operational and financial characteristics.

Precedent Transactions

This method looks at the prices paid for similar companies in past transactions. It provides a relative valuation metric based on historical sale prices and often includes a control premium for acquiring a controlling stake in a business.

Other methods:

- Leveraged Buyout (LBO) Analysis
- Dividend Discount Model (DDM)
- Liquidation Value
- Replacement Cost
- ...

Focus for today

When to use which

Valuation methods have different use cases.

Focus for today

Discounted Cash Flow (DCF)

Best suited to companies with stable and predictable cash flows, typically mature companies in stable industries.

E.g. Utilities, mature technology firms, established consumer goods companies

- + Intrinsic Value Focus
- + Flexibility
- + Long-term Perspective
- Sensitivity
- Complexity
- Subjectivity

DCF walkthrough & Assumptions - Procter & Gamble
Tell me the general approach with an example. (Or, you can go your quality into details on this level)

Company Name	Market Data			Financial Data				Valuation			
	Price (\$/share)	Market Cap (\$M)	TEV (\$M)	Sales (\$M)	EBITDA (\$M)	EBIT (\$M)	Earnings (\$M)	EV/Sales x	EV/EBITDA x	EV/EBIT x	P/E x
The Coca-Cola Company	38.14	168,041	185,122	46,854	13,104	11,127	7,381	4.0x	14.1x	16.6x	22.8x
PepsiCo, Inc.	81.37	123,883	143,824	66,415	12,344	9,878	5,618	2.2x	11.7x	14.6x	22.1x
Dr Pepper Snapple Group, Inc.	52.31	10,326	12,764	5,997	1,319	1,103	620	2.1x	9.7x	11.6x	16.7x
Monster Beverage Corporation	69.62	11,618	11,004	2,246	606	584	357	4.9x	18.1x	18.9x	32.5x
National Beverage Corp.	20.81	964	968	645	78	66	41	1.5x	12.5x	14.6x	23.5x
Average								2.9x	13.2x	15.3x	23.5x
Median								2.2x	12.5x	14.6x	22.8x

Comparable Companies (Comps)

Best suited to companies that have publicly traded peers with similar business models and financial metrics.

E.g. Retail chains, banking institutions, large-cap tech companies with clear industry benchmarks.

- + Market-Based
- + Simplicity
- + Industry Benchmarking
- Lack of Precision
- Limited Data Availability

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Precedent Transactions

Best suited to companies in industries where mergers and acquisitions are common and recent transaction data is available.

E.g. Pharmaceutical firms, biotech companies, technology startups with recent acquisition activity.

- + Real Transaction Data
- + Industry Specific
- Data Relevance
- Transaction Specific
- Timing Issues

Precedent Transaction Rationale

- Which transactions did you select to value Company A? Why? What similarities exist between the target and Company A?
- On what ways would Company A command a higher TV if they were put in the position of a target? What competitive advantages does Company A have over past transaction targets?
- How are the industry verticals classified relative to Company A and its strategy? Is there an identifiable trend over time regarding industry multiples? Are they contracting or expanding? Why? What's the secular driver within the industry?

Target	Buyer	Transaction	LTM	EV/LTM							
Company J	New	Company S	Declining	\$82,700	July 26, 2017	2017	\$7,862	\$3,472	\$1,624	2.2x	4.9x
Company K	Growing	Company T	Stagnating	\$38,040	August 15, 2016	2016	\$2,207	\$1,686	\$393	1.3x	5.6x
Company L	Declining	Company U	Stagnating	\$74,220	March 27, 2015	2015	\$56,513	\$36,958	\$7,916	2.3x	7.2x
Company M	Declining	Company V	Stagnating	\$63,060	January 8, 2013	2013	\$1,077	\$709	\$399	1.5x	4.2x
Company N	Stagnating	Company W	Declining	\$36,820	July 1, 2010	2010	\$5,098	\$4,682	\$2,580	1.1x	2.0x
Company O	Growing	Company X	Declining	\$113,260	April 4, 2006	2006	\$880	\$1,611	\$438	0.5x	2.0x
Company P	Growing	Company Y	Growing	\$30,480	March 2, 2006	2006	\$1,658	\$82	\$22	20.2x	75.3x
Company Q	New	Company Z	Stagnating	\$79,150	June 26, 2004	2004	\$1,938	\$610	\$120	3.2x	16.2x
Company R	Growing	Company AA	Growing	\$80,760	October 1, 2002	2002	\$2,027	\$720	\$286	2.8x	8.0x
Average										3.9x	13.9x
Company A										3.9x	9.9x

Discounted cashflow (DCF) analysis deep dive

Fundamentals

One step at a time

1. Study the Target & Determine Key Performance Drivers
2. Project Free Cash Flow
3. Calculate the Weighted Average Cost of Capital (WACC)
4. Determine Terminal Value
5. Calculate Present Value
6. Determine Valuation

1. Study the Target & Determine Key Performance Drivers

"An investment in knowledge pays the best interest." – That guy with his face on the \$100 bill



Sources

10K – Annual reporting

10Q – Quarterly reporting

MD&A – Management Discussion & Analysis

Equity Research

...

