VALUE, PRICE AND INFORMATION: CLOSING THE DEAL

Value versus Price

Are you valuing or pricing?

Tools for intrinsic analysis
- Discounted Cashflow Valuation (DCF)
- Intrinsic multiples
- Book value based approaches
- Excess Return Models

Tools for "the gap"
- Behavioral finance
- Price catalysts

Tools for pricing
- Multiples and comparables
- Charting and technical indicators
- Pseudo DCF

Value of cashflows, adjusted for time and risk

| INTRINSIC VALUE | → Value → | THE GAP
Is there one?
Will it close? | ← Price ← | PRICE |

Drivers of intrinsic value
- Cashflows from existing assets
- Growth in cash flows
- Quality of Growth

Drivers of "the gap"
- Information
- Liquidity
- Corporate governance

Drivers of price
- Market moods & momentum
- Surface stories about fundamentals

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Value versus Price

	View of the gap	Investment Strategies
The Efficient Marketer	The gaps between price and value, if they do occur, are random.	Index funds
The "value" extremist	You view pricers as dilettantes who will move on to fad and fad. Eventually, the price will converge on value.	Buy and hold stocks where value < price
The pricing extremist	Value is only in the heads of the "eggheads". Even if it exists (and it is questionable), price may never converge on value.	(1) Look for mispriced securities. (2) Get ahead of shifts in demand/momentum.

The valuer's dilemma and ways of dealing with it…

- **Uncertainty about the magnitude of the gap:**
  - Margin of safety: Many value investors swear by the notion of the "margin of safety" as protection against risk/uncertainty.
  - Collect more information: Collecting more information about the company is viewed as one way to make your investment less risky.
  - Ask what if questions: Doing scenario analysis or what if analysis gives you a sense of whether you should invest.
  - Confront uncertainty: Face up to the uncertainty, bring it into the analysis and deal with the consequences.
- **Uncertainty about gap closing:** This is tougher and you can reduce your exposure to it by
  - Lengthening your time horizon
  - Providing or looking for a catalyst that will cause the gap to close.

Strategies for managing the risk in the "closing" of the gap

- The "karmic" approach: In this one, you buy (sell short) under (over) valued companies and sit back and wait for the gap to close. You are implicitly assuming that given time, the market will see the error of its ways and fix that error.

- The catalyst approach: For the gap to close, the price has to converge on value. For that convergence to occur, there usually has to be a catalyst.
  - If you are an activist investor, you may be the catalyst yourself. In fact, your act of buying the stock may be a sufficient signal for the market to reassess the price.
  - If you are not, you have to look for other catalysts. Here are some to watch for: a new CEO or management team, a "blockbuster" new product or an acquisition bid where the firm is targeted.

An example: Apple – Price versus Value (my estimates) from 2011 to 2020

Apple: Stock Price - 2011 to 2020

Month	Price per share		Value per share		% Difference
Sep-11	$	54.47	$	69.30	-21.39%
Sep-12	$	95.30	$	91.29	4.40%
Sep-13	$	68.11	$	86.43	-21.20%
Sep-14	$	100.75	$	97.91	2.90%
Sep-15	$	110.30	$	130.91	-15.74%
Sep-16	$	113.05	$	126.47	-10.61%
Sep-17	$	154.12	$	158.33	-2.66%
Sep-18	$	225.74	$	201.50	12.03%
1-Sep	$	249.75	$	243.25	2.67%

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A closing thought…

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VALUATION: PACKET 2
RELATIVE VALUATION, ASSET-BASED VALUATION AND PRIVATE COMPANY VALUATION

Spring 2023

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Updated: January 2023

The Essence of Relative Valuation (Pricing)

- In relative valuation, the price of an asset is compared to the prices assessed by the market for similar or comparable assets.

- To do relative valuation then,
  - we need to identify comparable assets and obtain market pricing for these assets
  - convert these market prices into standardized prices, since the absolute prices cannot be compared This process of standardizing creates price multiples.
  - compare the standardized price or multiple for the asset being analyzed to the standardized prices for comparable assets, controlling for any differences between the firms that might affect the multiple, to judge whether the asset is under or over priced.

