Valuation

- Educational Presentation #6 – Hedge Funds
- 23.01.25
- Property of the ESCP Alternative Investments Society
- Sources: Breaking Into Wallstreet, Bloomberg, PitchBook, Grant Thornton, Investopedia

ESCP Alternative Investment Society

Section I: Introduction and Overview

Overview of Valuation

- Valuation is the process of determining the present value of an asset, company, or investment
- It serves as the foundation for investment decisions
- Estimates fair price based on quantitative and qualitative factors

Intrinsic Valuation

Definition:

- Determines a company's true value based on fundamental financial metrics
- Involves calculating the present value of future cash flows
- Assesses the company's assets after accounting for liabilities

Methods:

Discounted Cash Flow (DCF): Projects future cash flows and discounts them to their present value using the company's cost of capital

Asset-based Valuation: Focuses on estimating the company's asset value, subtracting liabilities to determine its net worth

Relative Valuation

Definition:

- Assesses a company's worth by comparing it to similar businesses or recent market transactions
- Relies on market-driven metrics
- Determines a company's relative worth in comparison to peers

Methods:

Comparable Company Analysis (Comps): Use of financial ratios such as P/E, EV/EBITDA, and others of comparable companies to assess valuation

Precedent Transaction Analysis: Involves examining prices paid in similar recent mergers and acquisitions to infer a company's value

How do Hedge Funds use Valuation?

L/S Hedge Funds

- Use valuation to identify undervalued stocks for long positions and overvalued stocks for short positions. They rely heavily on relative valuation metrics (e.g., EV/EBITDA, P/E) and sometimes intrinsic methods like DCF.
- **Example:** An L/S fund identifies a company trading at a significantly lower multiples than its peers despite strong growth potential. It goes long in this stock, while shorting a competitor trading at an unwarranted high multiple.

Event-Driven: M&A Arbitrage

- Event-driven funds with focus on M&A arbitrage use relative valuation (precedent transactions) to assess deal fairness and intrinsic valuation (DCF) to identify arbitrage opportunities.
- **Example:** A fund identifies a company involved in a merger deal where the target's stock trades below the acquisition price. It buys the stock of the targeted company while shorting the acquiring company, betting the deal will close and profiting from the spread.

Event-Driven: Activist

- Activist funds, a subset of event-driven strategies, use intrinsic valuation (DCF and asset-based valuation) to identify underperforming companies or sub-businesses and push for strategic changes to unlock value.
- **Example:** Elliott Investment Management acquired over $5 billion in Honeywell International's stock and urged the company to separate its Aerospace and Automation divisions. The fund argued it would simplify operations, and potentially increase the share price by 51% to 75% within two years.

Section II: Discounted Cash Flow Analysis (DCF)

Intrinsic Valuation DCF Overview

- Calculates the present value of a company's future cash flows
- Uses a discount rate to reflect the time value of money
- Combines a projection period (5-10 years) and a terminal value
- Provides an estimate of the total business value

Process:

1. Calculate Free Cash Flows to the Firm (**FCFFs**) over the projection period (i.e. “high growth period”; approx. 5-10yrs)
2. Calculate the Terminal Value (**TV**) (i.e. the value of the business’ operations post “stage 1”)
3. Find the Weighted Average Cost of Capital (**WACC**) & discount + sum up FCFFs & TV (i.e. derive a firm’s EV)
4. Bridge from EV to EqV (find the value of the firm’s equity, i.e. value for shareholders)
5. Divide EqV by (fully diluted) # of shares to get Price per Share

Intrinsic Valuation DCF – 1 FCFFs

1 Calculate FCFFs over the projection period (i.e. “high growth period”; c. 5-10yrs)

Free Cash Flows to the Firm (FCFFs)

FCFF = NOPAT (=EBIT * (1-t)) – CapEx + D&A ± Δ Working Capital ± Other Non-cash Adj.