2. Project Free Cash Flow

Arghh no! Not the numbers!?!#\\$

Business value depends on the quantity and timing of future cash flows.

How do we calculate free cash flow and project it?

	Historical period			Projection period					
Cash flow projection	2021	2022	2023	2024	2025	2026	2027	2028	Terminal
Revenue	\$ 76.117	\$ 80.187	\$ 82.006	\$ 85.129	\$ 88.370	\$ 91.735	\$ 95.228	\$ 98.854	\$ 101.325
<i>% growth</i>		5,3%	2,3%	3,8%	3,8%	3,8%	3,8%	3,8%	2,5%
EBIT	\$ 17.986	\$ 17.813	\$ 18.134	\$ 19.284	\$ 20.018	\$ 20.780	\$ 21.571	\$ 22.393	\$ 22.952
<i>% of revenue</i>	23,6%	22,2%	22,1%	22,7%	22,7%	22,7%	22,7%	22,7%	22,7%
(-) Income Tax	\$ 3.263	\$ 3.202	\$ 3.615	\$ 3.603	\$ 3.740	\$ 3.883	\$ 4.030	\$ 4.184	\$ 4.288
<i>% tax rate</i>	18,1%	18,0%	19,9%	18,7%	18,7%	18,7%	18,7%	18,7%	18,7%
EBIAT	\$ 14.723	\$ 14.611	\$ 14.519	\$ 15.681	\$ 16.278	\$ 16.897	\$ 17.541	\$ 18.209	\$ 18.664
(+) D&A	\$ 2.735	\$ 2.807	\$ 2.714	\$ 2.955	\$ 3.108	\$ 3.153	\$ 3.328	\$ 3.436	\$ 3.529
<i>% of CapEx</i>	98,1%	88,9%	89,7%	92,3%	92,3%	92,3%	92,3%	92,3%	92,3%
(-) CapEx	\$ 2.787	\$ 3.156	\$ 3.026	\$ 3.203	\$ 3.369	\$ 3.418	\$ 3.607	\$ 3.724	\$ 3.826
<i>% of revenue</i>	3,7%	3,9%	3,7%	3,8%	3,8%	3,7%	3,8%	3,8%	3,8%
(-) Change NWC	\$ (1.840)	\$ (4.004)	\$ (2.411)	\$ (2.937)	\$ (3.049)	\$ (3.165)	\$ (3.286)	\$ (3.411)	\$ (3.496)
<i>% change in revenue</i>	-2,4%	-5,0%	-2,9%	-3,5%	-3,5%	-3,5%	-3,5%	-3,5%	-3,5%
Unlevered FCF	\$ 16.511	\$ 18.266	\$ 16.618	\$ 18.370	\$ 19.066	\$ 19.798	\$ 20.547	\$ 21.331	\$ 21.864

Calculation

3. Calculate the Weighted Average Cost of Capital (WACC)

Not for today!

A company's weighted average cost of capital (WACC) is the blended cost a company expects to pay to finance its assets.



WACC Formula and Calculation

$$\text{WACC} = \left(\frac{E}{V} \times Re \right) + \left(\frac{D}{V} \times Rd \times (1 - Tc) \right)$$

where:

E = Market value of the firm's equity

D = Market value of the firm's debt

$V = E + D$

Re = Cost of equity

Rd = Cost of debt

Tc = Corporate tax rate

Capital Asset Pricing Model (CAPM) Formula

The formula for calculating the expected return of an [asset](#), given its [risk](#), is as follows:^[1]

$$ER_i = R_f + \beta_i(ER_m - R_f)$$

where:

ER_i = expected return of investment

R_f = risk-free rate

β_i = beta of the investment

$(ER_m - R_f)$ = market risk premium

Lets use assumptions today

Company Type	WACC Range (%)
Established Companies	7% to 12%
High-Growth or High-Risk Companies	10% to 20%
Startups and Early-Stage Companies	> 20%

