

Brandeis Investment Club

Valuation Methodologies

3.5.2025

Brandeis
Investment
Club



Today's Agenda

1. **Why value companies?**
2. **Valuation Methodologies**
 - a. **Public Comparable Companies**
 - b. **Precedent Transactions**
 - c. **DCF (discounted cash flow analysis)**
 - i. **Weighted Average Cost of Capital (WACC)**
 - ii. **Cost of Equity**
 1. **Beta**
 - iii. **Cost of Debt**
 - iv. **Basics of a Discount Cash Flow (DCF) & Real Example**

Goal: be able to answer “What are some ways to value a company?” in an **interview**





Why do we need to value companies?

Public Comparable Companies

Definition: Compare companies because investors need a way to determine if one company is “**more expensive**” than another.

Common Multiples:

- **EV / EBITDA**
- **EV / Revenue**
- **EV / EBIT**
- **P / E (EqV / EPS)**

Often companies are valued based on **forward metrics**, meaning the projections of these financial metrics for the future periods. By using forward metrics, the company’s **growth** is considered when determining valuation.

Criteria for Selecting Good Comps:

- **Industry/products**
- **Financial profile**
- **Geography**
- **Size**
- **Growth**



Public Comparable Companies

Comparable Company Analysis

Company	Ticker	Stock Price*	Shrs. Out. =	Market Cap.	+Total Debt	-Cash=	Enterprise Value	Revenue	EBITDA	Net Income	Price to Earnings Ratio	EV/Revenue	EV to EBITDA	
Duke Energy	DUK	114.05	774.43	88323.74	80645.00	329.00	168639.74	29060.00	12356.00	4296.00	20.56	5.80	13.65	
Southern Co	SO	90.31	1118.52	101013.54	63490.00	748.00	163755.54	25253.00	10847.00	3976.00	25.41	6.48	15.10	
Exelon Corp	EXC	40.21	1001.99	40290.02	44008.00	927.00	83371.02	21727.00	7548.00	2328.00	17.31	3.84	11.05	
American Electric Power	AEP	100.28	533.44	53493.36	43814.00	593.00	96714.36	19382.00	7319.00	2208.00	24.23	4.99	13.21	
Constellation Energy Corp	CEG	285.52	314.39	89764.63	9261.00	454.00	98571.63	21137.00	3666.00	1623.00	55.31	4.66	26.89	
			in millions	in millions	in millions	in millions	in millions	in millions	in millions	in millions				
							* as of Oct 4, 2024 4PM							
											Min	17.31x	3.84x	11.05x
											1st Quartile	21.38x	4.75x	13.32x
											Median	24.03x	5.40x	14.37x
											3rd Quartile	25.11x	6.31x	20.99x
											Max	55.31x	10.75x	26.89x
Target Company	Ticker	Stock Price	Shrs. Out.	Market Cap.	Total Debt	Cash	Enterprise Value	Revenue	EBITDA	Net Income	Price to Earnings Ratio	EV/Revenue	EV to EBITDA	
NextEra Energy	NEE	83.85	2078.16	174253.72	73623.00	2705.00	245171.72	22809.00	10678.00	7310.00	23.84	10.75	22.96	
			in millions	in millions	in millions	in millions	in millions	in millions	in millions	in millions	in millions	in millions	in millions	
										1st Quartile	Median	3rd Quartile		
P/E Implied Share Price										\$ 75.20	\$ 84.53	\$ 88.33		
EV/EBITDA Implied Share Price										\$ 33.03	\$ 38.42	\$ 72.45		

Note:

- 5 Companies listed
- Found P/E and EV/EBITDA implied share price based on 1st quartile, median, and 3rd quartile



Public Comparable Companies (CapIQ)

NICE Ltd. (TASE:NICE) ניס ג'מ"ח Public Company Profile

Website: Add www.nice.com

Number of Employees: 7,936

Current Professionals Profiled: 12

Year Founded: 1986

Business Description: NICE Ltd., together with its subsidiaries, provides cloud platforms for AI-driven digital business solutions worldwide. It offers CXone, a cloud native open platform; Enlighten, an AI engine for CX that discovers automation opportunities; self-service, digital-entry centers solutions that enable consumer needs and journey orchestration solutions that empower organizations to connect and route customers to deal with the customer's request; connects them using real time AI-based routing. The company also provides smart self service solutions that empower organizations to build intelligent automated conversations based on data; and proposed agent solutions and tools enable contact center agents to guide and alert them in real time; complete performance solutions that help organizations to record structured and unstructured customer interaction and transaction data; and NICE Evidences, an evidence management platform for public safety emergency communications, law enforcement, and criminal justice helps agencies. In addition, it offers X-Sight, an open and flexible AI-cloud platform for financial crimes and compliance, a cloud platform for comprehensive AML and fraud prevention for small and mid-sized organizations; data intelligence and analytics solutions that enable organizations to turn raw data into comprehensive actionable intelligence to prevent, detect financial crimes; AI and Analytics technologies to detect and prevent financial crimes in real-time; primary laundering and fraud prevention solutions that help organizations adhere to capital markets compliance and anti-money laundering compliance regulations; intelligent investigations solutions; and self-service solutions that provide organizations with customization and self-development capabilities. The company was formerly known as NICE-Systems Ltd. It changed its name to NICE Ltd. in June 2016. NICE Ltd. was founded in 1986 and is based in Ra'anana, Israel.

