

# DeGroot Finance & Investment Council

Introduction to Valuation 2021-2022

### Beginner vs. Professional

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- A common misconception among new investors is that the best way to determine a company's value is to just look at its market capitalization (aka equity value). This approach has some flaws:
  - Not all companies are publicly traded
  - Non-equity forms of capital are not included in market cap
- Professionals value companies by calculating the value of the company's assets
  - Operating Assets are typically the principal sources of a company's revenues, cash flow, and income
  - Non-Operating Assets are marketable securities, excess cash and cash equivalents, unutilized assets, and loans receivable



### The Basics

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- The valuation of operating assets can be done using two different fundamental concepts; a liquidation value and a going concern value
  - Liquidation Approach: "What would it cost to buy all of these assets individually right now in their current condition?"
  - Going Concern Approach: "What value can the company's assets generate in the foreseeable future?"
- Most of the analysis in investment banking and private equity consider the company as a going concern, though liquidation valuation is used occasionally (especially when valuing distressed companies)



### Equity Value (aka Market Capitalization)

- Equity Value is the total value of the company's shares (equities); represents the shareholder's claim of the company value
- *Market Capitalization = Share Price \* S/O*



### Enterprise Value (EV)

- Enterprise Value is the total value of all the company's capital; represents the selling price of the company
  - Useful because different companies have different capital structures
- *EV = Market Capitalization + Preferred Equity + Debt + Minority Interest – Cash and Equivalents*

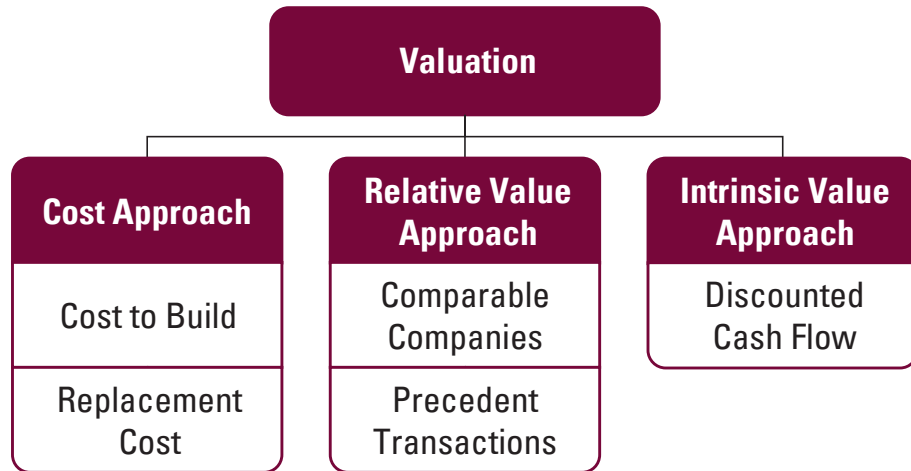
- Equity
- Debt
- Preferred Equity
- Minority Interest



### Multiples

- Multiples allow us to compare the cost of an investment to the return it currently or is expected to generate
- P / E is most commonly used for equity value
  - Stock price represents firm value to only equity holders, and earnings represents return to equity holders
- EV / EBITDA is most commonly used for enterprise value
  - EV represents firm value to debt and equity holders, and EBITDA represents return to debt and equity holders
- You can use forward (e.g. EV / NTM EBITDA) or trailing multiples (e.g. EV / LTM EBITDA)
  - Forward (NTM) multiples are a better indicator of expected return but are not always available
  - Trailing (LTM) multiples are usually used when forward multiples are unavailable, usually in private markets

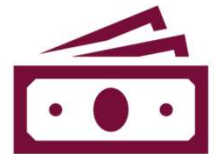
### Overview



### Cost Approach

The cost approach focuses on the market value of an asset or a collection of assets

- **Cost to Build:** looks at how much it would cost to build the asset; commonly used for real estate
- **Replacement Cost:** looks at the current market value of the asset



### Relative Value Approach

The relative value approach values a company based on how similar companies have been publicly valued currently and historically

- **Comparable Companies:** looks at key operating and trading multiples of similar companies and applies them to the company being valued
- **Precedent Transactions:** looks at historical acquisition prices of similar companies to determine company value

### Intrinsic Value Approach

The intrinsic value approach values a company based on fundamental expectations of the company/asset for the foreseeable future