4. Determine Terminal Value

Businesses will eventually stop outgrowing the economy

Discrete forecast	Projection period
When the company is expected to grow faster than the economy	When the company is expected to grow at the same rate as the economy
Grow by company specific growth assumption(s)	Grow by GDP growth assumption(s)
Typically 5-10 years for DCF modelling purposes	Terminal Year

Calculate using:

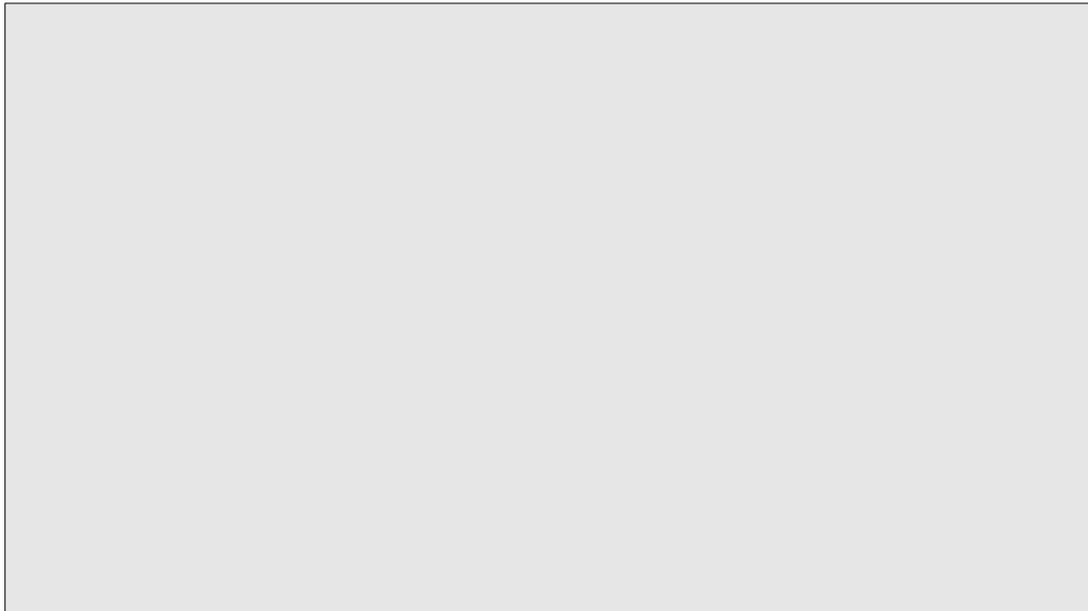
- Perpetuity growth method
- Exit multiple method

Terminal Value	
Perpetuity Approach	Exit Multiple Approach
The perpetuity approach attaches a constant growth rate onto the forecasted cash flows of a company after the explicit forecast period.	The exit multiple approach applies a comps-derived valuation multiple to a metric of the company to estimate its terminal value.
$\text{Terminal Value} = \frac{\text{Final Year FCF} \times (1 + \text{Perpetuity Growth Rate})}{(\text{Discount Rate} - \text{Perpetuity Growth Rate})}$	$\text{Terminal Value} = \text{Final Year EBITDA} \times \text{Exit Multiple}$

Focus for today

5. Calculate Present Value

To account for the time value of money, we need to discount future cashflows.



Discounted Cash Flow Formula

The formula for DCF is:

$$DCF = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \frac{CF_n}{(1+r)^n}$$

where:

CF_1 = The cash flow for year one

CF_2 = The cash flow for year two

CF_n = The cash flow for additional years

r = The discount rate

Unlevered FCF	\$ 18.370	\$ 19.066	\$ 19.798	\$ 20.547	\$ 21.331
Present value of FCF	\$ 17.330	\$ 16.968	\$ 16.623	\$ 16.275	\$ 15.940

6. Determine Valuation

Nearly there...

Enterprise Value is calculated by summing up Present Value

$$\text{Present Value}_{y_1} + \text{Present Value}_{y_1} + \text{Present Value}_n + \text{Present Value}_{\text{Terminal}} = \text{Enterprise Value}$$



Equity value is calculated by adding cash and subtracting net debt

$$\text{Enterprise Value} + \text{Cash} - \text{Net Debt} = \text{Equity value}$$



Share Price is calculated by dividing Equity Value by Shares Outstanding

$$\text{Equity Value} / \text{Shares Outstanding} = \text{Share Price}$$

Q&A