

Choice of Valuation Models

SBM Fund

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Sources:

Investm. Valuation 3rd ed. (2012) by Damadoran, NYU
Analyst Guide (2018) by Stockholm Business School
Valuation 6th ed. (2015) by McKinsey & Company
Good Stocks Cheap (2017) by K. J. Marshall

Key Questions to Answer

Do I understand the business?

Products/services
Distribution
Customers
Suppliers
Management
ESG
Industry
Geography

Is the business good?

Past:
Financials
Shareholder friendliness
Future:
Market forces
Competitive advantage(s)
Growth Prospects
Risks

Is the stock inexpensive?

Absolute valuation (DCF)
Relative valuation (multiples)
Scenario & sensitivity analysis

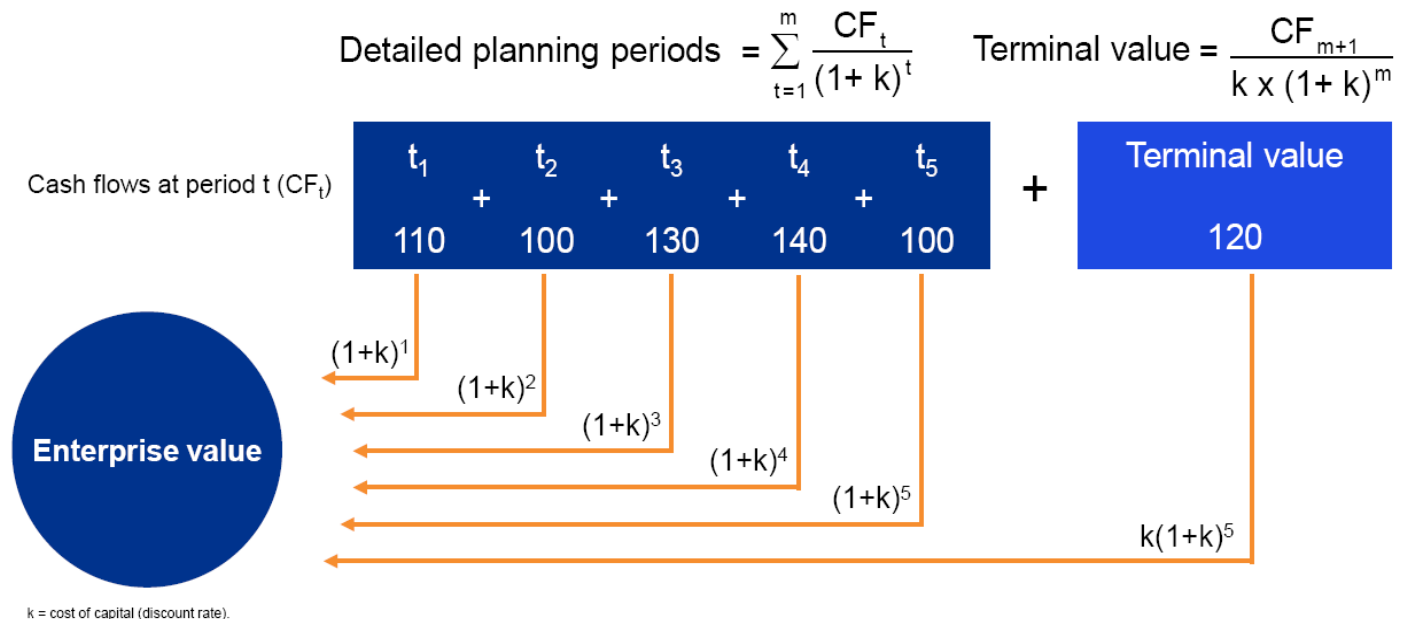
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Absolute Valuation Models

Discounted Cash Flow Model

Discounted Cash Flow Model

- » Future payoffs are discounted back to the present day using an appropriate risk-adjusted rate of return to determine a company's intrinsic value



