Price and value: what's your game?

January 2023

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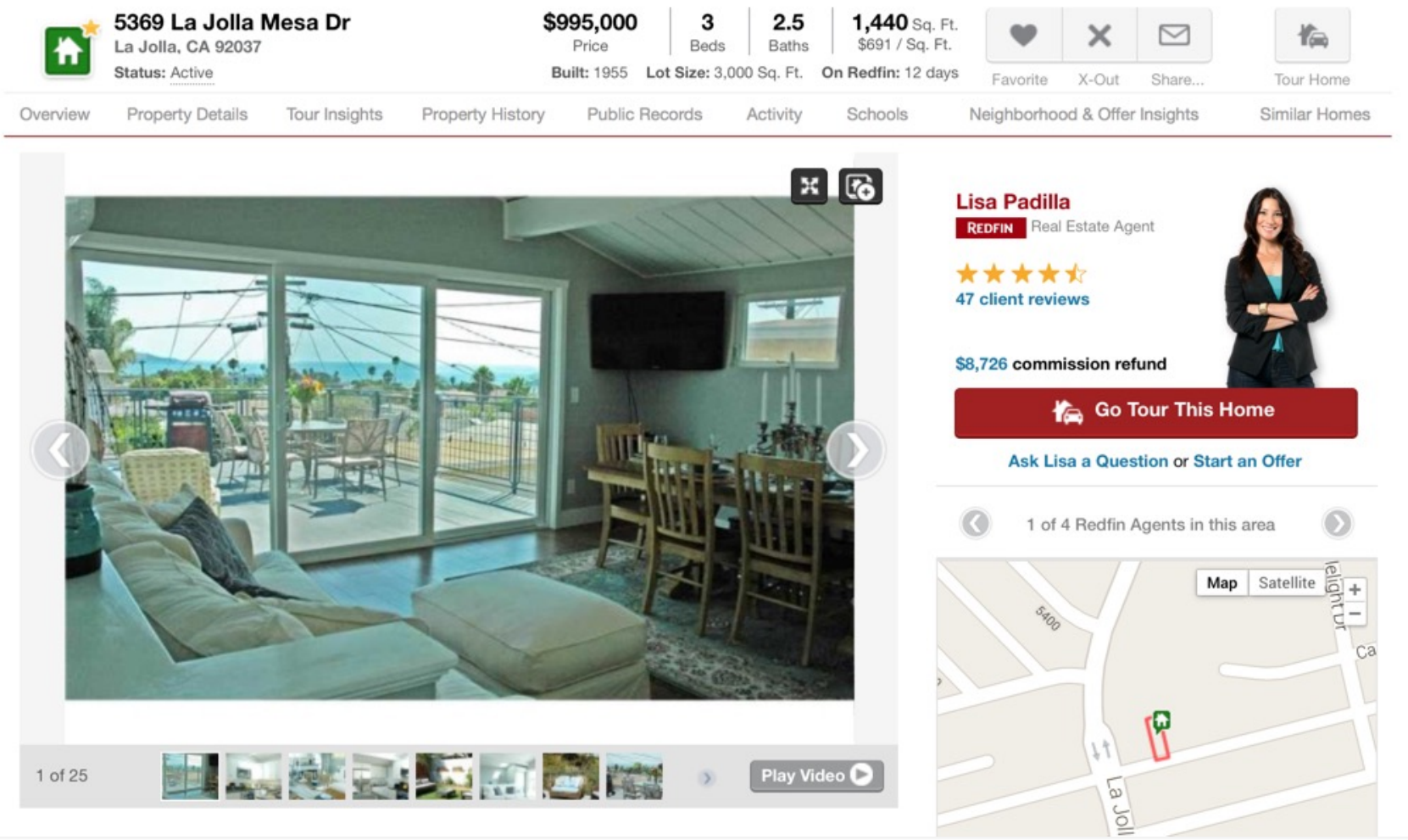
Test 1: Are you pricing or valuing?



Test 2: Are you pricing or valuing?

3

Rating
Buy

Europe
Switzerland

Biotechnology
Biotechnology

Company
BB BIOTECH

Reuters	Bloomberg	Exchange	Ticker
BION.S	BION SW	SWX	BION

Date
13 August 2013

Forecast Change

Price at 12 Aug 2013 (CHF)	124.00
Price Target (CHF)	164.50
52-week range (CHF)	128.40 - 84.90

Strong sector and stock-picking continue

Impressive performance
Over the past two years, BB Biotech shares have roughly tripled, which could tempt investors to take profits. However, this performance has been well backed by a deserved revival of the biotech industry, encouraging fundamental news, M&A, and increased money flow into health care stocks. In addition, BBB returned to index outperformance by modifying its stock-picking approach. Hence, despite excellent performance, the shares still trade at a 23% discount to the net asset value of the portfolio. Hence, the shares are an attractive value vehicle to capture growth opportunities in an attractive sector.

Biotech industry remains attractive
With the re-rating of the pharma sector, investors have also showed increased interest in biotech stocks. Established biotech stocks have delivered encouraging financial results and approvals, while there has also been substantial industry consolidation, which is not surprising in times of "cheap" money and high liquidity. BB Biotech remains an attractive vehicle to capture the future potential of the biotech sector. In addition, investors benefit from a 23% discount to NAV and attractive cash distribution policy of 5% yield p.a. Hence, we reiterate our Buy on BB Biotech shares.

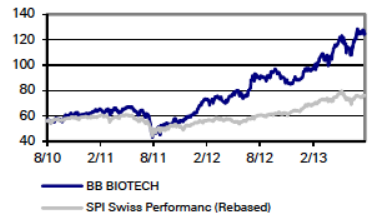
BB Biotech shares remain attractive
In the first 6M of 2013, BB Biotech increased its NAV by 36%, which marks good outperformance against the Nasdaq Biotech Index (NBI)'s 27%. This is a remarkable performance after 2012, when BBB's NAV increase of 45% also

Key changes

Target Price	106.50 to 164.50	↑	54.5%

Source: Deutsche Bank

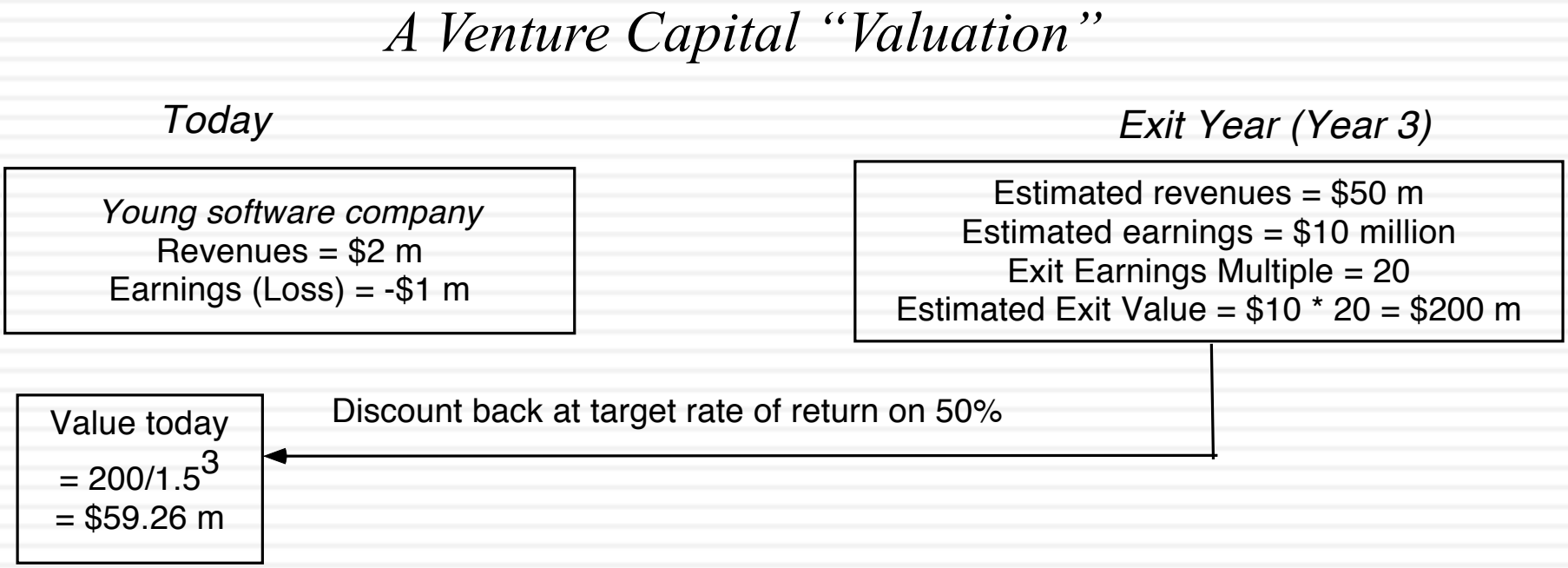
Price/price relative



Performance (%)	1m	3m	12m
Absolute	-1.4	5.4	37.4
SPI Swiss Performance IX	0.5	-1.4	26.4

Source: Deutsche Bank

Test 3: Are you pricing or valuing?



