Intrinsic Valuation – Part 1

Free cash flow and terminal value

Agenda

Education – Week 4

Intrinsic vs. relative valuation

Free cash flow

Discounting

Terminal value

Intrinsic vs. relative valuation

When valuing a company, we can either use intrinsic valuation or relative valuation... So, what's the difference?

Relative Valuation

- Values an asset based on how the market values **similar assets**
- Driven by the belief that **similar assets** should trade for **similar prices**
- Can be used to make bets on the relative performance of similar assets
- A limitation is that the market may be currently mispricing a sector/industry
- E.g. The value of an apartment in Claremont based on what similar sized apartments have sold for in Montclair

Intrinsic Valuation

- Values an asset based on the **present value of all future cash flows**
- Driven by the belief that an asset should sell for what it could generate in cash **from now until judgement day** discounted to the present value
- Gives you a better idea of what variables drive s the value of the asset
- E.g. The value of an apartment in Claremont is the present value of all future cash flows you could earn if you were to rent it out

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Discounted cash flow (DCF): 3 basic parts

> Intrinsic value of a company is the present value of all the future cash flows it will generate in its lifetime (this is called a DCF)

Free cash flow projections	*Projects out future cash flowing into the company less the reinvestment requirements—typically 3-10 year projection*
Discount rate	*Money today > money tomorrow, you have to apply a discount factor to account for the opportunity cost of capital*
Terminal value	*After your initial FCF projection period, the company doesn't disappear, so terminal value captures the PV of FCF in perpetuity*

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Free cash flow

Two types of free cash flow:

> Unlevered free cash flow: measures free cash flow available to both debt and equity holders of the business

> Levered free cash flow: measures free cash flow available to only equity holders (stockholders) of the business

*When doing a DCF, you are valuing the entire firm, therefore, we focus on **unlevered free cash flow**, which has the following components:*

- EBIT, i.e. earnings available to all stakeholders
- Tax rate, i.e. Uncle Sam's share of the profits (t)
- Depreciation and amortization, i.e. non-cash expenses (D&A)
- Capital expenditures, i.e. reinvestment (Capex)
- Changes in net working capital (ΔNWC)

Free cash flow – formula

$$Unlevered\ FCF = EBIT * (1 - t) + D\&A - Capex - \Delta \text{NWC}$$

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Free cash flow – intuition

$$Unlevered\ FCF = EBIT * (1 - t) + D\&A - Capex - \Delta \text{NWC}$$

1. **Start with EBIT:** Measures earnings available to all stakeholders in the business: equity holders, debt holders, and the government
2. **Subtract taxes:** This is the government's claim to the business. What's left is available to debt and equity holders
3. **Add back D&A:** These are expensed on the income statement as proxy for reinvestment, but they are not cash expenses
4. **Subtract Capex:** This is cash that needs to be reinvested in the business, but is not expensed on the income statement
5. **Subtract ΔNWC:** See next slide…

Working capital – explanation

Working capital consists of short-term operating assets and liabilities a company needs to operate the business

What are short-term operating assets and liabilities?

- Defining feature of a working capital asset/liability is something that isn't earning/yielding a fair rate of return
- Think of these as "wasting assets"

Working capital assets

- Examples include: accounts receivable, inventory, prepaid exp., etc.
- Cash and ST marketable securities **are not** WC assets

Working capital liabilities

- Examples include: accounts payable, deferred revenue, DTL, etc.
- Current portion of ST debt **is not** a WC liability

Working capital – (TSX: GOOS)

Which of these current assets are WC assets?

	Notes	March 28, 2021	March 29, 2020
Assets		$	$
Current assets			
Cash		477.9	31.7
Trade receivables	8	40.9	32.3
Inventories	9	342.3	412.3
Income taxes receivable	6	4.8	12.0
Other current assets	20	31.0	43.5
Total current assets		896.9	531.8

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= WC asset

Are "Other current assets" working capital assets?

Working capital – (TSX: GOOS)

Are “Other current assets” working capital assets?

Type	Valuation Approach
Cash, trade receivables, accounts payable and accrued liabilities	The carrying amount approximates fair value due to the short term maturity of these instruments.
Derivatives (included in other current assets, other long-term assets, accounts payable and accrued liabilities or other long-term liabilities)	Specific valuation techniques used to value derivative financial instruments include: - quoted market prices or dealer quotes for similar instruments; - observable market information as well as valuations determined by external valuators with experience in the financial markets.

- Check the footnotes!
- As it turns out, GOOS classifies derivatives (marketable securities) in other current assets, which are not WC assets

**On page 20 of most recent 20-F*

Working capital – (TSX: GOOS)

Which of these current assets are WC liabilities?

Liabilities			
Current liabilities			
Accounts payable and accrued liabilities	14, 20	177.8	144.4
Provisions	15	20.0	15.6
Income taxes payable	6	19.1	13.0
Short-term borrowings	16	—	—
Current portion of lease liabilities	12	45.2	35.9
Total current liabilities		262.1	208.9

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Total current liabilities		262.1	208.9

= WC liabilities

How does working capital affect FCF?