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Relative Valuation Models

Comparable Company Analysis

Comparable Company Analysis

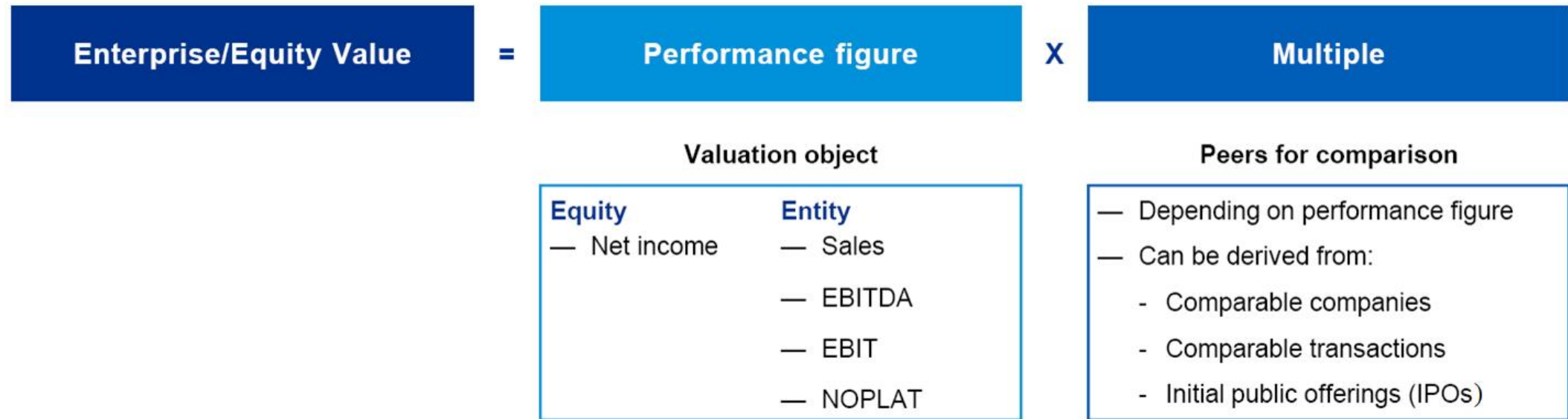
Reasons for Multiples' Popularity on Wall Street

- » Used for analyzing market sentiment for timing market transactions by using market values (P, EV) as numerator
- » Intrinsic values from DCF can take years to correct themselves whereas companies trading at the lower end of a multiples spectrum without apparent reasons due to cash flow, growth and risk characteristics will tend to adjust quite quickly
- » Analysts have incentives not to be wrong along (rely on market consensus as they would get fired if own assumptions turn out false)

Caution

- » Market mispricing will be carried on (entire groups of companies or sectors can be over- or undervalued, causing the target company also being over- or undervalued relative to its intrinsic value)

Comparable Company Analysis



Comparable Company Analysis Process

Step 1: Selecting the Universe of Comparables (“Comps”)

- » *Similar* operational characteristics
 - » Industry
 - » Products (business segments or pure play?)
 - » Customers
 - » Location (legal/operational)
 - » Distribution channel
 - » Cyclicity
- » *Similar* financial characteristics
 - » Size (market capitalization, enterprise value)
 - » Projected growth
 - » Risk profile
 - » Leverage (debt)
 - » Shareholder base

Comparable Company Analysis Process

Step 2: Standardizing the price

- » **Scale** the equity value (market capitalization) or enterprise/firm value by some common fundamental metric
- » *Caution:* might have to **adjust for differences across assets**
 - » Use metrics further up in the income statement to avoid accounting differences

