Valuation Workshop

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CAMBRIDGE APEX FUND

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Introduction

- 1st workshop and P72 talk should have given you a broad overview of the *philosophy* of investing

- We now look at specific concepts, which will be needed for your final pitches

- Will *not* cover the actual implementation in excel – see linked resources (learn by doing)

- Valuation is a deep topic:
  - Hard to judge the experience level of the audience
  - Skimming over several topics
  - Links for further reading at the end

What is valuation?

- Valuation is a **tool** for converting *views* into price targets.
  - Not a machine that takes company → price
  - Does not replace the need for thinking!
- A pitch is not a valuation: valuation is only one aspect of a pitch.
- Two philosophies:
  - **Intrinsic valuation** – present value of future cash flows
  - **Relative valuation** – what do people pay for similar assets?

Discounted Cash Flow Valuation

DCFs

- Intrinsic value = present value of expected future cash flows
- Time value of money:
  - How much is $100 of cash next year worth to you today?
  - Use a **discount rate**
  - Depends on the riskiness of the cash flows relative to other opportunities
- Typically, you only explicitly forecast cash flows for 5-10y
  - Afterwards, assume the company grows at the **perpetuity** rate of the overall economy (can use 10y T-bond rate, ~2.5%)
  - In FY10, the PV of future CFs is the **terminal value**, which must be discounted back to the present

What are we valuing?

- **Enterprise value**
  - How much would it cost to buy the company?
  - Both equity and debt holders have a claim
  - EV = mcap + debt – cash = mcap + net debt
- Enterprise value = PV of free cash flows to the firm (FCFF)
  - FCFF = NOPAT + noncash expenses – reinvestment
- Riskiness of these cash flows depends on both riskiness of debt and equity: appropriate discount rate is the **weighted-average cost of capital** (WACC)
- FCFF vs FCFE?
  - Use FCFF unless you are dealing with FIG.
  - For ultra-stable companies, consider dividend-discount model.

Walk me through a DCF

1. Revenue: sell 100 lemonades for $2 each => $200 revenue

2. Operating profit: subtract out cost of lemonades, labour etc.

3. Pay your taxes! NOPAT

4. Investment in the business:
   - Working capital (e.g buying more lemons)
   - CapEx (e.g buying a new juicer)

5. What's leftover is FCFF

6. Compute terminal value (either perpetuity or exit multiple)

7. Sum discounted FCFFs and TV to get enterprise value

8. Subtract debt, add cash to get equity value.

9. Divide by diluted shares outstanding to get share price

DCFs in practice

- Spend your time and brainpower on the **input assumptions**

- 3 statement models? Ok... but don't lose the forest for the trees

- Most important:
  - Revenue
  - Operating margin
  - Reinvestment rate
  - (WACC – important but formulaic)

- How to come up with inputs? This is why investors get paid!

- Sensitivity analysis is your friend

SBUX

		Terminal Growth				
		1.5%	2.0%	2.5%	3.0%	3.5%
	7.4%	54.4	58.51	63.46	69.53	77.16
	7.6%	53	56.49	61.05	66.60	73.5
WACC	7.8%	51.41	55.01	59.29	64.47	70.88
	8.0%	49.56	70.45	77	83	95.42
	8.2%	48.13	51	54.84	59.16	64.4

Case study: Palantir

- Background:
  - Software analytics, contracts with US government.
  - PLTR direct listing on Oct 1 at ~$10/sh (~$18bn mcap)
  - Consensus was very bearish: "uninvestable", "just a defense-contractor", "unprofitable".

- My assumptions (valued in October 2020):
  - PLTR would experience SaaS-style growth for the next 10y as they expanded from gov to B2B.
  - Operating leverage: op costs will grow much slower than revenue; completed development of Foundry, Gotham.
  - (capex not so important here)

- Catalyst: the direct listing.