Test 4: Are you pricing or valuing?

5

	1	2	3	4	5
EBITDA	$100.00	$120.00	$144.00	$172.80	$207.36
- Depreciation	$20.00	$24.00	$28.80	$34.56	$41.47
EBIT	$80.00	$96.00	$115.20	$138.24	$165.89
- Taxes	$24.00	$28.80	$34.56	$41.47	$49.77
EBIT (1-t)	$56.00	$67.20	$80.64	$96.77	$116.12
+ Depreciation	$20.00	$24.00	$28.80	$34.56	$41.47
- Cap Ex	$50.00	$60.00	$72.00	$86.40	$103.68
- Chg in WC	$10.00	$12.00	$14.40	$17.28	$20.74
FCFF	$16.00	$19.20	$23.04	$27.65	$33.18
Terminal Value					$1,658.88
Cost of capital	8.25%	8.25%	8.25%	8.25%	8.25%
Present Value	$14.78	$16.38	$18.16	$20.14	$1,138.35

Value of operating assets today	$1,207.81
+ Cash	$125.00
- Debt	$200.00
Value of equity	**$1,132.81**

Test 5: Are you pricing or valuing?

- In FAS 157, here is what it says: "The exchange price is the price in an orderly transaction between market participants to sell the asset or transfer ... The transaction to sell the asset or transfer the liability is a hypothetical transaction at the measurement date, considered from the perspective of a market participant that holds the asset or owes the liability. Therefore, the definition focuses on the price that would be received to sell the asset or paid to transfer the liability (an exit price), not the price that would be paid to acquire the asset or received to assume the liability (an entry price)."
- If you are an accountant, given the task of putting FAS 157 into practice, are you being asked to
  a. Value the assets/liabilities on a balance sheet
  b. Price the assets/liabilities on a balance sheet

Price versus Value: The Set up

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

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

Accounting Estimates

Valuation Estimates

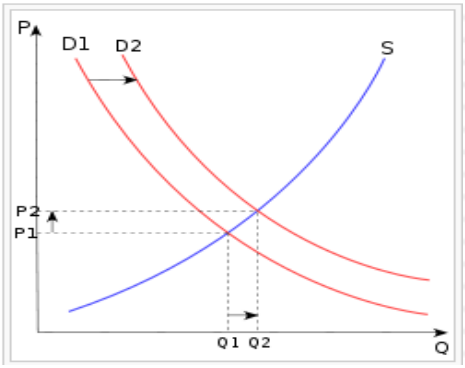
INTRINSIC VALUE

Value

THE GAP
Is there one?
If so, will it close?
If it will close, what will cause it to close?

Price

PRICE



INTRINSIC VALUATION
CASH FLOWS, GROWTH & RISK

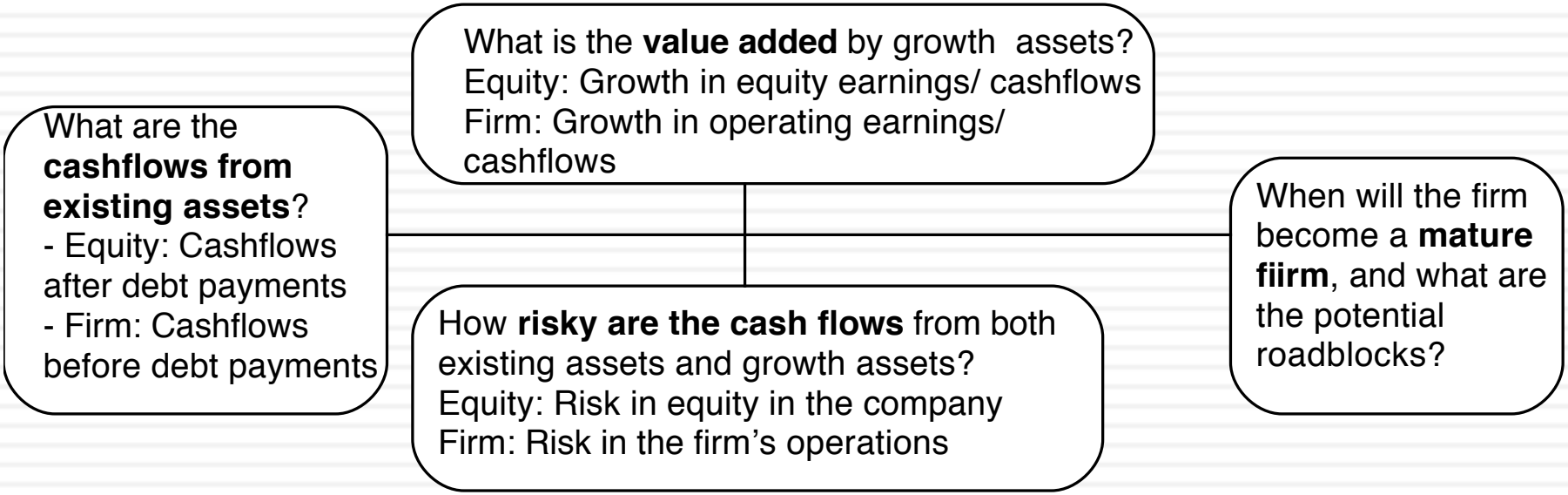
Intrinsic value is simple: We choose to make it complex

For cash flow generating assets, the intrinsic value will be a function of the magnitude of the expected cash flows on the asset over its lifetime and the uncertainty about receiving those cash flows.

$$\text{Value of asset} = \frac{E(CF_1)}{(1+r)} + \frac{E(CF_2)}{(1+r)^2} + \frac{E(CF_3)}{(1+r)^3} \ldots\ldots + \frac{E(CF_n)}{(1+r)^n}$$

1. *The IT Proposition*: If "it" does not affect the cash flows or alter risk (thus changing discount rates), "it" cannot affect value.
2. *The DUH Proposition*: For an asset to have value, the expected cash flows have to be positive some time over the life of the asset.
3. *The DON'T FREAK OUT Proposition*: Assets that generate cash flows early in their life will be worth more than assets that generate cash flows later; the latter may however have greater growth and higher cash flows to compensate.