Step 3: Computing median (preferred) or mean of multiples

Step 4: Implied Value

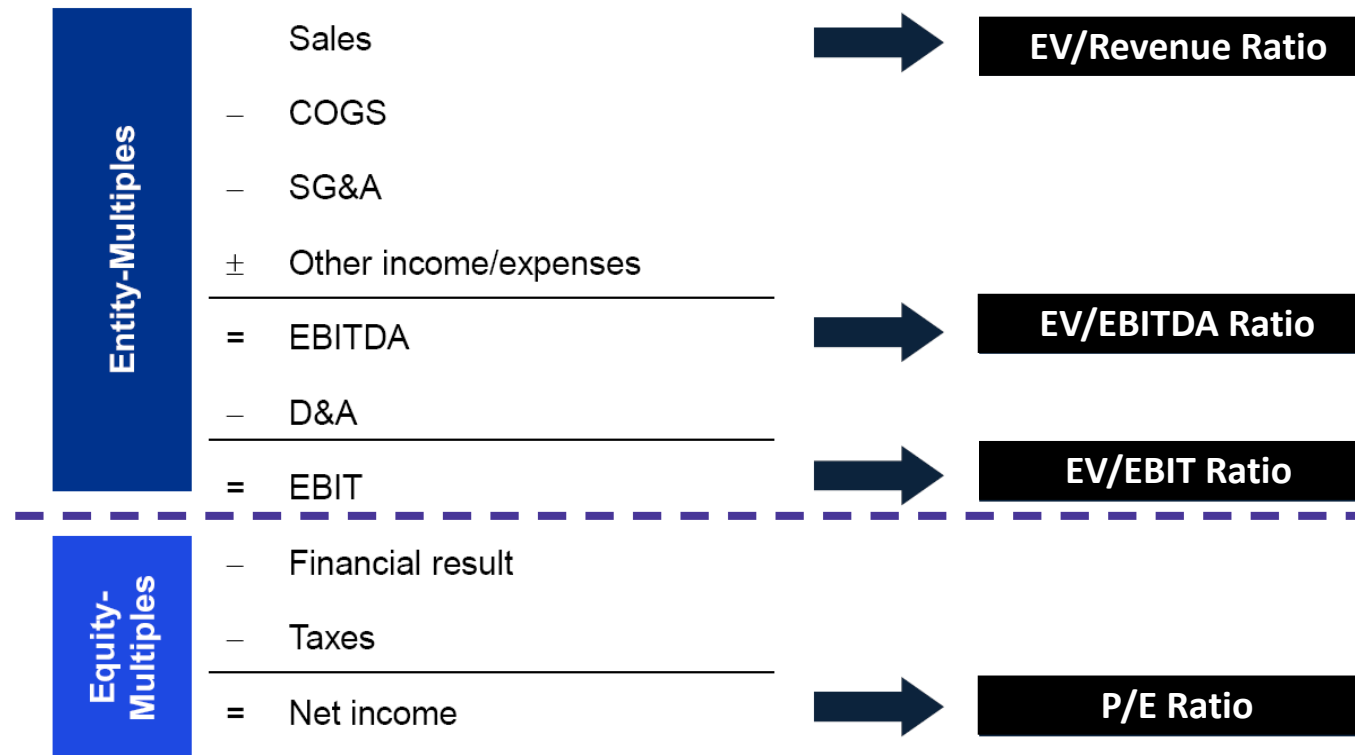
- » Multiply the median multiple with the target company's metric (e.g. peer group's EV/IC multiple times own invested capital (IC) projection)

Comparable Company Analysis

- » Pricing a target company by an average or (preferably) median multiple derived from comparable companies is similar to **valuing a house**:
 - (1) Look at how much surrounding houses are worth relative to square feet, which are comparable in size, number of bedrooms/bathrooms, (un)furnished, maintained condition, etc.
 - (2) Find median price-to-square feet multiple
 - (3) Apply multiple to number of square feet in target house to get its implied price

Types of Multiples

P&L-Based Multiples



Types of Multiples

Trailing Multiples

- » Based on last twelve months (LTM) or earlier
- » *Caution:*
 - » Backvaluation assumes that historical values are going to repeat and that company has not fundamentally changed (invalid for cyclical businesses)
 - » Backwards looking earnings are widely dispersed (include one-time items)
 - » Trailing denominator is not consistent with leading numerator

Types of Multiples

Forward Multiples

- » Based on projected **next twelve months (NTM) or longer**
 - » Looking just 1 year ahead into the future might fool you due recent short-term effects
→ use analysts' estimations **3-5 years into the future**, which are usually very stable
- » Use analyst consensus estimates to project peer companies' fundamentals and own projections for target company's fundamentals
- » **Denominator matches with numerator** (both are based on future projections)
- » *Caution:*
 - » Remove **one-time effects** to normalize company's historical results as they are usually the base for forecasts
 - » **Consensus estimates deficiencies:**
 - » Consensus estimates for target company might be only based on single analyst
 - » Sell-side analysts forecasts can be overly optimistic
 - » Uncertainty whether one-time and short-term effects were stripped out