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Relative valuation is pervasive…

- Most asset valuations are relative.
- Most equity valuations on Wall Street are relative valuations.
  - Almost 85% of equity research reports are based upon a multiple and comparables.
  - More than 50% of all acquisition valuations are based upon multiples
  - Rules of thumb based on multiples are not only common but are often the basis for final valuation judgments.
- While there are more discounted cashflow valuations in consulting and corporate finance, they are often relative valuations masquerading as discounted cash flow valuations.
  - The objective in many discounted cashflow valuations is to back into a number that has been obtained by using a multiple.
  - The terminal value in a significant number of discounted cashflow valuations is estimated using a multiple.

Why relative valuation?

"If you think I'm crazy, you should see the guy who lives across the hall"

Jerry Seinfeld talking about Kramer in a Seinfeld episode

Michael Richards
Photo: George Lange
©NBC, Inc.

" A little inaccuracy sometimes saves tons of explanation"

H.H. Munro

" If you are going to screw up, make sure that you have lots of company"
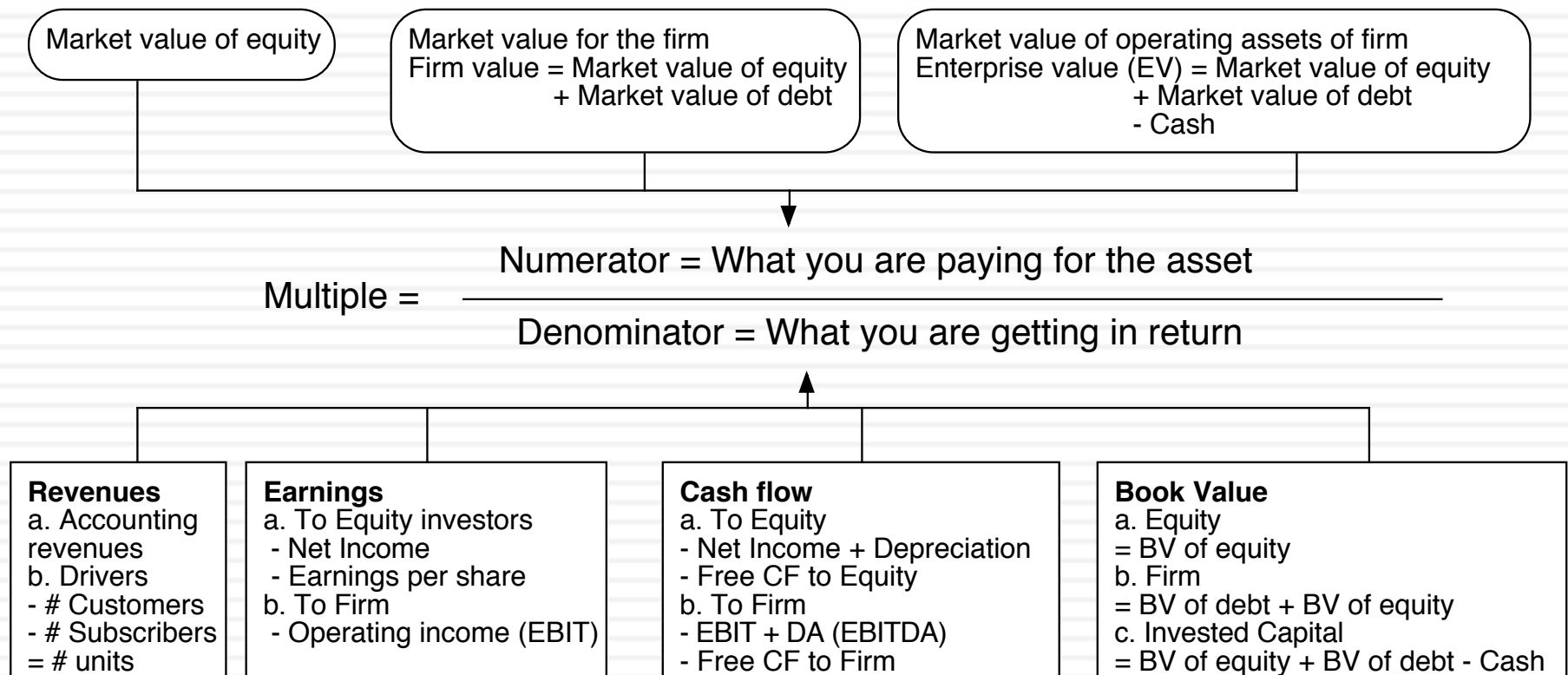
Ex-portfolio manager