- **Discounted Cash Flow:** forecasts future cash flows from the company/asset and calculate a terminal value, then adjust these dollar amounts to current dollars to determine the present value of the investment decision

# Relative Valuation

### Comparable Companies Analysis

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- Comparable companies analysis is based on the idea that you can value a company based on the valuation of similar companies by public markets

#### **Pros**

- Market driven; easily adaptable to constantly changing data and multiples
- Simple and straightforward way to see if firm is over/undervalued compared to peers
- Values debt and equity
- Typically, forward looking

#### **Cons**

- Markets may be volatile and can inaccurately value companies (e.g. GameStop)
- Sometimes not enough comparable
- Doesn't consider qualitative factors which may differentiate comparable companies
  - E.g. Management

### Precedent Transactions Analysis

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- Precedent transactions analysis is based on a similar philosophy to comparable companies analysis but instead of analyzing public markets' valuations of comparable companies, you analyze private valuations

#### **Pros**

- Precedent driven; based on real prices paid historically for similar transactions
- Determines purchase multiple benchmarks and an acquisition price
- May show M&A bidding trends

#### **Cons**

- Sometimes precedent transactions do not exist
- Transaction data isn't always publicly available
- Precedent transactions may have occurred in different macroeconomic conditions
- Rarely does a "pure-play" directly comparable transaction exist

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## Comparable Companies Analysis Instructions (with Tech example)

### 1. Select an appropriate set of comparable companies, and create a template for your comps table

- Typical criteria for comparable companies include industry, geography, size (revenue, EBITDA, assets, etc.)
- Should at minimum include market cap, EV, EV/EBITDA, and P/E
- Should include LTM and forward multiples

Company	Ticker	Market		EV	EV/Revenue			EV/EBITDA			P/E		
		Cap.	Net Debt		LTM	2021E	2022E	LTM	2021E	2022E	LTM	2021E	2022E
Facebook													
Microsoft													
Alphabet													
Apple													
Amazon													

All dollar amounts in US\$B.

### 2. Gather the necessary data and multiples, and fill in the figures into your table accordingly

- Good data sources include:
  - Bloomberg; use BI function, or go to the Financial Analysis page that appears when you search the stock's ticker
  - Annual (10k) reports and quarterly (10Q) reports; usually found on companies' investor relations websites

Company	Ticker	Market		EV	EV/Revenue			EV/EBITDA			P/E		
		Cap.	Net Debt		LTM	2021E	2022E	LTM	2021E	2022E	LTM	2021E	2022E
Facebook	FB	1,054	-52	1,002	9.0x	7.9x	6.6x	17.6x	14.3x	12.3x	26.2x	22.2x	19.4x
Microsoft	MSFT	2,266	-48	2,218	13.1x	11.8x	11.5x	26.3x	23.8x	23.3x	38.2x	34.6x	34.2x
Alphabet	GOOGL	1,914	-108	1,806	8.1x	8.6x	7.4x	23.3x	17.5x	15.3x	37.0x	24.4x	22.4x
Apple	AAPL	2,444	-72	2,372	6.8x	6.4x	6.2x	21.2x	19.6x	19.8x	28.9x	26.4x	26.1x
Amazon	AMZN	1,758	32	1,791	4.0x	3.7x	3.1x	27.1x	23.7x	19.1x	59.7x	49.8x	41.7x

All dollar amounts in US\$B.

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## Comparable Companies Analysis Instructions (with Tech example)

### 3. Under your comps table, calculate the comparable ratios

Company	Ticker	Market Cap.	Net Debt	EV	EV/Revenue			EV/EBITDA			P/E		
					LTM	2021E	2022E	LTM	2021E	2022E	LTM	2021E	2022E
Facebook	FB	1,054	-52	1,002	9.0x	7.9x	6.6x	17.6x	14.3x	12.3x	26.2x	22.2x	19.4x
Microsoft	MSFT	2,266	-48	2,218	13.1x	11.8x	11.5x	26.3x	23.8x	23.3x	38.2x	34.6x	34.2x
Alphabet	GOOGL	1,914	-108	1,806	8.1x	8.6x	7.4x	23.3x	17.5x	15.3x	37.0x	24.4x	22.4x
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Amazon	AMZN	1,758	32	1,791	4.0x	3.7x	3.1x	27.1x	23.7x	19.1x	59.7x	49.8x	41.7x
<b>Median</b>					<b>8.1x</b>	<b>7.9x</b>	<b>6.6x</b>	<b>23.3x</b>	<b>19.6x</b>	<b>19.1x</b>	<b>37.0x</b>	<b>26.4x</b>	<b>26.1x</b>
<b>Average</b>					<b>8.2x</b>	<b>7.7x</b>	<b>7.0x</b>	<b>23.1x</b>	<b>19.8x</b>	<b>18.0x</b>	<b>38.0x</b>	<b>31.5x</b>	<b>28.8x</b>

All dollar amounts in US\$B.