Types of Multiples

Trailing/Forward Multiples

- » Normalizing earnings by removing one-time items



Types of Multiples

Earnings-Based Multiples

$$\text{EV/EBITDA} = \frac{\text{Enterprise value}}{\text{EBITDA}}$$

$$\text{Adj. EV/EBITDA} = \frac{\text{Enterprise value}}{\text{EBITDA} - \text{Maintenance CapEx}}$$

$$\text{EV/EBIT} = \frac{\text{Enterprise value}}{\text{EBIT}}$$

$$\text{EV/NOPAT} = \frac{\text{Enterprise value}}{\text{NOPAT}}$$

CapEx = capital expenditures (on company growth and/or maintenance)

EBIT(DA) = earnings before interest, taxes, (depreciation, amortization) | NOPAT = net operating profit after taxes

Types of Multiples

Earnings-Based Multiples [cont'd]

$$P/E = \frac{\text{Market capitalization}}{\text{Net earnings}}$$

$$PEG = \frac{P/E}{\text{Net earnings growth rate (p. a.)}}$$

Sales-Based Multiples

$$EV/Sales = \frac{\text{Enterprise value}}{\text{Revenues}}$$

Types of Multiples

Why is EV/EBITDA generally better than P/E?

- » Mix of equity and debt matters only for market capitalization (not EV)
- » EPS is subject to:
 - » Different accounting principles
 - » Accounting manipulation
 - » One-time income or charges
 - » Non-cash and non-operating items

When is P/E better than EV/EBITDA?

- » When valuing companies with **negligible debt** (e.g. tech companies)
- » When valuing equity investments with < 50% ownership (**minority interest**) and thus no control over enterprise → EV multiples inappropriate

Types of Multiples

Cash Flow-Based Multiples

$$\text{EV/FCFF} = \frac{\text{Enterprise value}}{\text{FCFF}}$$

$$\text{P/FCFE} = \frac{\text{Market capitalization}}{\text{FCFE}}$$

Book Value-Based Multiples

$$\text{P/B} = \frac{\text{Market capitalization}}{\text{Equity book value}}$$

$$\text{P/TBV} = \frac{\text{Market capitalization}}{\text{Tangible equity book value}}$$

Types of Multiples

Book Value-Based Multiples [cont'd]

$$EV/IC = \frac{\text{Enterprise value}}{\text{Invested capital}}$$

Industry-Specific Multiples



EV / EBITDAR (excl. rent costs)



EV / Researchers or Scientists



EV / mboe / d (production) P / NAV
EV / 2P Reserves P / DACF



P / B EV / AUM
P / TBV P / E



EV / tonnes / d (production) P / NAV
EV / Reserves



P / FFO P / NAV
P / AFFO



EV / Users or Subscribers or Members
EV / Revenue EV/FCFF

Natural Resources

- P / NAV for mining and energy
- NAV is a DCF on each company's assets using a different discount rate for each project
- EV / Production
- Production measured in BOE / Day (barrels of oil equivalent) or Tons / Day (metric tons)
- EV / Reserves
- EV / Proven Reserves (1P)
- EV / Proven & Probable (2P)
- 1P → 90%, 2P → 50%, 3p → 10%

Financial Institutions

- P / B, P / TBV and P / E for banks
 - TBV = Tangible Book Value
- EV / AUM for asset management
 - AUM = Assets Under Management

Real Estate

- P / FFO for REITS
 - FFO = Funds from Operations
 - Net Income + D&A
- P / AFFO
 - AFFO = Adjusted Funds from Ops
 - Net Income + Rent Increases + Certain CAPEX