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The Market Imperative....

- Relative valuation is much more likely to reflect market perceptions and moods than discounted cash flow valuation. This can be an advantage when it is important that the price reflect these perceptions as is the case when
  - the objective is to sell a security at that price today (as in the case of an IPO)
  - investing on "momentum" based strategies
- With relative valuation, there will always be a significant proportion of securities that are under valued and over valued.
- Since portfolio managers are judged based upon how they perform on a relative basis (to the market and other money managers), relative valuation is more tailored to their needs
- Relative valuation generally requires less information than discounted cash flow valuation (especially when multiples are used as screens)

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Multiples are just standardized estimates of price…

Market value of equity	Market value for the firm Firm value = Market value of equity + Market value of debt	Market value of operating assets of firm Enterprise value (EV) = Market value of equity + Market value of debt - Cash

$$\text{Multiple} = \frac{\text{Numerator} = \text{What you are paying for the asset}}{\text{Denominator} = \text{What you are getting in return}}$$

Revenues a. Accounting revenues b. Drivers - # Customers - # Subscribers = # units	**Earnings** a. To Equity investors - Net Income - Earnings per share b. To Firm - Operating income (EBIT)	**Cash flow** a. To Equity - Net Income + Depreciation - Free CF to Equity b. To Firm - EBIT + DA (EBITDA) - Free CF to Firm	**Book Value** a. Equity = BV of equity b. Firm = BV of debt + BV of equity c. Invested Capital = BV of equity + BV of debt - Cash

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The Four Steps to Deconstructing Multiples

- Define the multiple
  - In use, the same multiple can be defined in different ways by different users. When comparing and using multiples, estimated by someone else, it is critical that we understand how the multiples have been estimated

- Describe the multiple
  - Too many people who use a multiple have no idea what its cross sectional distribution is. If you do not know what the cross sectional distribution of a multiple is, it is difficult to look at a number and pass judgment on whether it is too high or low.

- Analyze the multiple
  - It is critical that we understand the fundamentals that drive each multiple, and the nature of the relationship between the multiple and each variable.

- Apply the multiple
  - Defining the comparable universe and controlling for differences is far more difficult in practice than it is in theory.

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Definitional Tests

- Is the multiple consistently defined?
  - Proposition 1: Both the value (the numerator) and the standardizing variable (the denominator) should be to the same claimholders in the firm. In other words, the value of equity should be divided by equity earnings or equity book value, and firm value should be divided by firm earnings or book value.

- Is the multiple uniformly estimated?
  - The variables used in defining the multiple should be estimated uniformly across assets in the "comparable firm" list.
  - If earnings-based multiples are used, the accounting rules to measure earnings should be applied consistently across assets. The same rule applies with book-value based multiples.

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Example 1: Price Earnings Ratio: Definition

PE = Market Price per Share / Earnings per Share

□ There are many variants on the basic PE ratio in use. They are based upon how the price and the earnings are defined.