### 4. Multiply company data by comparable ratios to arrive at the valuation

- In this example we will value Netflix (NASDAQ:NFLX) using the technology comps table we created:

#### Using P/E

- NFLX's EPS for 2021 is estimated to be \$10.96
- The comps set is trading at 26.4x (median) 2021E P/E
- Target Price =  $\$10.96 * 26.4 = \$289.34$

#### Using EV/EBITDA

- NFLX has 443M shares outstanding, and is expected to earn \$6.721B in EBITDA in 2022. Net debt is equal to \$17.943B and cash and equivalents are equal to \$7.778B.
- The comps set we created is trading at 19.1x (median) 2022E EV/EBITDA
- Target EV =  $\$6.721B * 19.1 = \$128.371B$
- Target Equ.Val. =  $\$128.371B - \$17.943B - \$7.778B = \$102.650B$
- Target Price =  $\$102.650B / 443M = \$231.72$

- Therefore according to comparable companies analysis, NFLX should trade around \$231.72 - \$289.34





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## Precedent Transactions Analysis Instructions

### Precedent Transactions Analysis

- The steps to precedent transactions analysis are nearly identical comparable companies' analysis, although instead you choose M&A transactions and analyze the data and multiples for the target
- There are a few adjustments when choosing relevant transactions vs. choosing comparable companies. The criteria that must be considered includes:
  - Industry and financial characteristics: target company's business and financial characteristics should be comparable
  - Size of the deal: transactions that are close in size to the one being contemplated are more relevant than those that are substantially smaller or larger
  - Transaction-specific characteristics: it is necessary to understand the background and circumstances surrounding the transaction to extract meaningful insights (e.g. strategic vs. financial buyer, domestic vs. cross-border, full auction vs. negotiated deal, underlying market conditions, etc.)
  - Time: the more recent the transaction, the more relevant the benchmark

Donut Store – Comparable M&A Transactions						Valuation Multiples	
Acquirer Name	Target Name	Announcement Date	Transaction EV	LTM Revenue	LTM EBITDA	EV / LTM Revenue	EV / LTM EBITDA
McMaster Partners	Big Bistro Stores	2021-05-02	\$1,053.6	\$1,240.3	\$124.3	0.8x	8.5x
DFIC Financial Sponsors	Your Fav Restaurant	2020-12-06	2,113.0	2,641.3	229.7	0.8x	9.2x
Asset Management Firm	Another Restaurant	2019-01-16	1,308.9	818.0	165.7	1.6x	7.9x
DeGroote Holdings	Tea & Coffee Co	2018-07-28	971.5	383.0	43.9	2.5x	22.1x
Big Pension	Coffee Chain	2018-02-13	13,714.4	3,189.4	788.2	4.3x	17.4x

All dollar amounts in US\$M.

Maximum	\$13,724.4	\$3,189.4	\$788.2	4.3x	22.1x
75 <sup>th</sup> Percentile	2,113.0	2,641.3	229.7	2.5x	17.4x
<b>Median</b>	<b>\$1,308.9</b>	<b>\$1,240.3</b>	<b>\$165.7</b>	<b>1.6x</b>	<b>9.2x</b>
25 <sup>th</sup> Percentile	1,053.6	818.0	124.3	0.8x	8.5x
Minimum	971.5	383.0	43.9	0.8x	7.9x

# Intrinsic Valuation

### Discounted Cash Flow (DCF) Analysis

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- A key principle of discounted cash flow analysis is the time value of money; a dollar is worth more today than it will be worth in the future
- A discounted cash flow model forecasts the return to the firm's equity and debt holders over a given future period and then adjusts future cash flows by a discount rate (which incorporates inflation, risk, opportunity cost of not using money for other investments, etc.) to calculate the present value of the returns which the company will generate for capital providers, which is considered the company's current EV
  - Can also use inputs which calculate equity value instead but this is less common