Summary Statistic of Comparable Companies

	Equity Value	P/E			P/B	P/TBV	Div. Yield	ROE
		LTM	2017E	2018E	LTM	LTM	LTM	LTM
<u>U.S. Regional Insurance Companies</u>								
Cincinnati Financial Corp	\$12,520	26.9x	26.6x	24.5x	1.7x	1.7x	2.6%	8.1%
American Financial Group	\$9,020	15.1x	15.3x	14.8x	1.7x	1.8x	3.7%	15.4%
Hanover Insurance Group	\$4,080	21.6x	17.0x	13.3x	1.4x	1.5x	2.1%	6.6%
RLI Corp	\$2,410	27.7x	27.2x	27.6x	2.8x	3.0x	5.2%	11.2%
Safety Insurance Group Inc	\$1,100	18.6x	18.1x	17.4x	1.6x	nmf	4.0%	9.2%
United Fire Group Inc	\$1,050	26.4x	26.3x	18.4x	1.1x	1.1x	2.5%	4.9%
United Insurance Holdings Corp	\$677	nmf	10.5x	8.1x	1.3x	1.7x	1.5%	1.0%
U.S. Regional Insurance Average		22.7x	20.7x	17.7x	1.5x	1.8x	3.0%	8.0%
Universal Insurance Holdings	\$720	7.5x	6.6x	6.1x	1.7x	1.7x	3.3%	26.2%

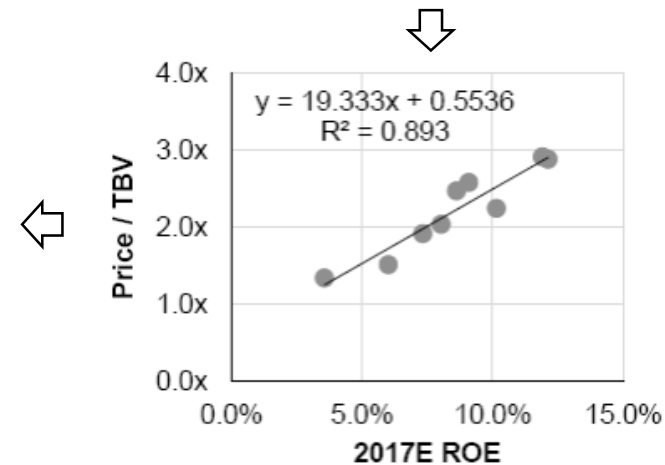
- » Not include analyzed company in sample median/average multiple
- » Include metrics that drive industry multiples (c.f. next slide)
 - » *Examples:* revenue growth, ROE, ROA, dividend yield, etc.

Regression Analysis

Sample P/TBV x ROE Regression Analysis for FCB Financial Holdings (NYSE:FCB)

Ticker	Name	Price	Mkt. Cap.	TBV per Share	P/TBV	ROE		
						LTM	2017E	2018E
LTXB US Equity	LegacyTexas Financial Group In	42.44	2,032	14.75	2.9x	11.5%	12.1%	12.4%
CFFN US Equity	Capitol Federal Financial Inc	14.95	2,063	9.92	1.5x	6.0%	6.0%	6.5%
BANR US Equity	Banner Corp	59.39	1,966	31.06	1.9x	6.6%	7.3%	7.9%
FIBK US Equity	First Interstate BancSystem In	43.55	1,960	16.92	2.6x	9.9%	9.1%	10.2%
CBF US Equity	Capital Bank Financial Corp	40.15	2,079	19.77	2.0x	5.1%	8.0%	7.9%
UCBI US Equity	United Community Banks Inc/GA	28.84	2,083	12.87	2.2x	9.6%	10.2%	10.5%
EGBN US Equity	Eagle Bancorp Inc	62.85	2,144	21.61	2.9x	12.4%	11.9%	11.8%
AF US Equity	Astoria Financial Corp	18.48	1,871	13.82	1.3x	4.0%	3.6%	3.5%
SFNC US Equity	Simmons First National Corp	59.05	1,851	23.97	2.5x	8.8%	8.6%	9.0%
	Average	41.08	2,005	18.30	2.2x	8.2%	8.5%	8.9%
	Median	42.44	2,032	16.92	2.2x	8.8%	8.6%	9.0%
FCB US Equity	FCB Financial Holdings Inc	48.80	2,020	21.78	2.2x	10.8%	11.6%	12.1%