Price: is usually the current price

            is sometimes the average price for the year

EPS: EPS in most recent financial year

            EPS in trailing 12 months

            Forecasted earnings per share next year

            Forecasted earnings per share in future year

Example 2: Staying on PE ratios

□ Assuming that you are comparing the PE ratios across technology companies, many of which have options outstanding. What measure of PE ratio would yield the most consistent comparisons?

a. Price/ Primary EPS (actual shares, no options)

b. Price/ Fully Diluted EPS (actual shares + all options)

c. Price/ Partially Diluted EPS (counting only in-the-money options)

d. Other

Example 3: Enterprise Value /EBITDA Multiple

- The enterprise value to EBITDA multiple is obtained by netting cash out against debt to arrive at enterprise value and dividing by EBITDA.

$$\frac{\text{Enterprise Value}}{\text{EBITDA}} = \frac{\text{Market Value of Equity} + \text{Market Value of Debt} - \text{Cash}}{\text{Earnings before Interest, Taxes and Depreciation}}$$

1. Why do we net out cash from firm value?
2. What happens if a firm has cross holdings which are categorized as:
   - Minority interests?
   - Majority active interests?

Example 4: A Housing Price Multiple

The bubbles and busts in housing prices has led investors to search for a multiple that they can use to determine when housing prices are getting out of line. One measure that has acquired adherents is the ratio of housing price to annual net rental income (for renting out the same house). Assume that you decide to compute this ratio and compare it to the multiple at which stocks are trading. Which valuation ratio would be the one that corresponds to the house price/rent ratio?

a. Price Earnings Ratio

b. EV to Sales

c. EV to EBITDA

d. EV to EBIT

Descriptive Tests

- What is the average and standard deviation for this multiple, across the universe (market)?

- What is the median for this multiple?
  - The median for this multiple is often a more reliable comparison point.

- How large are the outliers to the distribution, and how do we deal with the outliers?
  - Throwing out the outliers may seem like an obvious solution, but if the outliers all lie on one side of the distribution (they usually are large positive numbers), this can lead to a biased estimate.

- Are there cases where the multiple cannot be estimated? Will ignoring these cases lead to a biased estimate of the multiple?

- How has this multiple changed over time?

1. Multiples have skewed distributions... US company PE Ratios

Current, Trailing and Forward PE Ratios: US Stocks in January 2023

	<4	4-8	8-12	12-16	16-20	20-24	24-28	28-32	32-36	36-40	40-50	50-75	75-100	>100
Current PE	213	393	448	286	203	162	139	94	65	54	88	87	54	130
Trailing PE	209	374	465	284	241	169	124	95	76	46	93	106	35	100
Forward PE	54	381	543	355	291	189	135	81	64	45	77	77	41	84