Case study: Palantir

	Historical ->			Future ->							
	2018	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**
Revenue	595.41	742.56	901.12	1,063.11	1,448.23	1,949.01	2,338.81	2,806.58	3,367.89	4,041.47	4,849.77
Gross profit	430.01	500.18	627.44	765.44	1,061.56	1,477.35	1,800.89	2,245.26	2,694.31	3,233.18	3,879.81
Op costs	1,029.75	1,053.22	1,064.95	1,107.55	1,151.85	1,197.92	1,245.84	1,295.67	1,347.50	1,401.40	1,457.46
EBIT	(599.74)	(553.04)	(437.51)	(342.11)	(90.29)	279.43	555.05	949.59	1,346.81	1,831.78	2,422.35
tax	-	-	-	-	-	61.47	122.11	208.91	296.30	402.99	532.92
NOPAT	(599.74)	(553.04)	(437.51)	(342.11)	(90.29)	217.95	432.94	740.68	1,050.51	1,428.78	1,889.44
D&A and Capex	0	0	0	0	0	0	0	0	0	0	0
FCFF	(599.74)	(553.04)	(437.51)	(342.11)	(90.29)	217.95	432.94	740.68	1,050.51	1,428.78	1,889.44
PV in 2021				(342.11)	(80.62)	173.75	308.16	470.71	596.09	723.87	854.69
Sum of PVs	4,821.80										
Perpetuity	33,751.89										
Total EV	38,573.69										
Debt	1000										
Market cap	37,573.69										
Shares outstanding	1,649.8										
Price per share	22.77469518										
EBIT margin	-1.007274072	-0.744776703	-0.485525642	-0.321799022	-0.062347934	0.143368629	0.237319479	0.338343548	0.399897742	0.45324471	0.499478748
Assumptions											
Revenue growth		24.7%	0.213533004	43.17%	36.23%	34.58%	20%	20%	20%	20%	20%
Gross margin	72.2%	67.4%	69.6%	72.00%	73.30%	75.80%	77%	80%	80%	80%	80%
Op cost growth		2%	1%	4%	4%	4%	4%	4%	4%	4%	4%
tax rate	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%	22%

Disclaimer: I am long PLTR shares and short PLTR calls.

Case study: Palantir

Sell $28.30

Sell covered
3/19/21 40C

BUY $17.90

BUY $15.50

BUY $10.30

Relative valuation

Relative valuation

- "No-arbitrage principle" – assets with identical cash flows and risks should have the same price.

- Find **trading comps**, then look at multiples like P/E, EV/EBITDA, EV/Revenue, P/B

- Low multiple ("cheap") != good value:
  - Low P/E may mean low growth expectations
  - Low P/B may mean unproductive assets
  - Try to understand why a company has a given multiple!
  - Tip: look at time series of historical multiples for a company to understand investor sentiment

- Prefer forward multiples, e.g P / FY22 earnings

Step by step

1. Choose comps using your own knowledge, 10-Ks, or BBG/CIQ. The more similar, the better.

2. For each company, **normalise** the statements: strip out one-time items that inhibit comparability, unify accounting conventions (check MD&A and footnotes in 10-K)

3. Choose your multiples – look up which multiples are important for your industry coverage.

4. Build a comps table (include value drivers like revenue growth and ROIC).

5. Calculate average of comps to get implied valuations (but don't pay too much attention to these)

Comps table example

In $ million (unless otherwise noted)			EV/Sales			EV/EBITDA			Revenue Growth				
Company	Market Cap	EV	LTM	2020E	2021E	LTM	2020E	2021E	2020E	2021E	EBITDA Margin LTM	ROIC LTM	P/E 2020E
Stericycle, Inc.	5,705	8,277	2.7x	3.1x	3.1x	15.9x	17.0x	16.4x	-18.9%	1.1%	17.3%	3.2%	29.5x
Waste Connections, Inc.	27,029	30,870	5.7x	5.7x	5.3x	18.7x	19.0x	17.2x	-0.3%	8.4%	30.3%	5.0%	40.4x
Republic Services, Inc.	31,066	39,615	3.9x	3.9x	3.7x	13.7x	13.6x	13.0x	-0.8%	4.6%	28.2%	6.5%	30.8x
Mean	21,267	26,254	4.1x	4.2x	4.0x	16.1x	16.5x	15.5x	-6.7%	4.7%	25.3%	4.9%	33.6x
Median	27,029	30,870	3.9x	3.9x	3.7x	15.9x	17.0x	16.4x	-0.8%	4.6%	28.2%	5.0%	30.8x
Waste Management, Inc. Valuation													
Waste Management, Inc.	49,170	59,585	3.9x	4.0x	3.8x	14.2x	14.2x	13.3x	-4.2%	6.6%	27.8%	8.2%	30.7x

Notes: WM has the highest ROIC but forward EV/EBITDA is lower than peers (maybe because of bigger revenue decrease)

Value drivers for multiples

- Multiples depend on **value drivers:** growth, profitability, risk
  - Sales growth, ROIC, WACC
  - Good characteristics (e.g higher growth) => higher multiples
  - Can be quantified (link to intrinsic value)

$$\frac{EV}{EBITDA} = \frac{(1-t)}{r-g} + \frac{(D\&A) \times t/EBITDA}{r-g} - \frac{\text{reinvestment}/EBITDA}{r-g}$$

- This can get complicated quickly
  - Some shortcuts, e.g PEG ratio
  - Can regress multiples against value drivers to "predict" the multiple, given some estimate of growth, ROIC, etc.
  - Takeaway: remember that multiples depend on value drivers

My take on multiples

- Cannot replace a DCF. Multiples *embed* DCF assumptions!