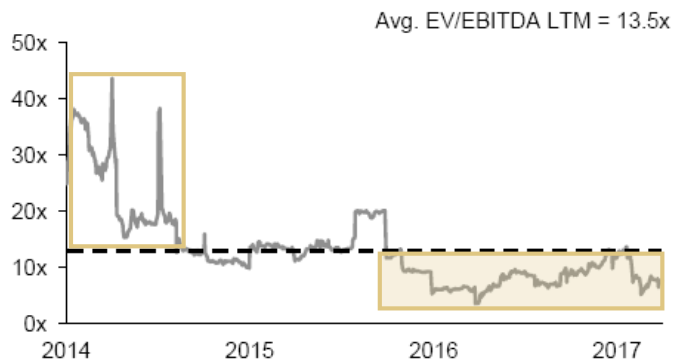
	LTM	2017E	2018E
Regression Intercept	0.74	0.55	0.53
Regression Coefficient	17.87	19.33	18.92
Return on Equity	10.8%	11.6%	12.1%
P / TBV Estimate	2.7x	2.8x	2.8x
TBV of FCB	21.78	21.78	21.78
Price estimate of FCB stock	57.93	60.82	61.38
<i>% Upside (potential return)</i>	<i>19%</i>	<i>25%</i>	<i>26%</i>



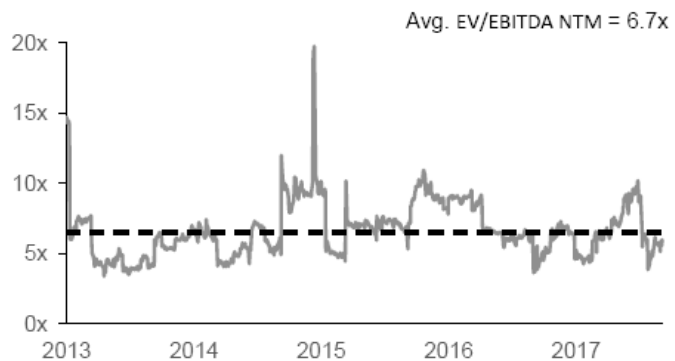
P/TBV is positively correlated with ROE for sample (peers)

Historical Trend Analysis of Multiples

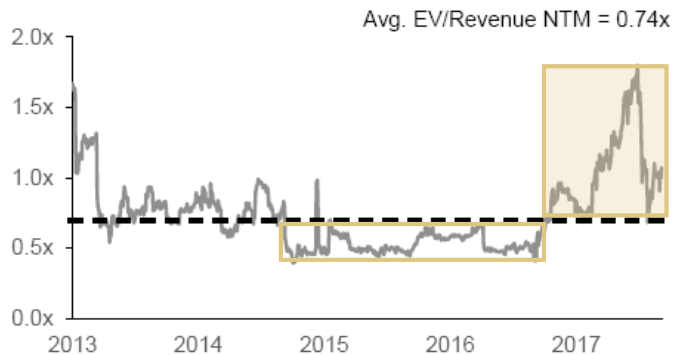
Historic EV/EBITDA LTM (1)



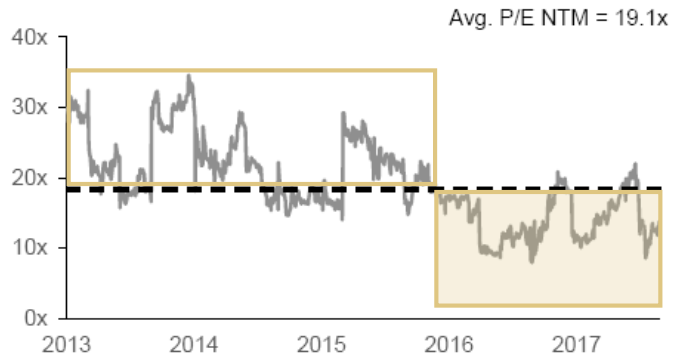
Historic EV/EBITDA NTM (2)



Historic EV/Revenue NTM (3)



Historic P/E NTM (4)



- (1) Peer group trades for the last 2.5 years at below-average multiples
→ **no clear buy signal**
(check EBITDA growth rate)
- (2) Peer group trades around the multiple's mean
→ **no clear buy signal**
- (3) Sudden drop in multiple after steady increase
→ **potential buy signal**
(research on reason for sharp decline)
- (4) Repeated drops in multiple
→ **no clear buy signal**

Multiples Scoring

Same Industry	EV/EBITDA	EV/EBIT	EV/NOPAT	EV/IC	Score	Rank
Weighting	25%	25%	25%	25%	compute	
Stock 1	12.6x	16.4x	20.9x	1.5	0.7163	1
Stock 2	9.7x	12.5x	18.5x	4.0	0.9637	3
Stock 3	15.2x	18.3x	23.3x	3.0	0.9375	2

» Compare relative scores of selected stocks from *same industry* based on a **weighted average** of discretionary multiples. First, each value in the columns is divided by the max. value in its respective column. This puts all values on a scale of 0 to 1.