- Other Non-cash Adj.: - unrealized gains, + unrealized losses, ± deferred taxes
- NOPAT = Net Operating Profit After Tax
- T = c. 5 - 10 yrs. „high growth period“
  - Infrastructure may see periods of up to 50 years

Intrinsic Valuation DCF – 2 TV

2 Calculate the Terminal Value (TV) (i.e. the value of the business' ops post "stage 1")

Terminal Value =

$$TV = CF_T * \frac{1 + gGDP}{WACC - gGDP}$$

- **Option Perpetuity Growth Method (Gordon's model):**
  - $gGDP$ **=** Long-term growth rate of cash flows, often linked to nominal GDP growth (conservative)
  - Alternative: Inflation Rate, Industry Growth, Historical Growth, ESG – adj. Growth (< WACC)
  - Assumption: The business grows perpetually at a steady rate beyond the forecast horizon
  - Suitable for businesses with predictable, stable cash flows and growth prospects
- **Option_Exit Multiple Method**
  - More common for private equity, M&A, and industries with reliable market multiples

$$TV = EBITDA_T * \frac{Exit\ EV}{EBITDA\ Multiple}$$

Discount

$$\mathrm{PV}(TV) = \frac{TV}{(1 + WACC)\text{^}T}$$

Intrinsic Valuation DCF – 3 WACC

3 Find WACC & discount + sum up FCFFs & TV (i.e. derive a firm's EV)

Weighted Average Cost of Capital (WACC)

- **Average cost** at which a company **finances its assets** and **minimum return** investors seek when investing in a specific company
- **Basic** $WACC$

$$\boldsymbol{WACC = \frac{E}{TA} * C_{Equity} + \frac{D}{TA} * (1 - t)}$$

  - $\mathbf{C_{Equity} = r_f + \beta * (r_m - r_f)}$
  - $\boldsymbol{r_f}$: Yield 10yr−treasury bill of country of firms HQ
  - $\boldsymbol{r_m}$: Historical avg. returns market
  - $\boldsymbol{\beta}$: listed on Bloomberg (BBG) OR find listed peers on AND find avg. & median $\boldsymbol{\beta}$, relever to target capital structure with Hamad's formula $\boldsymbol{\beta_u = \beta_l * \frac{1}{1+\frac{D}{E}*(1-t)}}$
  - If public: $C_{Debt} = \frac{interest\ expense}{total\ debt}$ OR value-weighted YTM of its outstanding bonds
  - If private: $C_{Debt} = r_f + spread$ (spread *via calculating ICR* ($\frac{EBIT}{Interest\ expense}$) *+ using Damodaran's tables*)

Intrinsic Valuation DCF – 3 WACC

3 Find WACC & discount + sum up FCFFs & TV (i.e. derive a firm's EV)

Advanced Weighted Average Cost of Capital (WACC)

$$WACC = \frac{E}{TA} * C_{Equity} + \frac{D}{TA} * C_{Debt} * (1 - t) + \frac{P}{TA} * C_{Prefs}$$

$$C_{Prefs} = \frac{DPS_{Prefs}}{Price_{Prefs}}$$

Problems with WACC:

- **Target Capital Structure** is **known / derivable**
- **Target Capital Structure** is assumed to be **constant**
- Meaningful **listed Comps** must **exist**

Mid-year convention => for t=1 use 0.5 for discounting. Stub period, i.e. you don't always value @01.01.

Intrinsic Valuation DCF – 4 Bridge

4 Bridge from EV to EqV (find the value of the firm's equity, i.e. value for shareholders)

Standard EV-Equity Bridge

- **Enterprise Value** (TEV or EV; derived through a DCF asset-side model)

- Total debt (market value) + cash & cash equivalents (= **Net debt**)
- Preferred stock (market value / estimate, if any)
- Non-controlling interests (= **Minorities;** market value)

= Equity Value

Alternative for listed:

