Ch. 7 Market-Based Valuation:

Relative Value

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LAW OF ONE PRICE

VALUATION INDICATORS

Price Multiples

Enterprise Value Multiples

Multiple
Price-to-earnings (P/E)
Price-to-book (P/B)
Price-to-sales (P/S)
EV-to-EBITDA (EV/EBITDA)
EV-to-Free Cash Flow (EV/FCFF)
EV-to-Sales(EV/S)

METHODS FOR PRICE AND ENTERPRISE VALUE MULTIPLES

1. Method of Comparables

- Economic rationale is the law of one price

2. Method Based on Forecasted Fundamentals

- Reflects firm fundamentals and future cash flows

PRICE-TO-EARNINGS MULTIPLE RATIONALES AND DRAWBACKS

Rationales	Drawbacks
EPS is driver of value	Zero, negative, or very small earnings
Widely used	Permanent versus transitory earnings
Related to stock returns	Management discretion for earnings

PRICE-TO-EARNINGS MULTIPLE DEFINITIONS

Trailing P/E

Uses last year's earnings

LTM

Preferred when forecasted earnings are not available

Forward P/E

Uses next year's earnings

NTM

Preferred when trailing earnings are not reflective of future

ISSUES IN CALCULATING EPS

EPS Dilution	Underlying Earnings
Normalized Earnings	Differences in Accounting Methods

EXAMPLE: NORMALIZED EARNINGS

Year	EPS	BVPS	ROE
2019	\$0.66	\$4.11	16.1%
2018	\$0.55	\$3.67	15.0%
2017	\$0.81	\$2.98	27.2%
2016	\$0.73	\$2.12	34.4%
2015	\$0.34	\$1.61	21.1%

2020 stock price \$24.00

1) Method of historical average EPS

$$\text{Average (normalized) EPS} = \frac{(\$0.66 + \$0.55 + \$0.81 + \$0.73 + \$0.34)}{5} = \$0.618$$

$$\text{P/E} = \$24.00 / \$0.618 = 38.8$$

2) Method of average ROE

$$\text{Average ROE} = \frac{(16.1\% + 15.0\% + 27.2\% + 34.4\% + 21.1\%)}{5} = 22.8\%$$

$$\text{Average (normalized) EPS} = \text{Average ROE} \times \text{Current equity book value per share}$$
$$\text{Average (normalized) EPS} = 22.8\% \times \$4.11 = \$0.937$$

$$\text{P / E} = \$24.00 / \$0.937 = 25.6$$

METHOD OF COMPARABLES

Benchmark Value of the Multiple Choices

- Industry peers
- Industry or sector index
- Broad market index
- Firm’s historical values

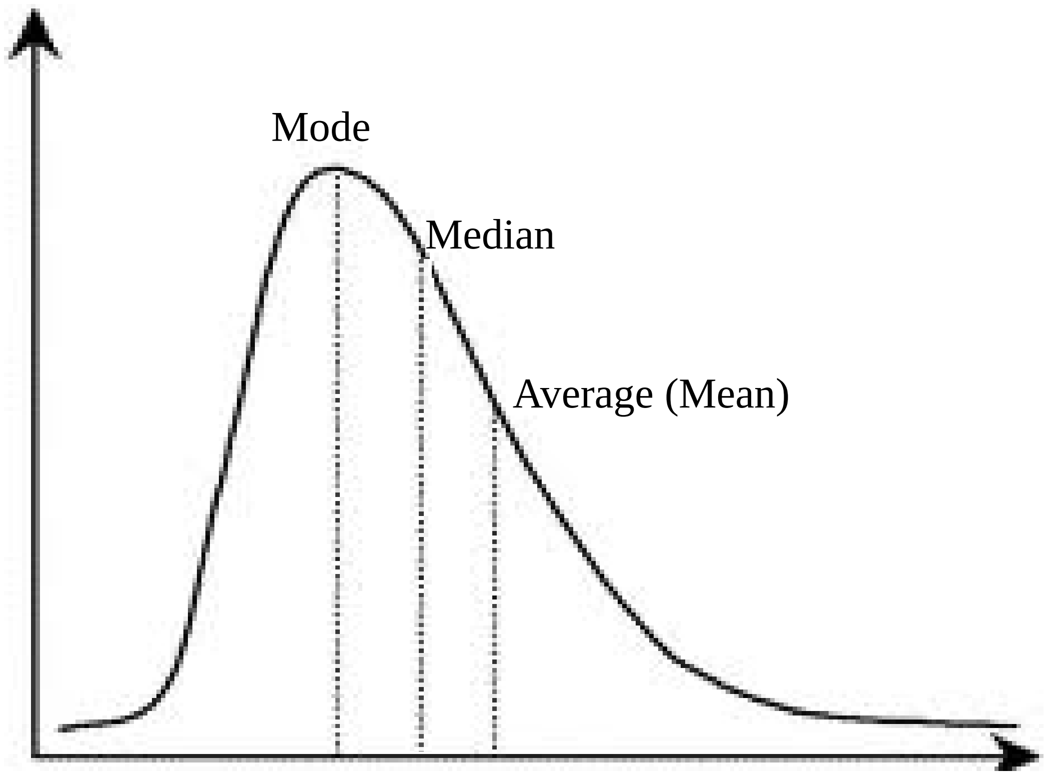
METHOD OF COMPARABLES
USING PEER COMPANY MULTIPLES