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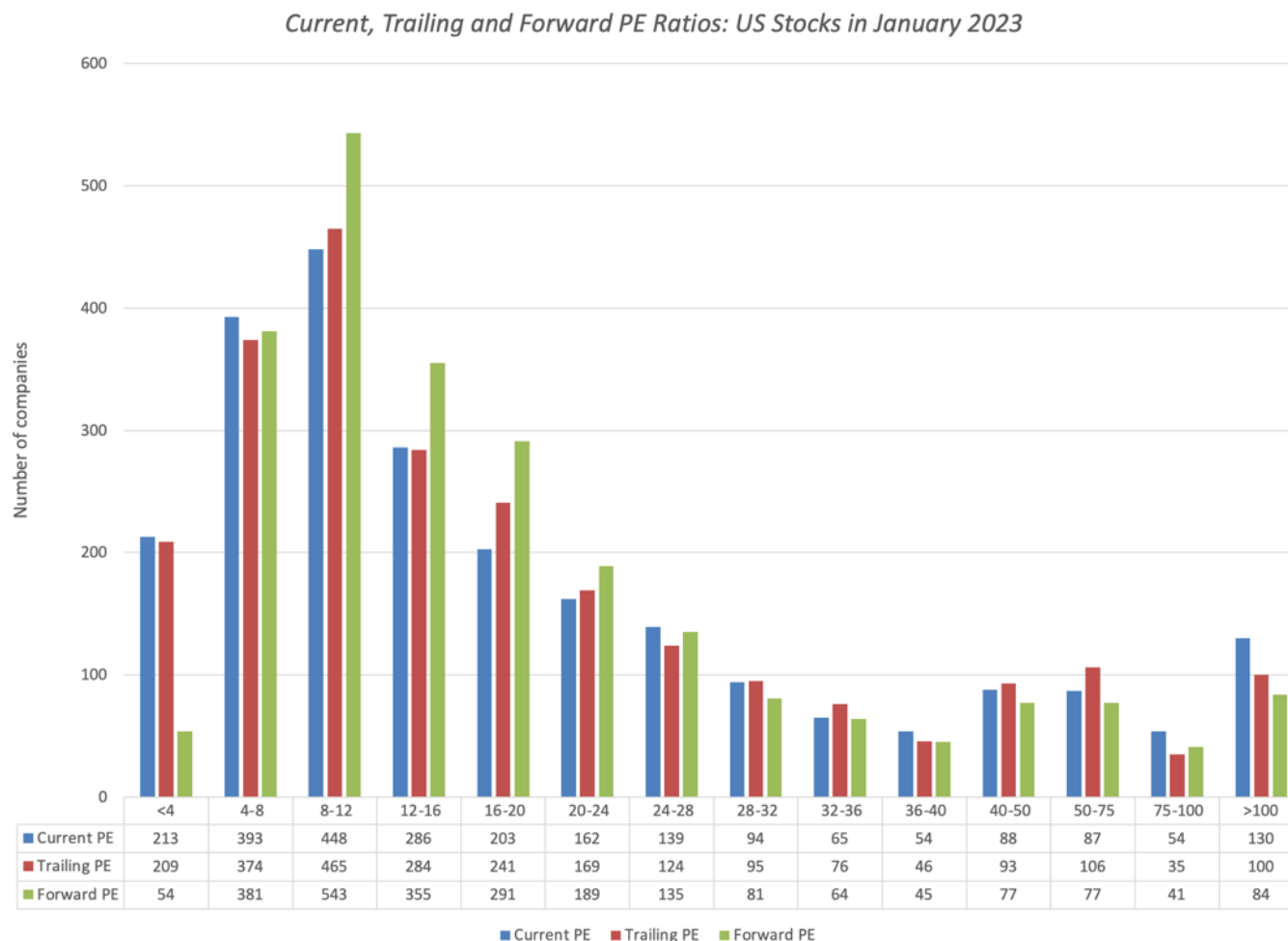
2. Making statistics "dicey"

	Current PE	Trailing PE	Forward PE
Number of firms	7165	7165	7165
Number with PE	3,099	3,097	2,417
Average	109.25	82.09	30.70
Median	13.92	14.50	14.44
Minimum	0.05	0.04	0.05
Maximum	86400.00	21678.00	4896.00
Standard deviation	1698.48	805.04	125.4
Standard error	34.1	14.47	2.55
Skewness	37.69	21.28	26.78
25th percentile	7.91	8.28	9.19
75th percentile	29.4	28.65	23.97

US firms in January 2023

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3. Markets have a lot in common : Comparing Global PEs

PE Ratios across the Globe: Start of 2023

Sub Group	# firms	Average	25th Perc	Median	7th Perc
Africa and Middle East	2,409	39.84	6.11	11.13	20.22
Australia & NZ	1,895	41.59	7.84	14.47	28.38
Canada	2,900	36.76	4.93	10.25	21.37
China	7,266	87.37	13.18	27.11	51.90
EU & Environs	5,952	62.46	7.46	13.72	26.25
Eastern Europe & Russia	357	115.74	5.65	10.58	20.36
India	4,149	69.87	11.37	21.61	42.58
Japan	3,974	45.23	8.69	13.38	23.06
Latin America & Caribbean	1,023	33.94	5.96	10.52	18.18
Small Asia	9,591	56.10	7.43	12.77	24.59
UK	1,232	33.87	7.08	13.68	25.62
United States	7,165	82.09	8.28	14.50	28.65
Global	47,913	62.92	8.24	15.21	30.93

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