The determinants of value



DCF as a tool for intrinsic valuation

Value of growth
The future cash flows will reflect expectations of how quickly earnings will grow in the future (as a positive) and how much the company will have to reinvest to generate that growth (as a negative). The net effect will determine the value of growth.
Expected Cash Flow in year t = E(CF) = Expected Earnings in year t - Reinvestment needed for growth

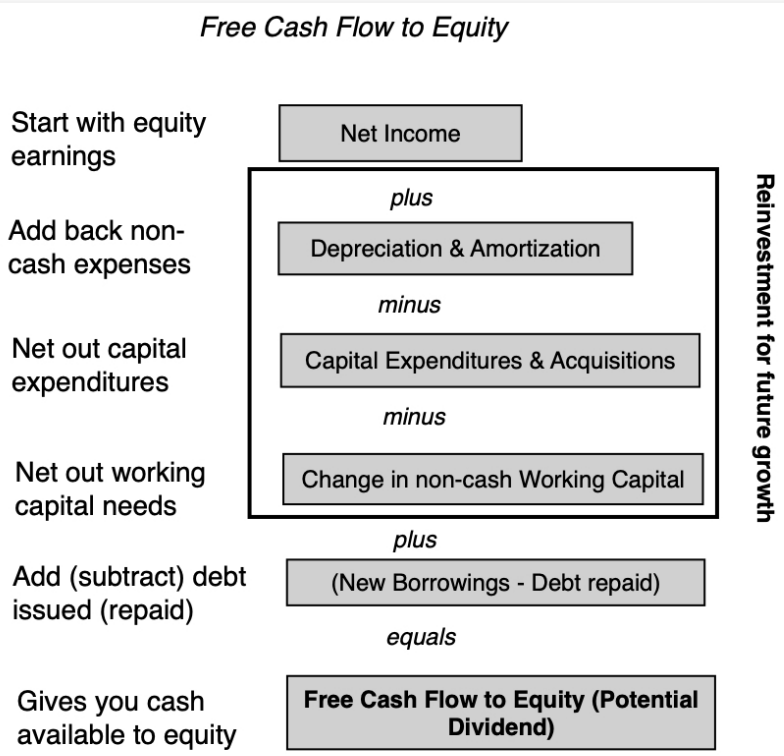
Cash flows from existing assets
The base earnings will reflect the earnings power of the existing assets of the firm, net of taxes and any reinvestment needed to sustain the base earnings.

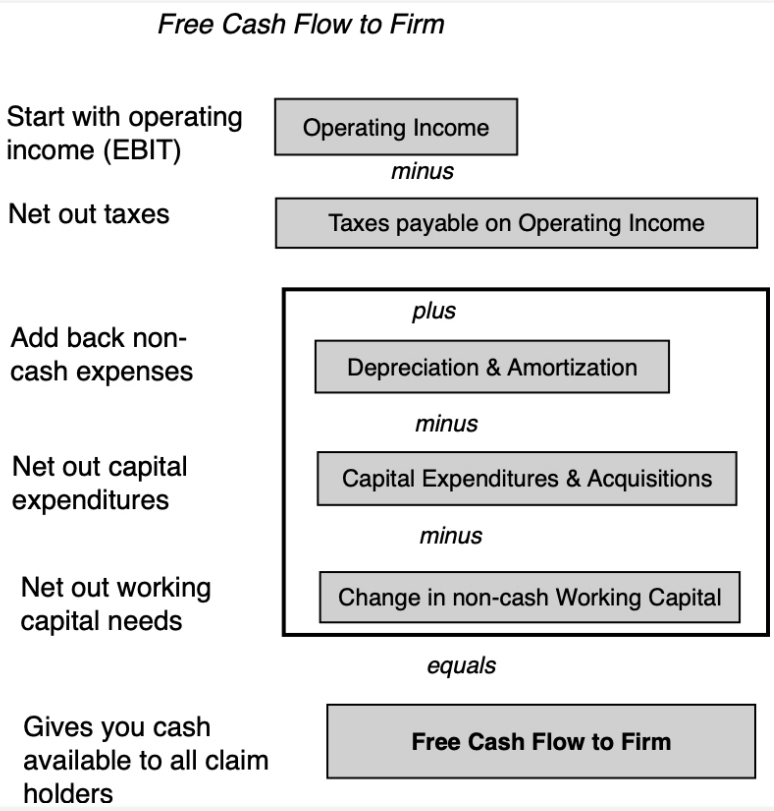
$$\text{Value of asset} = \frac{E(CF_1)}{(1+r)} + \frac{E(CF_2)}{(1+r)^2} + \frac{E(CF_3)}{(1+r)^3} \ldots\ldots + \frac{E(CF_n)}{(1+r)^n}$$

Steady state
The value of growth comes from the capacity to generate excess returns. The length of your growth period comes from the strength & sustainability of your competitive advantages.

Risk in the Cash flows
The risk in the investment is captured in the discount rate as a beta in the cost of equity and the default spread in the cost of debt.

1. Cash Flows


Free Cash Flow to Equity
Start with equity earnings
Net Income
plus
Add back non-cash expenses
Depreciation & Amortization
minus
Net out capital expenditures
Capital Expenditures & Acquisitions
minus
Net out working capital needs
Change in non-cash Working Capital
Reinvestment for future growth
plus
Add (subtract) debt issued (repaid)
(New Borrowings - Debt repaid)
equals
Gives you cash available to equity
Free Cash Flow to Equity (Potential Dividend)


Free Cash Flow to Firm
Start with operating income (EBIT)
Operating Income
minus
Net out taxes
Taxes payable on Operating Income
plus
Add back non-cash expenses
Depreciation & Amortization
minus
Net out capital expenditures
Capital Expenditures & Acquisitions
minus
Net out working capital needs
Change in non-cash Working Capital
equals
Gives you cash available to all claim holders
Free Cash Flow to Firm

2. Discount Rates

Expected Return on a Risky Investment = Cost of Equity

=

Risk free Rate
Rate of return on a long term, default free bond.

Will vary across currencies and across time.

+

Beta
Relative measure of risk added to a diversified portfolio.

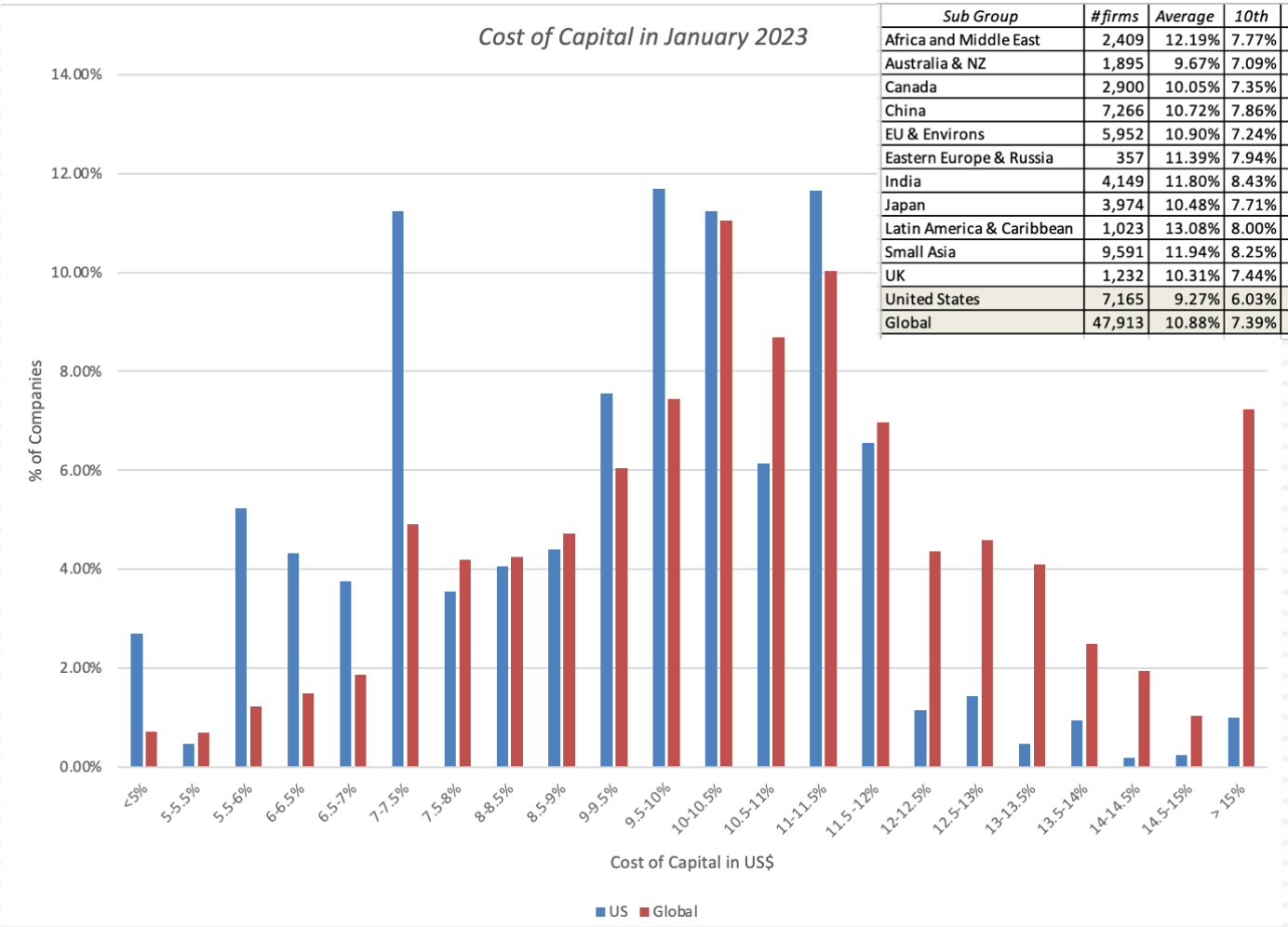
Determined by the business or businesses that you operate it, with more exposure to macro economic risk translating into a higher beta.