Equity–Value = share price ∗ total diluted # of shares outstanding

Intrinsic Valuation DCF – 4 Bridge

4 Bridge from EV to EqV (find the value of the firm's equity, i.e. value for shareholders)

Advanced EV-Equity Bridge

- **Enterprise Value**
  - – Total **financial** debt (market value; **incl. hybrid instruments, leases, revolver** etc.)
  - \+ Cash & cash equivalents (e.g. marketable securities)
  - – Preferred stock (market value / estimate, if any)
  - – Non-controlling interests (= **minorities;** market value)
  - – **Contingent liabilities** (present value, if any)
  - – **(Un(der)funded) Pension & health care liabilities** (provisions)
  - – **Hybrid financing instruments** (e.g. Mezzanine debt)
  - – In-the-Money (employee) stock options/ share warrants (present value, if any)
  - – Tax liabilities & unpaid taxes due
  - – Change of control costs
  - \+ **Fair Value of non-operating assets** (i.e. Excess real estate, Financial assets, Associates, Assets held for sale, Tax shields from net operating loss carryforwards)
  - ± **Δ Net Working Capital** (Δ calculated with normalized N.W.C. as baseline)
  - ± (...), e.g. Deferred income / deposits received

} = **Equity Value**

Sources: Grant Thornton | McKinsey & Co.: Valuation (5th ed.) | https://pages.stern.nyu.edu/~adamodar/New_Home_Page/valquestions/debttosubtract.htm | Roedl & Partne

Section III: Relative Valuation

Comparable Company Analysis (Comps)

- Comparable Company Analysis (Comps) estimates a business's value by comparing it to similar publicly traded companies
- It involves identifying appropriate peer companies in the same industry and analyzing their financial metrics
- By using the valuation multiples of comparable companies, Comps provides an estimate of the target company's market value

Criteria

- **Geography**: With varying conditions by geography, companies should operate in the same region
- **Industry**: Same sector or subsector is crucial to ensure similar business models, and risk profiles
- **Financial Characteristics**: To ensure accurate comparability, companies should be within a similar range for metrics like revenue, EBITDA, market cap, or growth rates

Advantages

- **Market-Driven**: Reflects real-time market sentiment and conditions
- **Simplicity**: Requires less detailed forecasting compared to intrinsic valuation
- **Widely Accepted**: Trusted by market participants as a standard valuation method

Disadvantages

- **Subjective Selection**: Results depend heavily on the choice of peer companies
- **Market Volatility**: Influenced by short-term market trends, which may not reflect true value
- **Limited Forward View**: Lacks the predictive insights provided by intrinsic methods like DCF

Overview of Multiples

- Valuation multiples are financial metrics that assess a company's value relative to performance measures like earnings or cash flow
- They simplify complex financial data into ratios, making it easier to compare companies across different industries and time periods
- By using valuation multiples, analysts can quickly measure a company's relative value compared to its peers

Multiple Name	Use Case	Meaning
Enterprise Value (EV) / EBIT	Companies with significant CapEx	Value relative to op. income after depreciation
EV / EBITDA	Companies with minimal CapEx / D&A impact	Value relative to cash flow from operations
P / E	Financial institutions, general use	Value relative to net earnings
Equity Value / Levered FCF	Analyzing post-debt cash flow	Value relative to post-debt cash flow
EV / Unlevered FCF	Capital structure-neutral companies	Value relative to pre-debt cash flow

Precedent Transactions

- Precedent transactions analyze valuation multiples from past mergers or acquisitions of comparable companies
- This method often results in higher valuations due to premiums paid by buyers for full ownership and potential synergies
- The goal is to estimate a valuation range, rather than determining an exact value

Criteria

- **Geography**: Location of the target company (Europe, US, etc.)
- **Industry**: Focused sectors (F&B, Tech, etc)
- **Financial Metrics**: Revenue or EBITDA within a defined range
- **Time Period:** Transactions in the approximate same region / market conditions

Advantages

- **Reflects Realistic Market Value**: Includes the premium buyers are willing to pay for full ownership in real-world transactions
- **Captures Market Sentiment**: Considers the valuation trends and competitive dynamics at the time of the deal
- **Highly Comparable**: When carefully selected, transactions provide relevant benchmarks for valuation