» Example: *Stock #2 Score*

$$(9.7 / 15.2) * 25\% + (12.5 / 18.3) * 25\% + (18.5 / 23.3) * 25\% + (4.0 / 4.0) * 25\% = 0.9637$$

3

Investment Model Validation

Sensitivity & Scenario Analysis

Investment Model Validation

Sensitivity Analysis

- » Examine how the estimated share price would vary based on **slight changes in particular inputs** in your valuation (e.g. discount/growth rates)
 - » Precautionary measures in case you are (highly) uncertain about own projections for single variables

Scenario Analysis

- » **Fair value range**: based on fin. projections for *worst/likely/best case scenarios*
- » **Margin of safety**: % difference between the base-case scenario and the current (lower) share price

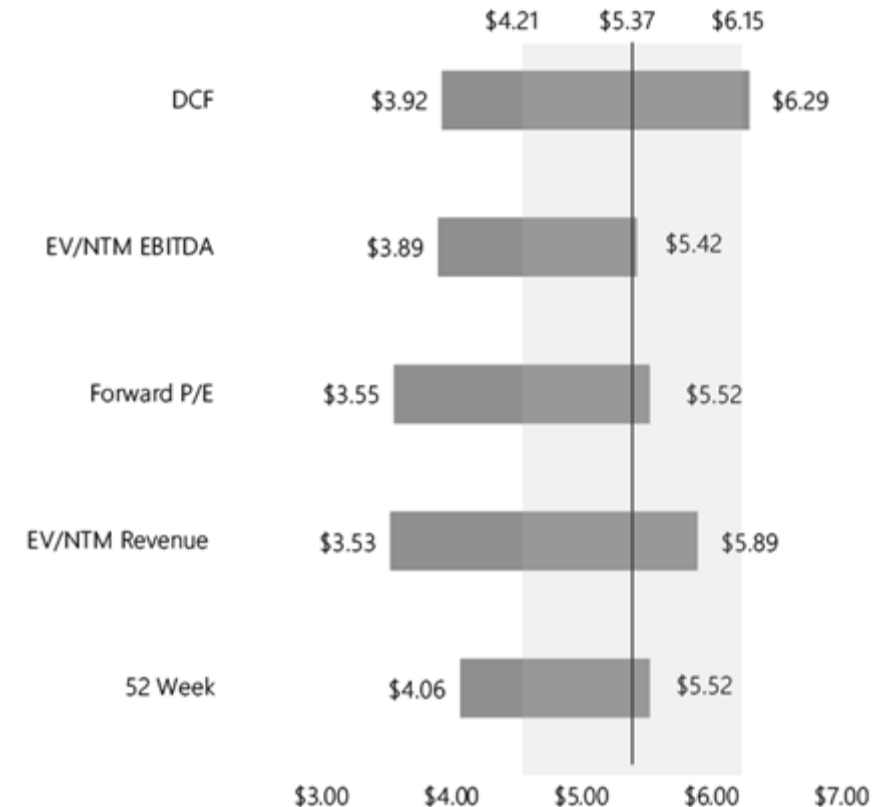
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Investment Decision Process

Price Range & Weighted Av., Return-Growth-Price Assessment, Margin of Safety

Price Range & Weighted Price Average

- » Valuation methods can yield quite **different value estimates** (price range)
- » Compute a weighted average, e.g. based on **60/40 split** of absolute/relative methods (50/50 split for opportunistic special situation investments)
- » *Example*
 - » Current share price: \$4.77
 - » Fair value range: \$4.21 - \$6.15
 - » 12M target price: \$5.37
 - » Potential upside: 12.5%