X

Equity Risk Premium
Premium investors demand over and above the risk free rate for investing in equities as a class.

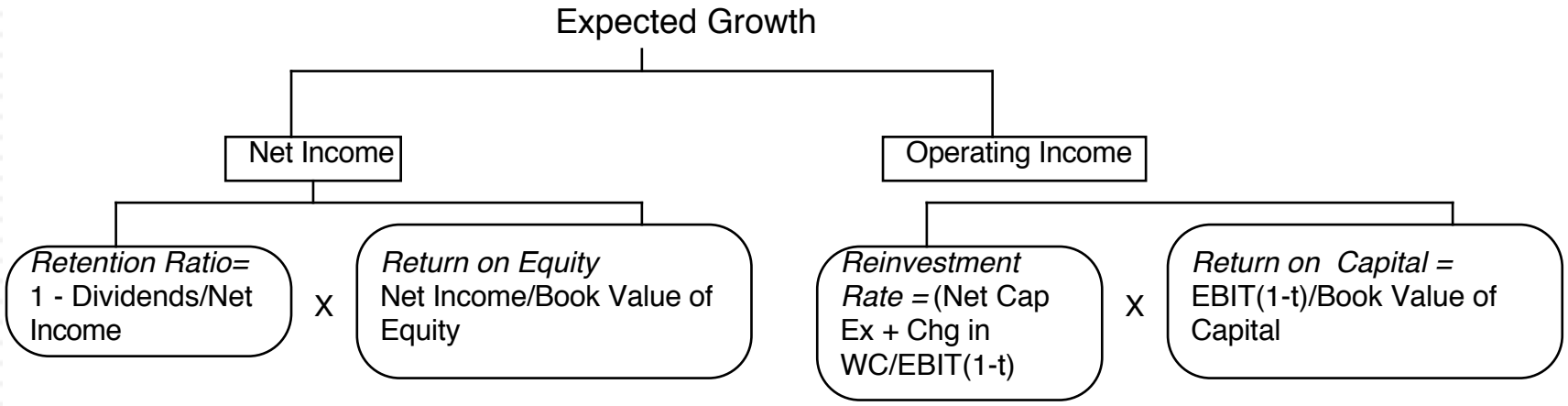
Function of the countries that you do business in and how much value you derive from each country.

And don't over think it..



Sub Group	#firms	Average	10th	25th	Median	75th	90th
Africa and Middle East	2,409	12.19%	7.77%	9.08%	**11.35%**	14.26%	18.22%
Australia & NZ	1,895	9.67%	7.09%	8.76%	**10.39%**	10.49%	11.44%
Canada	2,900	10.05%	7.35%	9.67%	**10.44%**	10.50%	11.58%
China	7,266	10.72%	7.86%	9.24%	**10.97%**	11.74%	13.09%
EU & Environs	5,952	10.90%	7.24%	8.71%	**10.37%**	12.06%	14.90%
Eastern Europe & Russia	357	11.39%	7.94%	8.97%	**10.96%**	13.29%	15.05%
India	4,149	11.80%	8.43%	9.80%	**12.00%**	13.74%	14.56%
Japan	3,974	10.48%	7.71%	9.07%	**10.72%**	11.50%	13.10%
Latin America & Caribbean	1,023	13.08%	8.00%	9.57%	**11.96%**	14.62%	20.08%
Small Asia	9,591	11.94%	8.25%	9.66%	**11.23%**	12.86%	15.83%
UK	1,232	10.31%	7.44%	8.41%	**10.67%**	11.67%	12.95%
United States	7,165	9.27%	6.03%	7.26%	**9.63%**	10.88%	11.63%
Global	47,913	10.88%	7.39%	9.08%	**10.60%**	12.07%	14.04%

3. Growth



- Quality growth is rare requires that a firm be able to reinvest a lot and reinvest well (earnings more than your cost of capital) at the same time.
- The larger you get, the more difficult it becomes to maintain quality growth.
- You can grow while destroying value at the same time.

And its value

Sub Group	count	Median Value		% with ROE>COE	Median Value		% with ROC>WACC	% with ROIC<WACC	% with ROIC greater than WACC by >5%	% with ROIC less than WACC by >5%
		ROE	Cost of Equity		ROIC	Cost of Capital				
Africa and Middle East	1,836	8.14%	13.93%	33.22%	5.81%	11.70%	29.96%	70.04%	20.00%	47.01%
Australia & NZ	1,747	-9.04%	10.51%	22.36%	-5.36%	10.43%	25.72%	74.28%	18.88%	41.88%
Canada	2,722	-12.09%	10.54%	17.13%	-7.99%	10.44%	19.96%	80.04%	14.54%	41.19%
China	6,955	7.15%	12.14%	27.96%	4.64%	11.00%	27.25%	72.75%	17.32%	43.20%
EU & Environs	5,243	8.46%	12.11%	36.99%	6.66%	10.66%	37.74%	62.26%	27.09%	50.17%
Eastern Europe & Russia	287	7.85%	13.31%	32.87%	4.96%	11.61%	28.83%	71.17%	20.27%	43.94%
India	3,574	8.37%	14.31%	34.00%	6.29%	12.85%	29.63%	70.37%	19.71%	42.87%
Japan	3,787	7.06%	12.51%	23.75%	5.93%	10.79%	30.83%	69.17%	19.87%	50.36%
Latin America & Caribbean	821	10.13%	16.17%	32.21%	9.30%	12.50%	40.90%	59.10%	26.45%	52.00%
Small Asia	8,792	7.09%	13.31%	27.71%	4.77%	11.35%	24.71%	75.29%	15.10%	41.29%
UK	1,052	5.76%	12.32%	33.22%	6.56%	10.95%	41.53%	58.47%	31.36%	52.28%
United States	5,593	3.51%	11.37%	35.20%	7.44%	10.10%	46.89%	53.11%	37.53%	51.67%
Global	42,409	6.64%	12.31%	29.49%	5.19%	10.86%	30.64%	69.36%	20.86%	51.68%

4. The Terminal Value

Myth 5.1: The only way to estimate terminal value is to use the perpetual growth model.

Myth 5.2: The perpetual growth model can give you an infinite value.

Myth 5.3: The growth rate is your biggest driver of terminal value.

Myth 5.4: Your growth rate cannot be negtive in a perpetual growth model.

Myth 5.5: If your terminal value is a high proportion of your DCF value, it is flawed.

$$\text{Value of an asset with life} > n \text{ years} = \frac{E(CF_1)}{(1+r)^1} + \frac{E(CF_2)}{(1+r)^2} + .. + \frac{E(CF_n)}{(1+r)^n} + \frac{\text{Terminal Value}_n}{(1+r)^n}$$

Truth 5.1: The terminal value can be based on annuities or a liquidation value.