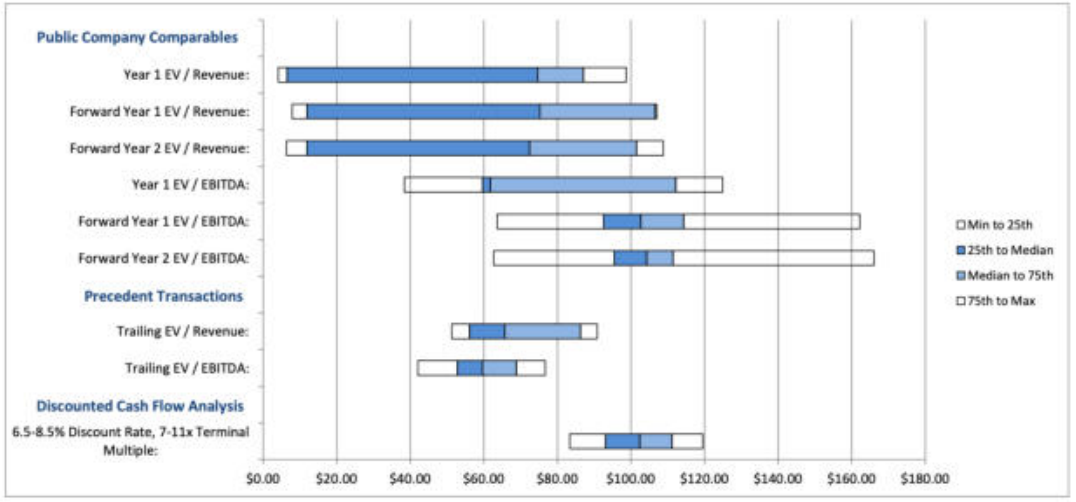
Disadvantages

- **Time Sensitivity**: Valuations may become outdated due to changing market conditions
- **Limited Data**: Often dependent on publicly available information, potentially not fully disclosing transaction specifics
- **Subjective Comparability**: Differences in deal structure, market conditions, and company specifics add difficulty

Section IV: Valuation in Practice

Valuation in Practice

”Football Field Valuation”



The range from the 25th to the 75th percentile falls between $60.00 and $80.00 for the transactions, and from $100.00 to $120.00 for the other methods. Therefore, the company's value could be estimated anywhere between $80.00 and $120.00 per share.

Key Takeaways:

- Valuation is about providing a range of possible values, not a precise number
- The results of a valuation should be interpreted as a range of values rather than an exact figure
- Football Field Chart: A visual representation of valuation ranges, showing different methodologies and their results, often with large variance

Why the Range Matters:

- Valuation accounts for different assumptions and market conditions, providing flexibility in decision-making
- The output of a model doesn't determine the exact deal price, it rather serves as a guideline for what to expect

Ad- and Disadvantages of Methods

Valuation Method	Advantages	Disadvantages
Public Comps	Real market data – no assumptions	Difficult to find 100% comparable companies, difficult for smaller / more volatile companies
Precedent Transactions	Based on real market prices	Data can be inconsistent, difficult to find truly comparable transactions
Discounted Cash Flow Analysis	Focuses on long term cash generation potential	Highly reliant on future assumptions, difficult for uncertain companies

Each methodology has its own strengths and weaknesses, leading to different results. Precedent transactions often provide the highest valuations due to acquisition premiums, while public comps tend to provide mid-range values based on market comparisons. Discounted cash flow (DCF) tends to produce lower values as it relies on future assumptions, making it more sensitive to projections and uncertainties.

Section V: Examples

DCF Example – Free Cash Flow

Calculating Free Cash Flow (FCF)

Build Up Free Cash Flow - (USD 'MM)										
Year	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**
A/F	Actual	Actual	Actual	Actual	Actual	Forecast	Forecast	Forecast	Forecast	Forecast
Revenue	33,416	33,294	40,419	59,339	47,365	53,009	59,326	66,396	74,308	83,162
EBITDA	29,721	12,287	14,381	29,059	37,287	26,528	29,689	33,227	37,187	41,618
EBIT	28,393	10,583	12,479	27,044	34,832	24,089	26,960	30,173	33,768	37,792
Tax Rate, %	*16.2%*	*20.0%*	*24.2%*	*20.0%*	*16.5%*	*20.2%*	*20.2%*	*20.2%*	*20.2%*	*20.2%*
EBIAT	**23,793**	**8,466**	**9,459**	**21,635**	**29,085**	**19,229**	**21,521**	**24,085**	**26,955**	**30,167**
Depreciation	1,328	1,704	1,902	2,015	2,455	2,439	2,729	3,055	3,419	3,826
Accounts Receivable	(401,998)	421,000	(46,000)	(40,000)	25,552	(7,931)	(17,086)	(19,122)	(21,400)	(23,951)
Inventories	-	-	-	-	-	-	-	-	-	-
Accounts Payable	2,000	(5,000)	16,000	61,000	10,000	(134)	31,205	34,924	39,085	43,743
Capital Expenditure	(7,982)	(8,443)	(6,309)	(4,667)	(3,748)	(7,520)	(8,416)	(9,419)	(10,542)	(11,798)
UFCF	**(382,859)**	**417,727**	**(24,948)**	**39,983**	**63,344**	**6,082**	**29,953**	**33,522**	**37,517**	**41,988**