- Law of one price
- Risk and earnings growth adjustments
- PEG = P/E Ratio / Growth
  - Attempts to adjust for Growth
  - PEG < 1.2 = Buy
  - PEG > 1.2 = Sell

AVERAGE VS MEDIAN

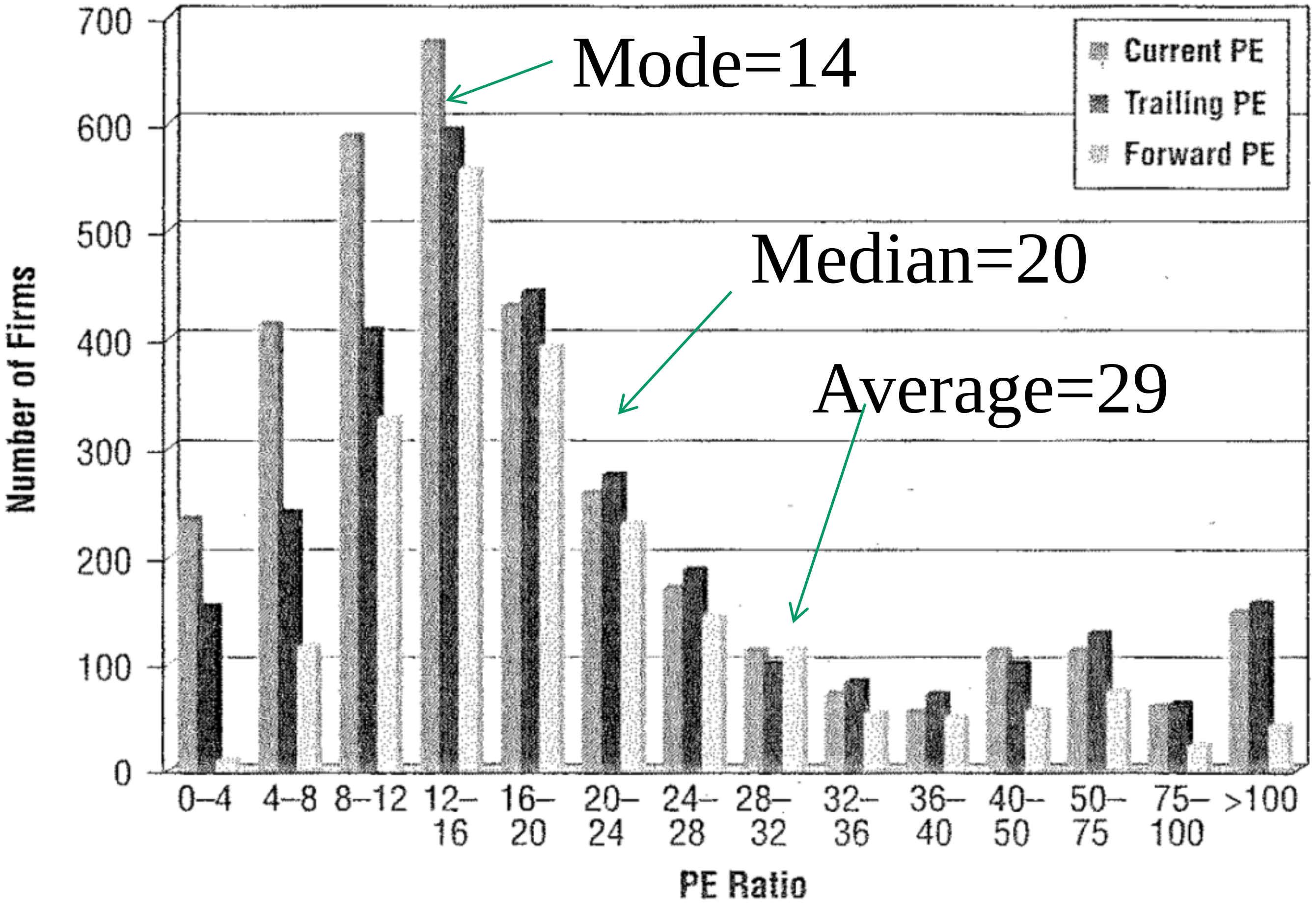
With stock returns, we assume a normal distribution because you will have negative returns (losses).