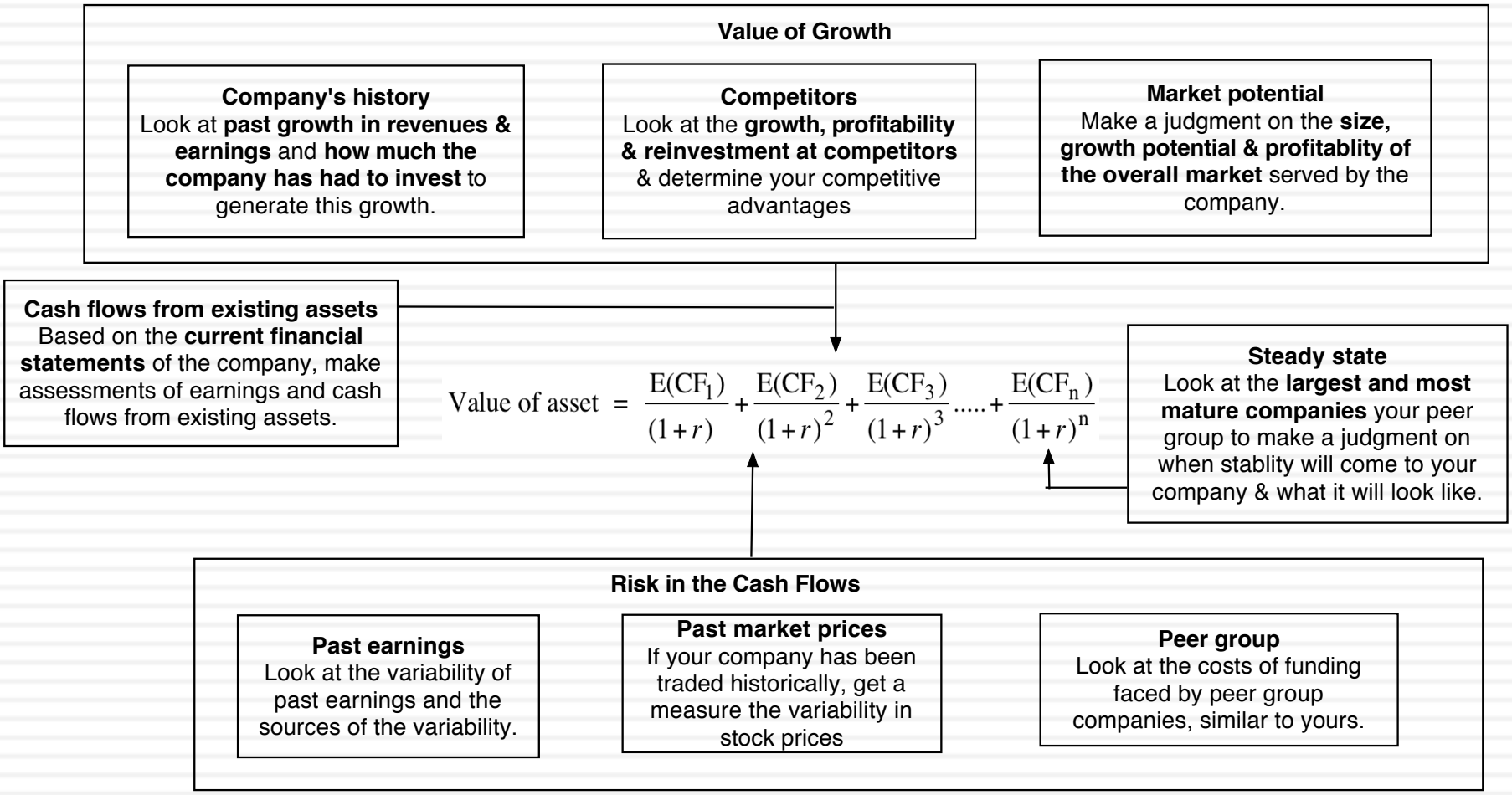
Truth 5.2: Not if growth forever is capped at the growth rate of the economy.

Truth 5.3: Growth is not free & increasing growth can add or destory value.

Truth 5.4: Growth can be negative forever & is often more reflective of reality.

Truth 5.5: The terminal value should be a high percent of value today.

If your job is assessing value, here are you challenges…



Twitter: Setting the table in October 2013

	Last 10K	Trailing 12 month
Revenues	$316.93	$534.46
Operating income	-$77.06	-$134.91
Adjusted Operating Income		$7.67
Invested Capital		$955.00
Adjusted Operatng Margin		1.44%
Sales/ Invested Capital		0.56
Interest expenses	$2.49	$5.30

Twitter: Priming the Pump for Valuation

1. Make small revenues into big revenues

	2011		2012		2013	
	%	$	%	$	%	$
Google	32.09%	$27.74	31.46%	$32.73	33.24%	$38.83
Facebook	3.65%	$3.15	4.11%	$4.28	5.04%	$5.89
Yahoo!	3.95%	$3.41	3.37%	$3.51	3.10%	$3.62
Microsoft	1.27%	$1.10	1.63%	$1.70	1.78%	$2.08
IAC	1.15%	$0.99	1.39%	$1.45	1.47%	$1.72
AOL	1.17%	$1.01	1.02%	$1.06	0.95%	$1.11
Amazon	0.48%	$0.41	0.59%	$0.61	0.71%	$0.83
Pandora	0.28%	$0.24	0.36%	$0.37	0.50%	$0.58
Twitter	0.16%	$0.14	0.28%	$0.29	0.50%	$0.58
Linkedin	0.18%	$0.16	0.25%	$0.26	0.32%	$0.37
Millennial Media	0.05%	$0.04	0.07%	$0.07	0.10%	$0.12
Other	55.59%	$48.05	55.47%	$57.71	52.29%	$61.09
Total Market	100%	$86.43	100.00%	$104.04	100.00%	$116.82

		Annual growth rate in Global Advertising Spending				
		2.00%	2.50%	3.00%	3.50%	4.00%
Online advertising share of market	20%	$124.78	$131.03	$137.56	$144.39	$151.52
	25%	$155.97	$163.79	$171.95	$180.49	$189.40
	30%	$187.16	$196.54	$206.34	$216.58	$227.28
	35%	$218.36	$229.30	$240.74	$252.68	$265.16
	40%	$249.55	$262.06	$275.13	$288.78	$303.04

My estimate for 2023: Overall online advertising market will be close to $200 billion and Twitter will have about 5.7% ($11.5 billion)

2. Make losses into profits

Company	*Operating Margin*
Google Inc. (NasdaqGS:GOOG)	22.82%
Facebook, Inc. (NasdaqGS:FB)	29.99%
Yahoo! Inc. (NasdaqGS:YHOO)	13.79%
Netlfix	3.16%
Groupon	2.53%
LinkedIn Corporation (NYSE:LNKD)	5.18%
Pandora Media, Inc. (NYSE:P)	-9.13%
Yelp, Inc. (NYSE:YELP)	-6.19%
OpenTable, Inc. (NasdaqGS:OPEN)	24.90%
RetailMeNot	45.40%
Travelzoo Inc. (NasdaqGS:TZOO)	15.66%
Zillow, Inc. (NasdaqGS:Z)	-66.60%
Trulia, Inc. (NYSE:TRLA)	-6.79%
Aggregate	20.40%

My estimate for Twitter: Operating margin of 25% in year 10

3. Reinvest for growth

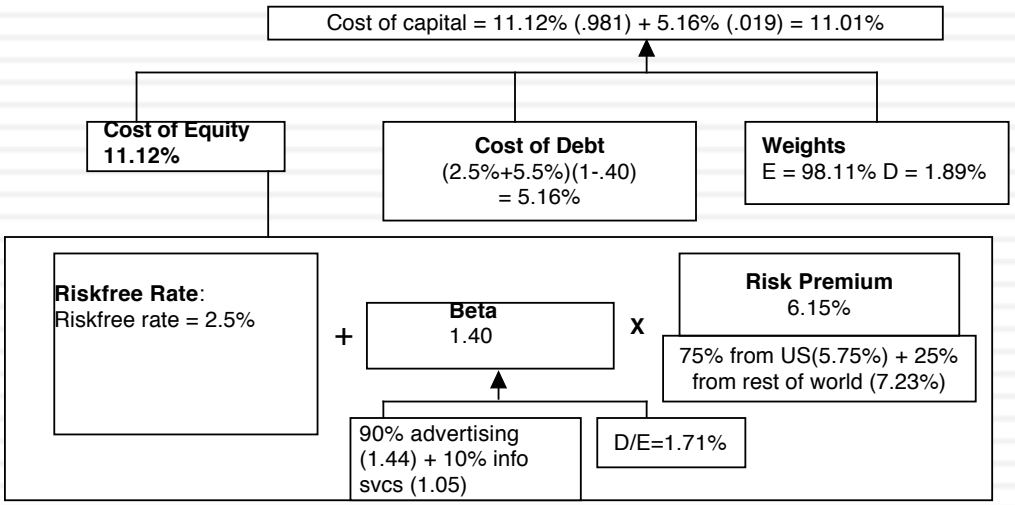
	Sales/ Invested Capital
Twitter (2013)	1.10
Advertising Companies	1.40
Social Media Companies	1.05