Combined Return/Growth/Price Assessment

Return (ROCE _{EBIT} , ROCE _{FCFE})	Growth (ΔEBIT/FDS, ΔFCFE/FDS)	Price (EV/EBIT, P/FCFE)	Decision	Reasoning
X	✓	✓	Buy	Investors might accept an <i>average return</i> of a company that had a <i>good growth rate</i> and is <i>inexpensive</i>
✓	X	✓	Buy	Investors might accept an <i>average growth rate</i> for a company that <i>returned well</i> and is <i>inexpensive</i>
✓	✓	X	Buy Don't Buy	Long-term investors will own share long enough to see ROCE _{EBIT} & ROCE _{FCFE} govern their investment return Short-term investors won't own companies long enough to care about anything but price
X	X	✓	Don't Buy	

» **Strength in two categories** can compensate for averageness in the third

» *Attention:* Compare metrics which are either EBIT- or FCFE-based
(don't mix metrics related to different financial outputs)

Margin of Safety

- » Since valuation is by its nature imprecise, must leave a margin of error (e.g. 20%) for being partially wrong and still have a favorable outcome
 - » Leave a sufficient margin of safety to have the expectation of a **double-digit annualized rate of return** over the long-term
- » Margin depends on **predictability of a company's future fundamentals**
 - » The slower the current and potential pace of change of the industry structure, the more predictable is a business in a given industry
 - » The greater the company's ability to earn superior economic results that others cannot easily replicate due to its strong competitive advantage(s), the better it is protected against unexpected adverse economic developments

Thank you for listening.

If this was interesting to you, join SBM.

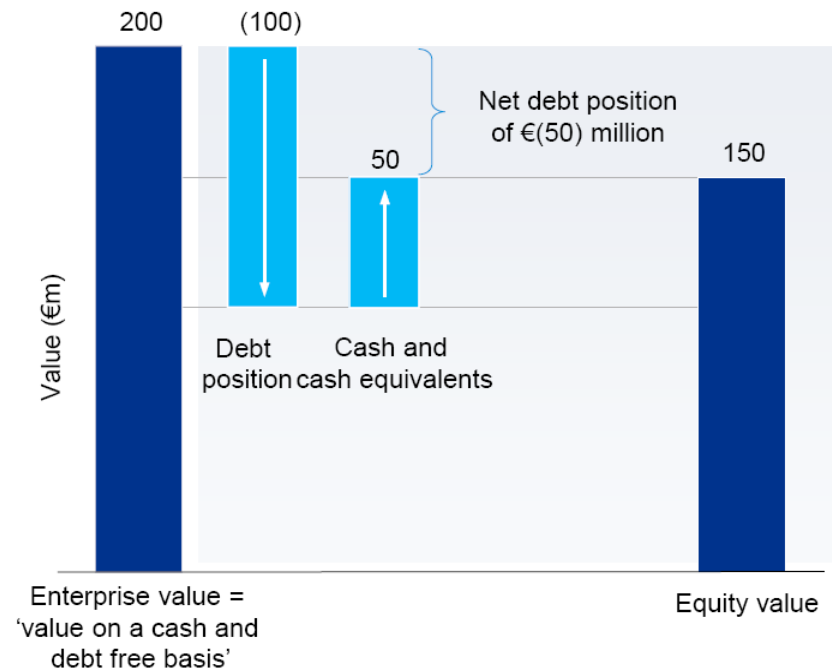


Appendices

Equity vs. EV, Formulas of Model Input Variables

Equity Value vs. Enterprise Value

- » Businesses are often purchased on a cash- and debt-free basis with the net debt [debt & debt equivalents – (excess) cash & cash equivalents] deducted from the purchase price



Formulas of Model Input Variables

» The values of these variables are published in a company's most recent annual or quarterly financial statement (10-K/10-Q)

Balance Sheet

Market Capitalization: $\text{Market cap} = \# \text{common shares outstanding} * \text{current common share price}$

Enterprise/firm value: $\text{EV} = \text{Market cap} + \text{Pref. equity} + \text{NCI} + \underbrace{\text{Debt} - \text{Excess cash \& marketable sec.}}_{\text{Net debt}}$
(use MVs where possible)