Primary Industry Classification: View Complete Industry Classification
Application Software

Primary Office Location: View All Office Addresses
13 Zarech Street PO Box 690 | Ra'anana | 4310602 | Israel
Phone: 972 9 775 3151

Current and Pending Investors: View Details
Discount Investment Corporation Ltd. (TASE:DID3)

Peer Investors: View Details
Discovery Capital Corporation, Exceptional Technologies Fund (VCC) Inc., Kooras Technologies Ltd., Koor Industries Limited, Viola Group, Viola Ventures

Stock Quote and Chart (Currency: ILS)

Stock Quote and Chart (Currency: ILS)	667.70	Market Cap (mm)	42,266.2
Last (Delayed)	667.70	Market Cap (mm)	42,266.2
Open	666.50	Shares Out. (mm)	63.3
Summary	667.70	Float %	99.9%
Fixed Income	667.70	Shares Sold Short (mm)	-
Short Interest	2.3%	Dividend Yield %	-
Equity Holdings	672.10	667.70	Dividend EPS Excl. Extra Shares
Transactions	841.10	580.60	P/Dividend EPS Before Extra
Day High/Low	6.07	Avg 3M Div Ytm (mm)	0.08
Volume (mm)	1.33		
Base Qty			

Delayed Quote* | Last updated on Oct-03-2023 12:00 AM (GMT-5) | TASE:NICE - Common Stock

NICE Ltd. (TASE:NICE) Quick Comparable Analysis

Financial Data | Trading Multiples | Operating Statistics | Business Description | Implied Valuation | Valuation Chart | Credit/Health Panel

Options | Add Companies | Display Options | Currency: US Dollar | Data as of: 10/03/2023

Options	Add Companies	Display Options	Currency: US Dollar	Data as of: 10/03/2023
NICE Ltd. (TASE:NICE) Application Software (Primary)				
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Company Name	Day Close Price Latest	Shares Outstanding Latest	Market Capitalization Latest	LTM Net Debt
1. RingCentral, Inc. (NYSE:RNG)	28.69	2,151.8	2,716.5	1,387.0
2. HubSpot, Inc. (NYSE:HUBS)	465.94	50.0	23,304.1	(729.2)
3. Palantir Technologies Inc. (NYSE:PLTR)	14.90	2,151.8	32,062.2	(2,857.3)
4. DocuSign, Inc. (NASDAQ:DOCU)	41.52	203.2	8,436.5	(965.1)
5. ANSYS, Inc. (NASDAQ:ANSI)	287.39	68.8	24,540.9	404.2
6. DataSight, Inc. (NASDAQ:DSIG)	86.97	325.0	28,268.2	(1,300.3)
7. Five9, Inc. (NASDAQ:FIVE)	61.70	72.2	4,455.5	49.3
8. Nutanix, Inc. (NASDAQ:NTNX)	34.31	239.6	8,221.2	(107.5)
9. Salesforce, Inc. (NYSE:CRM)	199.83	973.0	194,434.6	1,504.0
10. Sinch AB (pub) (OM:SNCH)	1.74	842.9	1,466.2	849.4
Peer Analysis				
Quick Compare				
Comparable IMA Transactions				
Credit/Health Panel				
Charting				
Chart Builder				
Annotated Stock Chart				
Fixed Income				
Summary				
High				
Low				
Mean				
Median				
MHA/Private Placements				
Public Offerings				
Investor Relations				
Transaction Advisors				
Business Relationships				

Note:

1. Lots of companies listed automatically (DONT TAKE AUTOMATIC ONES DO YOUR OWN RESEARCH)
2. Automatically pulls data that you can download in excel



Precedent Transactions

Step 1: Compile Comparable Transactions

- Identify relevant past transactions for benchmarking.

Step 2: Conduct Market Research

- Gather industry trends and factors influencing purchase multiples.

Step 3: Input & Adjust Financial Data

- Organize and standardize financials, adjusting for non-recurring items, accounting differences, and seasonality.

Step 4: Calculate Peer Group Multiples

- Compute valuation multiples (LTM & NTM) and summarize key statistics (min, median, max, percentiles).

Step 5: Apply Multiples to Target

- Use median/mean multiple to estimate target value, considering key deal drivers and unique factors.



DCF Overview

- The basic theory of a DCF is that a **business is worth the sum of its expected future cash flows discounted to the present value** using a discount rate that reflects the riskiness of the cash flows.

$$\text{Value of Business} = \sum_{t=1}^{t=n} \frac{\text{Cash Flow}_t}{(1 + \text{Discount Rate})^t}$$

Note: we discount because of time value of money (money tomorrow is worth less than today)

- Example**: Consider a business with the following expected future cash flows. Assume the **discount rate is 10%**.