My estimate for Twitter: Sales/Capital will be 1.50 for next 10 years

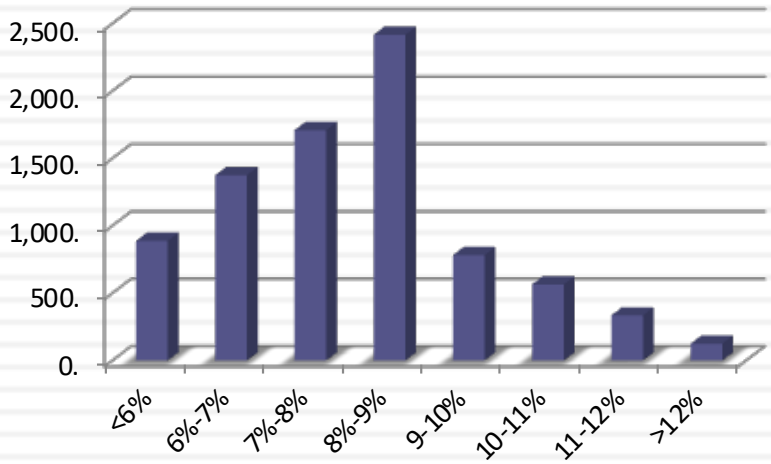
Sweating the small stuff: Risk and Required Return

Risk in the discount rate

My estimate for Twitter



Cost of Capital: US - Nov '13



0% *Survival Risk* 100%

Probability that the firm will not make it as a going concern

Certain to make it as going concern → *Certain to fail*

My assumption for Twitter

Twitter Pre-IPO Valuation: October 27, 2013

Starting numbers

	Last 10K	Trailing 12 month
Revenues	$316.93	$534.46
Operating income	-$77.06	-$134.91
Adjusted Operating Income		$7.67
Invested Capital		$955.00
Adjusted Operatng Margin		1.44%
Sales/ Invested Capital		0.56
Interest expenses	$2.49	$5.30

Revenue growth of 51.5% a year for 5 years, tapering down to 2.5% in year 10

Pre-tax operating margin increases to 25% over the next 10 years

Sales to capital ratio of **1.50** for incremental sales

Stable Growth
g = 2.5%; Beta = 1.00;
Cost of capital = 8%
ROC= **12**%;
Reinvestment Rate=2.5%/12% = 20.83%

Terminal Value$_{10}$= 1466/(.08-.025) = $26,657

	1	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Revenues	$ 810	$1,227	$1,858	$2,816	$4,266	$6,044	$7,973	$9,734	$10,932	$11,205
Operating Income	$ 31	$ 75	$ 158	$ 306	$ 564	$ 941	$1,430	$1,975	$ 2,475	$ 2,801
Operating Income after tax	$ 31	$ 75	$ 158	$ 294	$ 395	$ 649	$ 969	$1,317	$ 1,624	$ 1,807
- Reinvestment	$ 183	$ 278	$ 421	$ 638	$ 967	$1,186	$1,285	$1,175	$ 798	$ 182
FCFF	$(153)	$ (203)	$ (263)	$ (344)	$ (572)	$ (537)	$ (316)	$ 143	$ 826	$ 1,625

Terminal year (11)

EBIT (1-t)	$ 1,852
- Reinvestment	$ 386
FCFF	$ 1,466

Operating assets	$9,705
+ Cash	321
+ IPO Proceeds	1295
- Debt	214
Value of equity	11,106
- Options	713
Value in stock	10,394
/ # of shares	582.46
Value/share	$17.84

Cost of capital = 11.12% (.981) + 5.16% (.019) = 11.01%

Cost of capital decreases to 8% from years 6-10

Cost of Equity
11.12%

Cost of Debt
(2.5%+5.5%)(1-.40)
= 5.16%

Weights
E = 98.1% D = 1.9%

Riskfree Rate:
Riskfree rate = 2.5%

+

Beta
1.40

90% advertising (1.44) + 10% info svcs (1.05)

D/E=1.71%

X

Risk Premium
6.15%

75% from US(5.75%) + 25% from rest of world (7.23%)

Pricing
It’s demand and supply

The determinants of price

Mood and Momentum
Price is determined in large part by mood and momentum, which, in turn, are driven by behavioral factors (panic, fear, greed).

Liquidity & Trading Ease
While the value of an asset may not change much from period to period, liquidity and ease of trading can, and as it does, so will the price.