However, when analyzing ratio's such as EV/Sales, EV/EBITDA, EV/EBIT, P/E, etc. you will find the distribution to be positively skewed since these ratio's cannot be less than 0.



P/E ratio of 25 would appear to be

<u>cheap versus the Average</u> BUT <u>expensive versus the Median</u>



METHOD OF COMPARABLES
USING OWN HISTORICAL MULTIPLES

- Rationale: Regression to the Mean
- Approaches:
  - 5-10 year average trailing multiple
  - Average of four middle values over past 10 years
- Potential Problems from Changes in
  - firm business
  - firm financial leverage
  - interest rate environment
  - economic fundamentals
  - inflationary environment

PRICE-TO-BOOK VALUE MULTIPLE RATIONALES

- Book Value Is Usually Positive
- More Stable than EPS
- Appropriate for Financial Firms
- Appropriate for Firms that Will Terminate
- Can Explain Stock Returns

PRICE-TO-BOOK VALUE MULTIPLE DRAWBACKS

- Does Not Recognize Nonphysical Assets
- Misleading when Asset Levels Vary
- Can Be Misleading Because of Accounting Practices
- Less Useful when Asset Age Differs
- Can Be Distorted Historically by Repurchases

INVERSE PRICE RATIOS

Price Ratio	Inverse Price Ratio
Price-to-earnings (P/E)	Earnings yield (E/P)
Price-to-book (P/B)	Book-to-market (B/P)
Price-to-sales (P/S)	Sales-to-price (S/P)
Price-to-cash-flow (P/CF)	Cash flow yield (C/P)
Price-to-dividends (P/D)	Dividend yield (D/P)

ENTERPRISE VALUE/EBITDA MULTIPLE RATIONALES AND DRAWBACKS

Rationales

- Useful for comparing firms of different leverage
- Useful for comparing firms of different capital utilization
- Usually positive

Drawbacks

- Exaggerates cash flow
- FCFF more strongly grounded

CROSS-COUNTRY COMPARISONS

US GAAP vs. IFRS

- Net income higher under IFRS
- Shareholder's equity lower under IFRS
- ROE higher under IFRS

Valuation Multiples

- P/CFO and P/FCFE most comparable
- P/B, P/E, and EBITDA multiples least comparable

Inflation

- Higher inflation $\rightarrow$ Lower justified price multiples
- Higher pass-through rates $\rightarrow$ Higher justified price multiples

VALUATION INDICATORS IN PRACTICE: AVERAGING MULTIPLES

Arithmetic Mean and Weighted Mean	• Overestimate of index P/E
Harmonic Mean	• Closer to index P/E but is influenced by small outliers
Weighted Harmonic Mean	• Equal to index P/E