### Unlevered Free Cash Flow (UFCF)

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- Unlevered free cash flow represents the cash flows to both debt and equity holders, which allows you to calculate enterprise value
  - Levered free cash flow (LFCF) represents cash flow to only equity holders, so it would allow you to calculate equity value
- $UFCF = EBIT(1-TC) + D\&A - Capex - \Delta Non\ Cash\ WC$

### Cost of Equity ( $r_e$ )

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- $r_e$  is the return demanded by equity investors in exchange for the risk incurred by investing
- $r_e = r_f + \beta (r_m - r_f)$

### Weighted Average Cost of Capital (WACC)

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- Weighted average cost of capital is the average rate that a company pays to finance its assets; it incorporates the cost of debt, cost of equity, and cost of preferred stock, and weights them by the respective percentage of each type of capital assumed for the company's capital structure
- $WACC = r_e W_e + r_d W_d + r_p W_p$

### Beta ( $\beta$ )

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- Beta measures risk compared to overall market
- Must first calculate average unlevered beta of comparable companies, then re-lever
- $Unlevered\ \beta = Levered\ \beta \div (1 + ((1-t) * (D/E)))$
- $Re-levered\ \beta = Unlevered\ \beta * (1 + ((1-t) * (D/E)))$

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## Discounted Cash Flow Analysis Instructions

### 1. Project the firm's unlevered free cash flows (UFCFs)

- Cash flows forecasts can be based off of the firm's historical financial performance (revenue growth rates, EBITDA margin, etc.), industry data, and the firm's planned investing activities

DCF Analysis – Company A (US\$M)	2021E	2022E	2023E	2024E	2025E	2026E
EBIT	16.00	19.20	23.04	27.65	33.18	39.81
Less: Tax	4.00	4.80	5.76	6.91	8.29	9.95
<b>NOPAT</b>	<b>12.00</b>	<b>14.40</b>	<b>17.28</b>	<b>20.74</b>	<b>24.88</b>	<b>29.86</b>
Add: D&A	49.00	53.41	58.22	63.46	69.17	75.39
Less: Capex	4.00	4.40	4.84	5.32	5.86	6.44
Less: NWC Changes	12.00	12.60	13.23	13.89	14.59	15.32
<b>UFCF</b>	<b>45.00</b>	<b>50.81</b>	<b>57.43</b>	<b>64.98</b>	<b>73.61</b>	<b>83.49</b>

### 2. Choose a discount rate

- The rate used to discount UFCF and the TV to their present values should reflect the blended after-tax returns expected by various providers of capital
- Usually use WACC if you want to calculate EV

- Example

- $WACC = r_e(0.88) + 0.05(0.12)$
- $r_e = 0.0197 + 0.98(0.0703) = 9\%$
- $WACC = 0.09(0.88) + 0.05(0.12) = 8.37\%$

#### WACC Calculation

Risk-free rate	1.97%
Re-levered Beta	0.98
Equity MRP	7.03%
Debt/Value	12%
Tax Rate	25%
Cost of Debt	5%
Cost of Equity	9%
WACC	8.37%

### 3. Calculate a terminal value

- The value of the returns generated by the company ongoingly after the period in which you forecasted unlevered free cash flows
- Terminal Multiple Method:**
  - $TV = \text{Financial Metric} * \text{Trading Multiple}$ 
    - $EBITDA_t * \text{Comparable EV} / EBITDA$
  - Assumes that the company will be valued at the end of the period based on public market valuations
- Gordon Growth Method:**
  - $TV = \frac{UFCF_t \times (1+g)}{(r-g)}$
  - Assumes that the company will continue its historic operations and generate free cash flows at a steady rate forever

### 4. Discount the forecasted cash flows to present value

DCF Analysis – Company A (US\$M)	2021E	2022E	2023E	2024E	2025E	2026E
EBIT	16.00	19.20	23.04	27.65	33.18	39.81
Less: Tax	4.00	4.80	5.76	6.91	8.29	9.95
<b>NOPAT</b>	<b>12.00</b>	<b>14.40</b>	<b>17.28</b>	<b>20.74</b>	<b>24.88</b>	<b>29.86</b>
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<b>UFCF</b>	<b>45.00</b>	<b>50.81</b>	<b>57.43</b>	<b>64.98</b>	<b>73.61</b>	<b>83.49</b>
Discount Factor	0.92	0.85	0.79	0.73	0.67	0.62
<b>PV of UFCF</b>	<b>41.59</b>	<b>43.41</b>	<b>45.35</b>	<b>47.43</b>	<b>49.66</b>	<b>52.06</b>