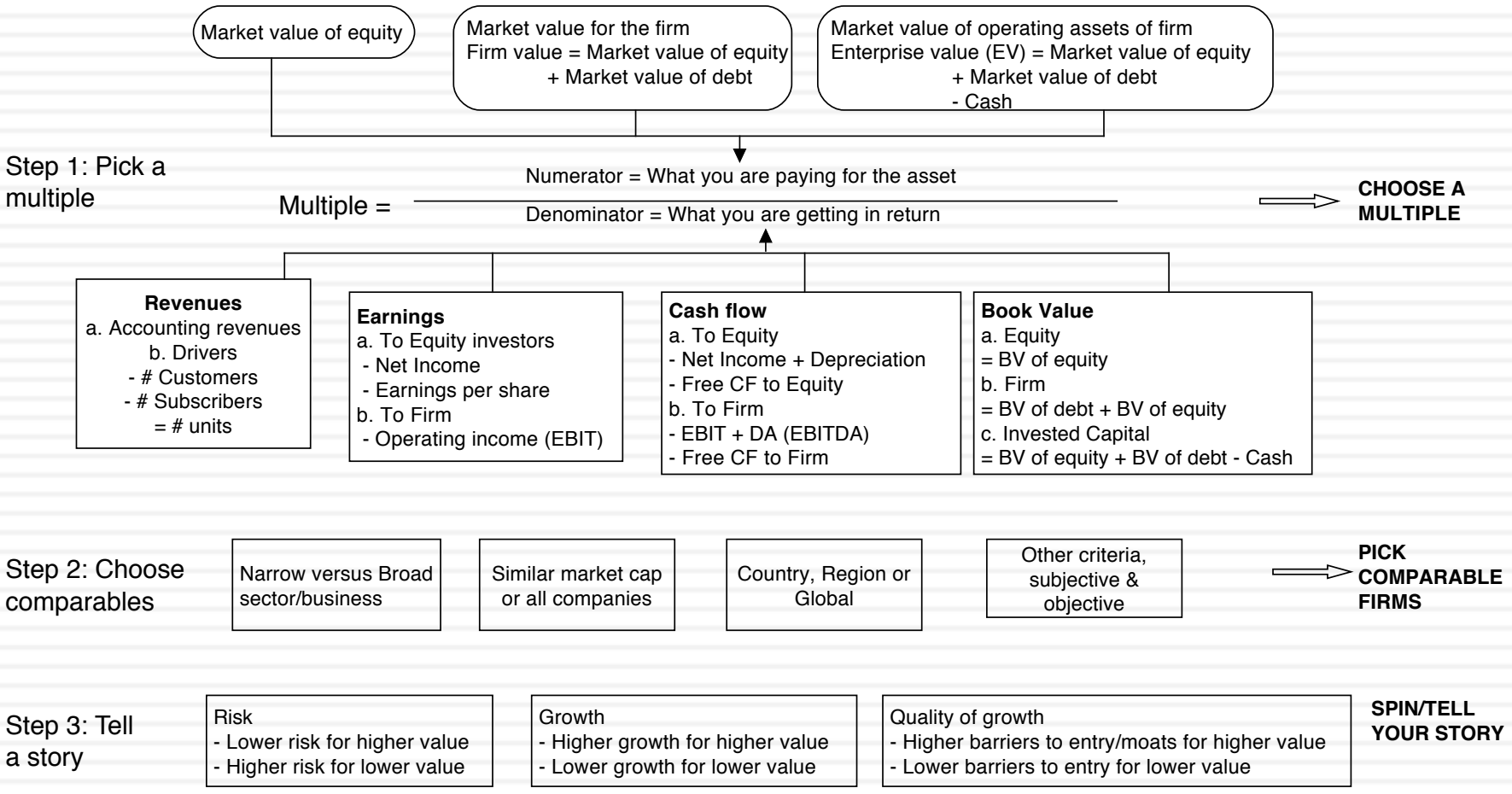
The Market Price

Incremental information
Since you make money on price changes, not price levels, the focus is on incremental information (news stories, rumors, gossip) and how it measures up, relative to expectations

Group Think
To the extent that pricing is about gauging what other investors will do, the price can be determined by the "herd".

Tools for Pricing: Technical Analysis & Charting

A more general tool: Multiples and Comparable Transactions



To be a better pricer, here are four suggestions

- Check your multiple or consistency/uniformity
  - 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
- Look at all the data, not just the key statistics
  - 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.
- Don't forget the fundamentals ultimately matter
  - It is critical that we understand the fundamentals that drive each multiple, and the nature of the relationship between the multiple and each variable.
- Don't define comparables based only on sector
  - Defining the comparable universe and controlling for differences is far more difficult in practice than it is in theory.

1. Check the Multiple

- Is the multiple consistently defined?
  - The consistency principle: 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.
  - The cost of mismatching: Assets that are not cheap(expensive) will look cheap (expensive), because your mismatch will skew the numbers.
- Is the multiple uniformly estimated?
  - The uniformity rule: The variables used in defining the multiple should be estimated uniformly across assets in the "comparable firm" list.
  - The cost of ignoring this rule: You will be comparing non-comparable numbers and drawing all the wrong conclusions.

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: 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.

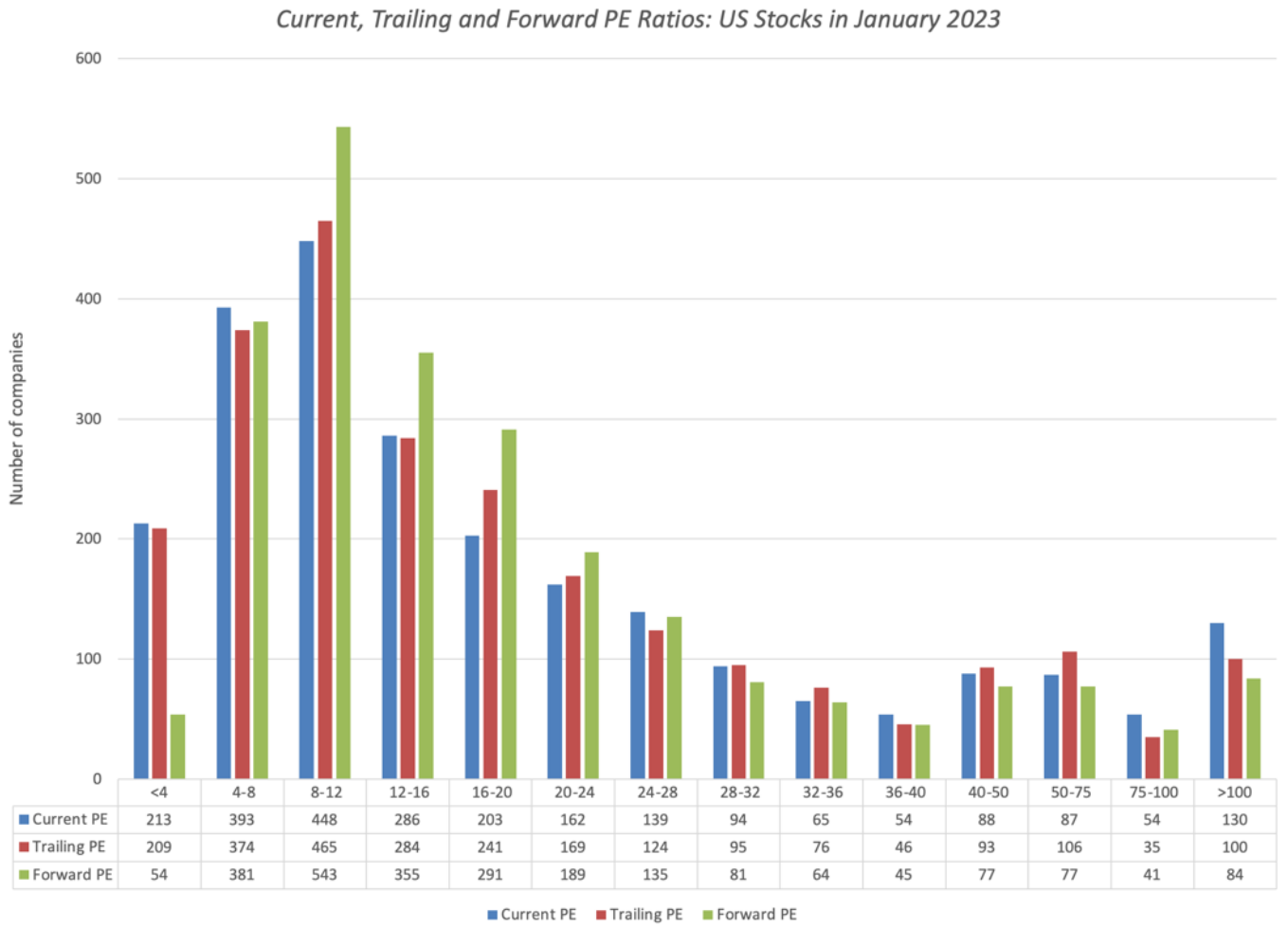
$$\frac{\text{Enterprise Value}}{\text{EBITDA}} = \frac{\text{Market Value of Equity + Market Value of Debt - Cash}}{\text{Earnings before Interest, Taxes and Depreciation}}$$

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?