Time Period	Year 1	Year 2	Year 3	Year 4	Year 5
Cash Flows	\$100	\$105	\$110	\$115	\$120
Present Value of Cash Flows	$\frac{100}{(1 + .1)^1}$	$\frac{105}{(1 + .1)^2}$	$\frac{110}{(1 + .1)^3}$	$\frac{115}{(1 + .1)^4}$	$\frac{120}{(1 + .1)^5}$
Sum of Present Values =	$\frac{100}{(1 + .1)^1} +$	$\frac{105}{(1 + .1)^2} +$	$\frac{110}{(1 + .1)^3} +$	$\frac{115}{(1 + .1)^4} +$	$\frac{120}{(1 + .1)^5}$

Sum of Present Values = \$413.39



Basics of a DCF analysis

❖ Description:

- Intrinsic valuation methodology
- **Discount projected free cash flows and terminal value** at cost of capital to obtain enterprise value, then subtract net debt to derive equity value

❖ Steps:

1. Calculate unlevered FCFs 5-10 years
2. Calculate terminal value
3. **Calculate WACC (weighted average cost of capital)**
4. Determine PV of FCFs + terminal value = enterprise value
5. Solve for equity value and implied share price (upside)



Equity

Market Value of Equity / Company Total market Value * Cost of Equity

Company Total Market Value = Company Debt + Equity

Cost of Equity = Risk Free Rate + Beta (Market Return of stock - Risk Free Rate

Market Value of Equity = share price * diluted shares

Assets	This Year	Last Year
Current assets		
Cash and cash equivalents	\$ 10,000	\$ 10,000
Accounts receivable	35,000	30,000
Inventory	25,000	20,000
Total current assets	70,000	60,000
Fixed assets		
Plants and machinery	\$ 20,000	\$ 20,000
Less depreciation	-12,000	-10,000
Land	8,000	8,000
Intangible assets	2,000	1,500
Total assets	88,000	79,500
Liabilities and Shareholders' Equity		
Liabilities		
Accounts payable	\$ 20,000	\$ 15,000
Taxes payable	5,000	4,500
Long-term bonds issued	15,000	10,000
Total liabilities	40,000	29,500
Shareholder's equity		
Common stock	\$ 40,000	\$ 40,000
Retained earnings	8,000	10,000
Total shareholder's equity	48,000	50,000
Liabilities and shareholders' equity	\$ 88,000	\$ 79,500



Cost of Equity

Cost of Equity = Risk Free Rate + Beta (Market Return of stock - Risk Free Rate)

$$r_e = r_f + \beta(r_m - r_f)$$

Risk Free Rate = 10 Year Treasury Rate (google)

where

r_e = Required Return on Equity

r_f = Risk-free Rate

r_m = Market Return

β = Stock Beta

$(r_m - r_f)$ = Equity Risk Premium

Beta (levered) = Volatility of a stock compared to the market

Market Return of Stock = Expected Return of Equity Markets



Beta

Unlevered: Does not incorporate capital expenditures into calculation

Remove any financial leverage, allows to see just market risk of company assets

Levered: Includes capital expenditures. Used for calculations.

Beta = 1; Asset moves with the market

Beta > 1; Asset is more volatile than market

Beta < 1; Asset less volatile than market

Unlevering Beta

$$\beta_U = \beta_L / [1 + D/E * (1 - T)]$$

β_U = unlevered (asset) beta

β_L = levered (equity) beta

D/E = debt-to-equity ratio

T = marginal tax rate

Relevering Beta

$$\beta_L = \beta_U * [1 + D/E * (1 - T)]$$

β_L = levered (equity) beta

β_U = unlevered (asset) beta

D/E = target debt-to-equity ratio

T = marginal tax rate



Cost of Equity

$$WACC = \frac{V_e}{V_e + V_d} \times C_e + \frac{V_d}{V_e + V_d} \times C_d$$



Debt

$$= \text{Cost of Debt} * (1 - \text{Tax}) * \text{Market Value of Debt} / \text{Company Total Market Value}$$

Tax = Tax Rate of Company (From 10k)

Cost of Debt = Interest Expense / Total Debt

Market Value of Debt = From Balance Sheet

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Summary

1. Public Comparable Companies

- a. Find companies similar to compare with (10k, CapIQ, Bloomberg Terminal EQRV)
- b. Calculate multiples (EV/EBITDA, P/E, etc.)
- c. Find implied share price

2. Precedent Transactions

- a. Find comparable deals
- b. Conduct Market Research
- c. Input & adjust financial data
- d. Calculate peer group multiples
- e. Apply multiples to target

3. DCF (discounted cash flow)

- a. Calculate unlevered FCFs 5-10 years
- b. Calculate terminal value
- c. **Calculate WACC (weighted average cost of capital)**
- d. Determine PV of FCFs + terminal value = enterprise value
- e. Solve for equity value and implied share price (upside)





**Who can answer “What are some ways
to value a company?”**