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## Discounted Cash Flow Analysis Instructions

### 5. Calculate enterprise value and equity value

- $$EV = \frac{UFCF_1}{(1+WAC)^1} + \frac{UFCF_2}{(1+WACC)^2} + \dots + \frac{UFCF_t}{(1+WAC)^t} + \frac{TV}{(1+WAC)^t}$$
- *Equity Value = EV – Debt – Preferred Stock – Cash and Equivalents*
- *Target Share Price = Equity Value ÷ Fully Diluted Shares Outstanding*

DCF Analysis – Company A (US\$M)	2021E	2022E	2023E	2024E	2025E	2026E
EBIT	16.00	19.20	23.04	27.65	33.18	39.81
Less: Tax	4.00	4.80	5.76	6.91	8.29	9.95
<b>NOPAT</b>	<b>12.00</b>	<b>14.40</b>	<b>17.28</b>	<b>20.74</b>	<b>24.88</b>	<b>29.86</b>
Add: D&A	49.00	53.41	58.22	63.46	69.17	75.39
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Discount Factor	0.92	0.85	0.79	0.73	0.67	0.62
<b>PV of UFCF</b>	<b>41.59</b>	<b>43.41</b>	<b>45.35</b>	<b>47.43</b>	<b>49.66</b>	<b>52.06</b>

- Example for Company A, which has 39M shares outstanding, \$120M in debt, and no preferred stock or cash and equivalents
  - Company A EV =  $45M / (1.0837) + 50.81M / (1.087^2) + \dots = \$1,573.26M$
  - Company A Equity Value =  $\$1,573.26M - \$120M = \$1,453.26M$
  - Target Price =  $\$1,453.26M / 39M \text{ shares} = \$37.26$
- Therefore, company A stock should trade around \$37.26

Company A Standalone DCF Value	
WACC	8.37%
Years 1-5 PV	236.29
Terminal Value	1336.97
Terminal Growth	2%
EV	1573.26
Net Debt	120
Equity	1453.26
S/O	39
Share Price	\$37.26

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## Additional Valuation Resources

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[Breaking Into Wall Street](#)



[Damodaran Online](#)



[CFI](#)



[Wall Street Prep](#)



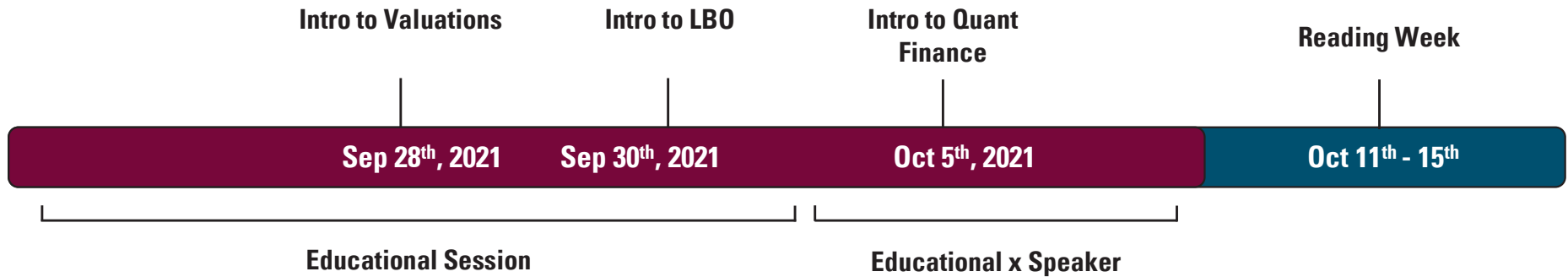
[Marquee Group](#)



[Macabacus](#)



### Timelines



### Event Descriptions

#### Intro to LBO



Come hear from **Owen Marshall** and learn about merger modelling

#### Intro to Quant Finance



Learn about Quant Finance from **Kayden Hudda** and a special guest from RBC



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