1. Revenue Projections
2. Calculate EBIT
3. Adjust for Taxes
4. Account for Non-Cash Items
5. Adjust Working Capital
5. Subtract CapEx

DCF Example - WACC

Calculating Weighted Average Cost of Capital (WACC)

Share price, USD		289.91
Beta		1.42
Diluted Shares Outstanding, MM		352
Cost of Debt, %		4.3%
Tax Rate, %		20.0%
After-tax Cost of Debt, %	**3.5%**	
** Risk-Free Rate, %*		4.8%
*** Market Risk Premium, %*		5.0%
Cost of Equity, %	**12.0%**	
Total Debt - (USD 'MM)		308,000
Total Equity - (USD 'MM)		102,135
Total Capital - (USD 'MM)		410,135
Debt Weighting, %		**75.1%**
Equity Weighting, %		**24.9%**
WACC, %	**5.6%**	

1. Determining Cost of Debt
2. Determining Cost of Equity with CAPM
3. Calculate Capital Structure Weights
4. Combine using Weights

DCF Example – Terminal Value and Enterprise Value

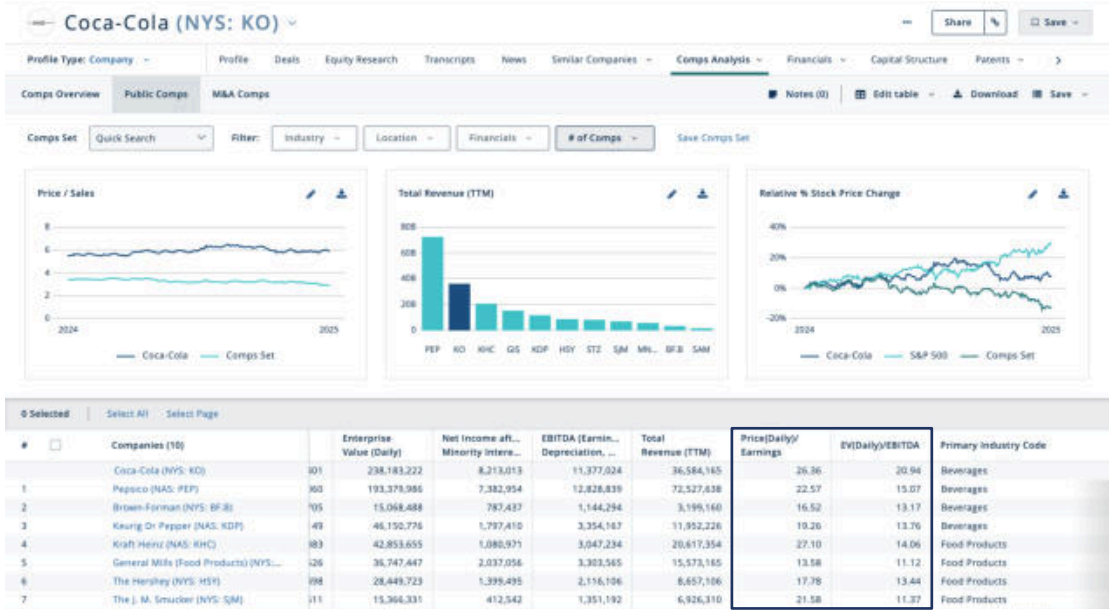
Terminal Value and Enterprise Value

Valuation - (USD 'MM)			
Terminal Value (Perpetuity Growth method) - (USD 'MM)		**Intrinsic Value**	
Long-term growth rate, %	*4.0%*	Enterprise Value - (USD 'MM)	2,232,861
WACC, %	5.6%	Net Debt - (USD 'MM)	-158,942
Free cash flow (t + 1)	43,667	Equity Value - (USD 'MM)	2,391,803
Terminal Value	2,767,290	Shares Outstanding, MM	352
Present Value of Terminal Value	2,109,540	Equity Value Per Share, USD	6,789.11