Increases in working capital means there will be **more cash tied up** in the company's working capital: **WC** (↑) = **FCF** (↓)

- If a company requires more inventory to grow sales, the cash paid for that inventory must be subtracted from free cash flow
- If a company provides a service for a customer but hasn't received cash payment yet, the increase in AR gets subtracted from FCF

Decreases in working capital means there will be **less cash tied up** in the company's working capital: **WC** (↓) = **FCF** (↑)

- If a company receives payment for a service before providing the service, cash received from customer is added to FCF
- If a company receives materials from supplier but hasn't yet paid in cash, increase in accounts payable gets added to FCF

Where do you find the components of FCF?

$$Unlevered\ FCF = EBIT * (1 - t) + D\&A - Capex - \Delta \text{NWC}$$

Income statement	$EBIT * (1 - t)$	Estimate earnings of the firm
Balance sheet	ΔNWC	Estimate reinvestment requirements needed for the firm to grow
Cash flow statement	$D\&A\ \&\ Capex$	

Why should we use unlevered FCF?

Advantages

- Calculates cash earnings available to all stakeholders of the company (debt + equity, creating apples to apples comparison for companies with different capital structures
- Firms can manipulate earnings when prepared on an “accrual” basis (i.e. under-depreciating); true “cash” prevents this pitfall

Disadvantages

- FCF will have large fluctuations due to lumpiness of reinvestment via capital expenditures
- Hard to accurately project out working capital, since incremental working capital requirements may change over time

Why not use net income? Why not EBITDA or operating cash flows?

- Net income doesn’t give apples to apples comparison for companies with different capital structures (more debt = higher interest expense)
- EBITDA doesn’t include WC requirements, OCF doesn’t factor in the capital structure, and **both do not include reinvestment spending (capex)**

Discounting

“A bird in the hand is worth two in the bush.” – Aesop

Intuition of discounting

Money in your hand today is worth more than money in your hand tomorrow, so a discount factor must be applied to future cash flows

Intuition of discounting

The discount factor is the **opportunity cost** of tying up capital in the firm, or the **expected return** required by stakeholders

$$Discount\ rate = R_f + some\ risk\ premium$$

$$R_f = risk - free\ rate\ (typicaly\ 10Y\ treasury)$$

There are a couple key principles governing cost of capital

- Cost of capital should be higher when yields on government bonds (i.e. "risk-free" rate) are higher
- Cost of capital should be higher for companies that are riskier, because risk-adverse investors must be compensated for risk

**There is generally disagreement about how to calculate the discount rate… nuances of calculating the discount rate will be discussed later*

Intuition of discounting

The further out you are discounting, the larger the discount factor; intuition is that there is higher opportunity cost and higher uncertainty

$$DCF\ Value = \sum_{t=1}^{\infty} \frac{CF_t}{(1+r)^t}$$

$$DCF\ Value = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \frac{CF_3}{(1+r)^3} + \cdots + \frac{CF_t}{(1+r)^t}$$

$$CF = Cash\ Flow$$
$$r = Discount\ Rate$$

With 10Y treasury yielding ~1.5%, ~6-10% for cost of capital passes the reasonability test

Terminal value

How to capture the PV of cash flows in perpetuity

Intuition of terminal value

A firm has potentially infinite life…
Therefore, the present value of cash flows in perpetuity

Since we can't estimate a firm's cash flows forever, it can sometimes be unrealistic to project out FCF for a period greater than 10 years…

- To capture the value of cash flows after your projection period, we calculate the terminal value for the business
- Terminal value = present value of cash flows in perpetuity

Let's say you make a DCF with a 3-year free cash flow projection…

$$DCF\ Value = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \frac{CF_3}{(1+r)^3} + \frac{Terminal\ Value}{(1+r)^3}$$

Calculating terminal value

*There are **two ways** of calculating terminal value **at period n**:*

Exit multiple approach

Take projected earnings (EBITA or EBITDA) in your final projection year and multiply by EV/EBITA or EV/EBITDA multiple

$$Terminal\ Value = EBITA_n * IS\ Multiple$$

Industry standard multiple can be determined from public comps or PMVs

Gordon growth model

*Assume cash flows grow at a constant rate following your final projection year at rate **g** and discount all future FCF to present value*

$$Terminal\ Value = \frac{CF_n * (1+g)}{r-g}$$

Growth rate typically between 0.5% and 3.5% with inflation at lower bound and GDP at upper

Calculating terminal value

Let's say you make a DCF with a 3-year free cash flow projection…

$$DCF\ Value = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \frac{CF_3}{(1+r)^3} + \frac{EBITA_3 * IS\ Multiple}{(1+r)^3}$$

or …

$$DCF\ Value = \frac{CF_1}{(1+r)^1} + \frac{CF_2}{(1+r)^2} + \frac{CF_3}{(1+r)^3} + \frac{\frac{CF_3 * (1+g)}{r-g}}{(1+r)^3}$$

Putting it all together

All the steps of a doing a DCF

All the steps of doing a DCF

1. **Forecast FCF:** Typically, 3-10 years… Must project out EBIT, tax rate, D&A, capex, and net working capital (formula on slide 9)
2. **Estimate discount rate:** Will discuss nuances and how to calculate this in a later week… For now, 6-10% passes the reasonability test…
3. **Calculate terminal value:** Use either exit multiple approach or the Gordon growth model (formula on slide 26)
4. **Discount future FCF:** Discount forecasted FCF in near-term and terminal value using the discount rate (slide 23)
5. **Sum up PV of FCF:** Add up all FCF discounted to the present value to get to an implied enterprise value
6. **Subtract net debt:** Subtract debt and add cash and investments to get to the implied equity value
7. **Divide by total shares:** Divide equity value by total shares outstanding to get the per share intrinsic value