- Explicit assumptions better than implicit assumptions

- However, can be very useful to use multiples as a sanity check
  - After doing your DCF, look at the implied multiples
  - Are these multiples reasonable, and consistent with your views?
  - Compute the exit multiple implied by the terminal value: if your perpetuity growth is too high, this will be ridiculous

- Check your scenarios: multiples should be bull > base > bear

Valuation in the Apex Fund

What we are looking for

- A nonconsensus pitch (10-15 mins) that shows:
  - Understanding of the competitive landscape
  - Deep understanding of the unit economics **and key drivers**
  - Appreciation of risk factors
- Clear thesis that links with assumptions on the key drivers:
  - Revenue/cost build (e.g breakdown by segment/geography)
  - Bull/base/bear cases
  - 3 Statement Model recommended (especially if you are interviewing with buyside) but not strictly necessary
- DCF with sensitivity analysis
- Comps table, with well-chosen trading comps, showing an understanding of multiples.
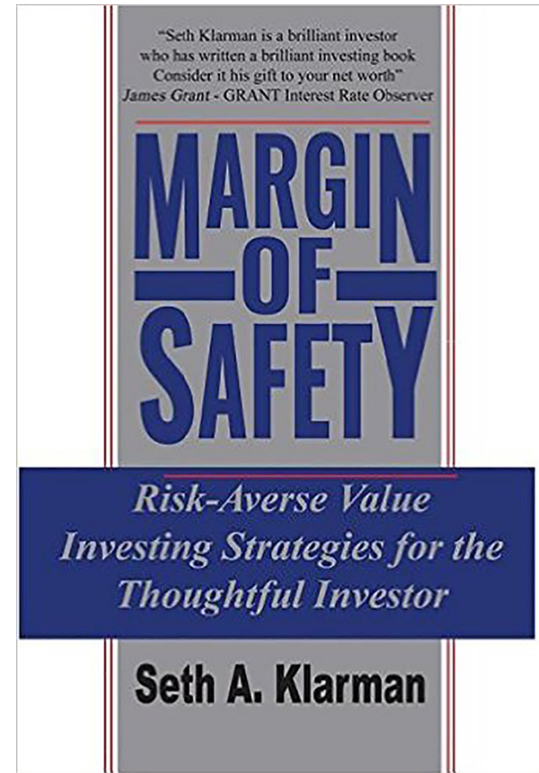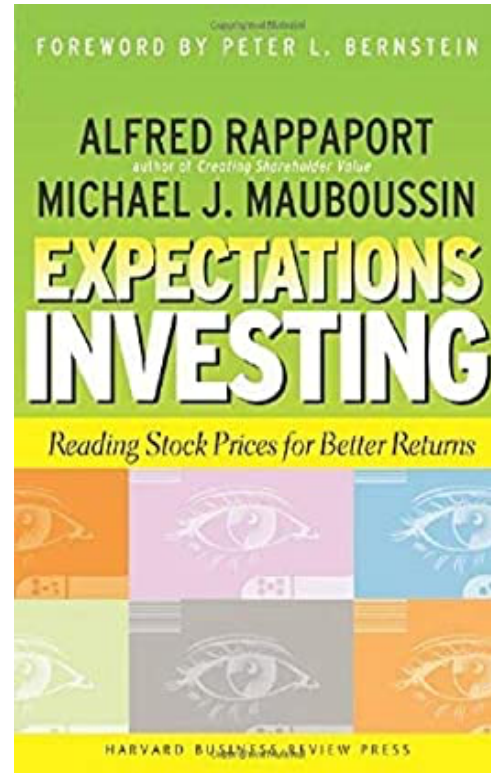
Valuation and pitching

- Strike a balance between conservatisim and expressing your view:
  - Be bold! It's ok to pitch 50-100% upside.
  - Not interested in 10% upside. Less margin of safety.
  - Use the bear case to express downside risks, and compute the risk/reward (bear case returns / bull case returns).
- Valuation is useless without a **catalyst**.
  - What will make the Street change their DCF to yours?
  - What will make multiples expand? Has a company traded at that multiple in the past?

Extras

Recommended resources

- Bill Ackman's Lemonade stand (link): fantastic intro to accounting and financial statements
- Damodaran on multiples (link): value drivers etc
- Damodaran Industry data (link)
- Damodaran Valuation course (link)

  (Maybe you see a pattern)

- WallStreetPrep 3SM guide (link): super useful reference when you're trying to build your model.
- TSLA valuation from scratch (link)
- My blog post on reverse DCFs and expectations investing.

Recommended reading

Questions