1. Calculate Terminal Value
2. Discount with WACC
3. Add Terminal Value to FCFs
4. EV-Equity Bridge

Comparable Company Analysis - Example

Example: Coca-Cola



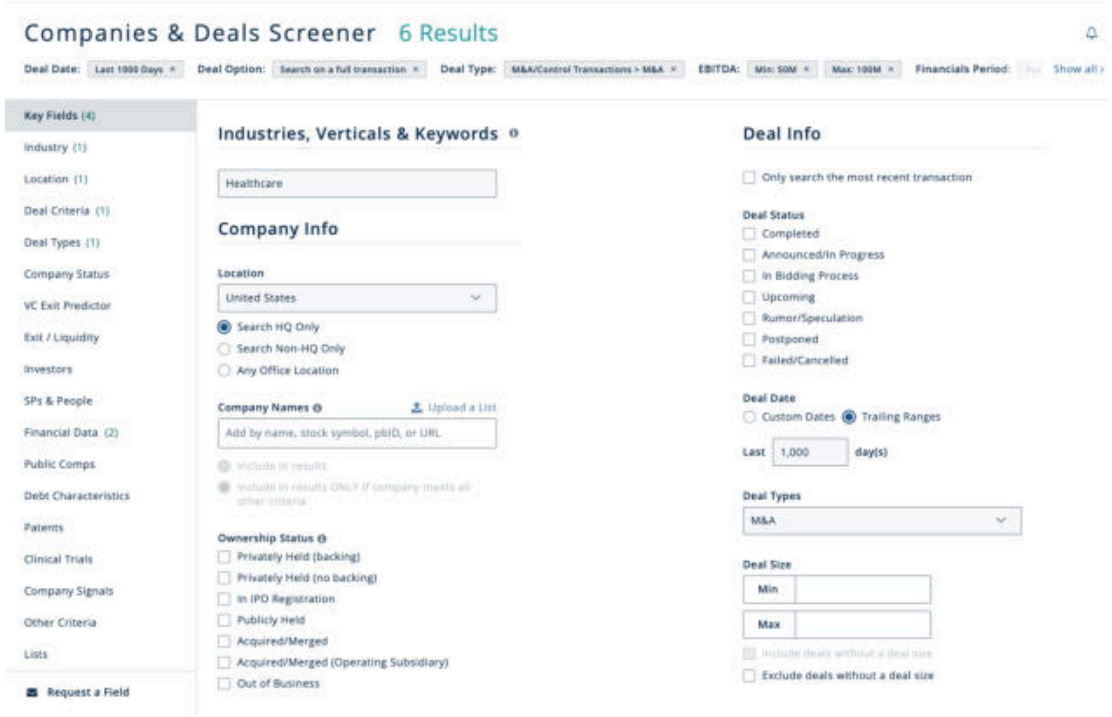
PitchBook is a popular tool for sourcing financial metrics, key multiples, and market data for public comps. It simplifies benchmarking valuations and identifying industry trends

In Practice:

- Coca Cola trades at the highest P/E and EV/EBITDA multiples amongst established beverage competitors (Pepsi & Dr. Pepper)
- Reasons for that include global brand recognition, superior margins, and diversified beverage portfolio, signalling stronger operational efficiency and lower risk

Precedent Transactions - Example

In Practice



1. Advanced Search
2. Select deal type (M&A)
3. Apply filters (geography, financials, industry, time)

Using the Advanced Search on PitchBook, start by selecting M&A as the deal type and apply key filters such as Geography, Industry, Financial Metrics (e.g., Revenue, EBITDA), and Time Frame to narrow your results. Once filtered, PitchBook provides details on target and buyer companies, transaction, deal values, and structures.

ESCP Alternative Investment Society