2. Play Moneyball: Let the numbers talk (not the analysts)

- 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



	<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

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

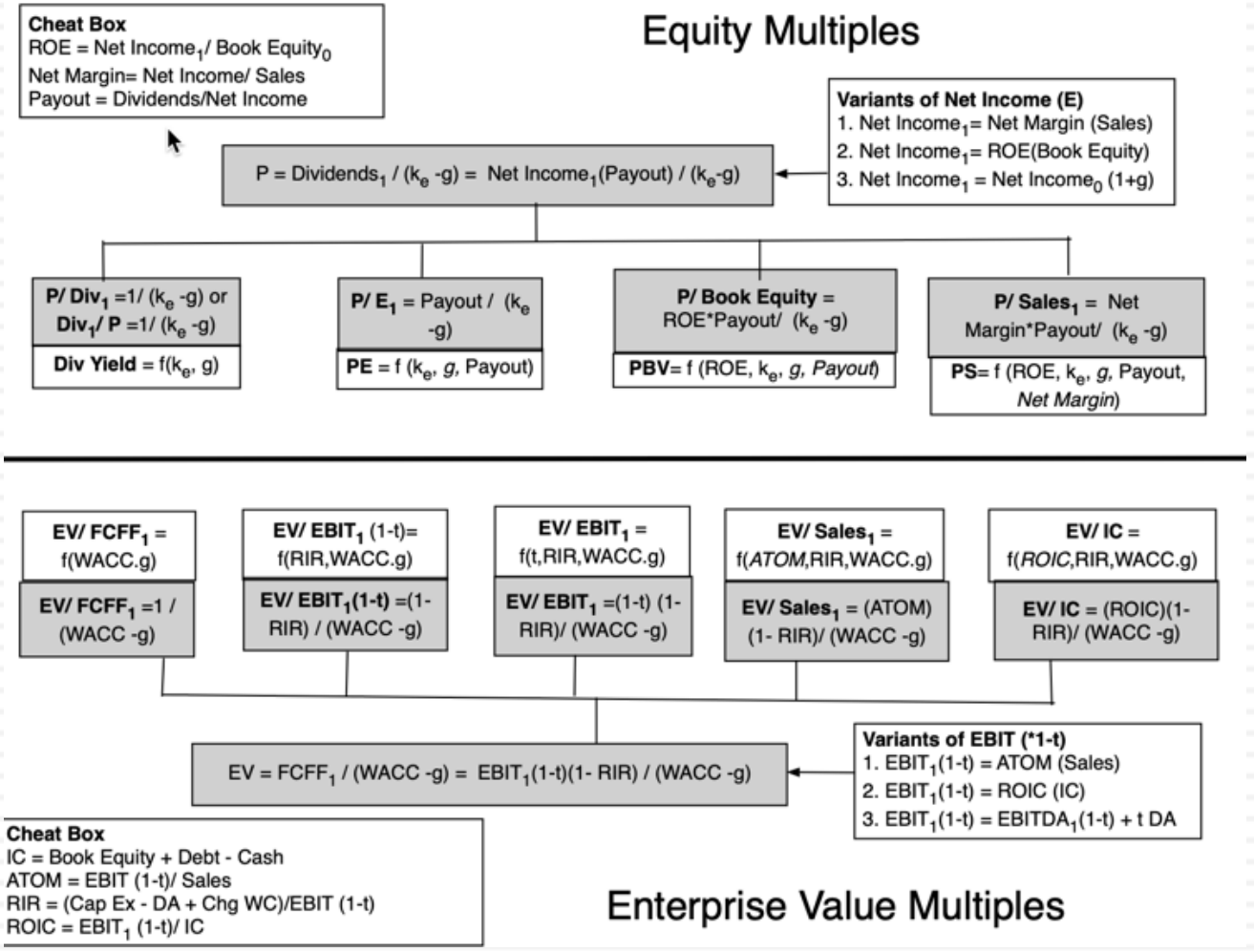
3. Understand your "implicit" assumptions

- What are the fundamentals that determine and drive these multiples?
  - Proposition 1: Embedded in every multiple are all of the variables that drive every discounted cash flow valuation - growth, risk and cash flow patterns.
  - In fact, using a simple discounted cash flow model and basic algebra should yield the fundamentals that drive a multiple
- How do changes in these fundamentals change the multiple?
  - The relationship between a fundamental (like growth) and a multiple (such as PE) is seldom linear. For example, if firm A has twice the growth rate of firm B, it will generally not trade at twice its PE ratio
  - Proposition 2: It is impossible to properly compare firms on a multiple, if we do not know the nature of the relationship between fundamentals and the multiple.

A Simple Analytical device

	Start with a basic intrinsic value model	*Divide both sides of the equation by the denominator of the multiple that you are trying to deconstruct,.*	You should end up with an intrinsic version of your multiple, which should relate it to fundamentals.
If Equity Multiple	Start with a dividend or FCFE model, preferably simple. Price= EPS * Payout / (r -g)	Divide your dividend or FCFE model by denominator of equity multiple. Prtce/Book = ROE * Payout / (r -g)	Intrinsic version of equity multiple, with drivers of value Price/Book = f(ROE, r, g, Payout)
If EV Multiple	Start with a operating asset value model, preferably simple. EV= EBIT (1-t) (1- RIR)/ (WACC -g)	Divide your operating asset model by denominator of EV multiple. EV/Sales = After-tax Operating Margin (1- RIR)/ (WACC -g)	Intrinsic version of EV multiple, with drivers of value EV/Sales = f(After-tax Operating Margin, RIR, WACC, g)

The Determinants of Multiples…



4. Define "comparable" broadly & control for differences

- Given the firm that we are valuing, what is a "comparable" firm?
  - While traditional analysis is built on the premise that firms in the same sector are comparable firms, valuation theory would suggest that a comparable firm is one which is similar to the one being analyzed in terms of fundamentals.
  - Proposition 4: There is no reason why a firm cannot be compared with another firm in a very different business, if the two firms have the same risk, growth and cash flow characteristics.
- Given the comparable firms, how do we adjust for differences across firms on the fundamentals?
  - Proposition 5: It is impossible to find an exactly identical firm to the one you are valuing.

Pricing Twitter- October 2013

Just Facebook and Linkedin							
Company	*EV*	*Market Cap*	*EV/Sales*	*EV/EBITDA*	*PE*	*Market Cap/User*	*Market Cap/Employee*
Facebook, Inc. (NasdaqGS:FB)	$100,017.00	$107,909.00	16.35	36.20	193.73	$97.22	$20.36
LinkedIn Corporation (NYSE:LNKD)	$28,448.50	$29,321.90	22.87	179.26	729.40	$130.32	$6.91
Facebook + Linkedin	$128,465.50	$137,230.90	17.45	43.97	229.79	$102.79	$14.38
Social Media/Internet Medley							
Facebook, Inc. (NasdaqGS:FB)	$100,017.00	$107,909.00	16.35	36.20	193.73	$97.22	$20.36
Google Inc. (NasdaqGS:GOOG)	$248,856.30	$296,078.30	4.46	14.64	25.45	$270.89	$6.61
LinkedIn Corporation (NYSE:LNKD)	$28,448.50	$29,321.90	22.87	179.26	729.40	$130.32	$6.91
Netlfix	$13,959.00	$14,539.00	3.54	81.20	304.80	$403.86	$7.11
OpenTable, Inc. (NasdaqGS:OPEN)	$1,641.70	$1,733.70	9.45	30.35	59.99	$15.34	$3.02
Pandora Media, Inc. (NYSE:P)	$4,163.40	$4,232.30	7.89	NA	NA	$21.16	$5.72
RetailMeNot	$1,723.60	$1,715.00	10.20	34.20	64.96	$147.84	$4.60
Trulia, Inc. (NYSE:TRLA)	$1,647.39	$1,853.10	17.75	NA	NA	$59.02	$3.57
Yelp, Inc. (NYSE:YELP)	$4,006.10	$4,102.90	22.42	NA	NA	$41.03	$2.67
Zillow, Inc. (NasdaqGS:Z)	$3,419.80	$3,589.50	22.48	NA	NA	$78.20	$5.22
Yahoo! Inc. (NasdaqGS:YHOO)	$27,262.80	$29,854.60	5.65	21.24	7.19	$106.24	$2.55
Groupon	$5,857.00	$7,039.00	2.42	44.04	NA	$168.80	$0.62
Travelzoo Inc. (NasdaqGS:TZOO)	$347.20	$421.10	2.23	12.81	23.39	$16.20	$0.95
Aggregate	*$441,349.79*	*$502,389.40*	*5.82*	*20.43*	*30.76*	*$151.57*	*$5.96*
Median			*8.67*	*32.27*	*59.99*	*101.73*	*4.91*
Average			*10.97*	*47.44*	*159.96*	*121.98*	*5.42*

*Twitter's value based on revenues = $543 million * ?*

*Twitter's value based on # users = 237 million * ?*

Rules for the road: Pricing

1. Respect the market: As a trader, you are not only at the mercy of the market, but you are assuming that over time, the market gets it right.
2. Watch for momentum shifts: It is easy to be a winner when the momentum is on your side, but you can lose it all if you don't detect momentum shifts.
3. Act decisively and quickly: Hamlet would not have been a good trader.
4. Rest your ego: If you believe that you are bigger than the market, you will over reach and destroy yourself.
5. Don't intellectualize: Trading is a simple exercise of gauging what the market thinks a stock or asset is worth, not an assessment of fundamentals.

PRICE OR VALUE? PICK YOUR POISON!

What's your game?

- The transactors
  - Traders: Oscar Wilde's definition of a cynic: "knows the price of everything, the value of nothing".
  - Salespeople: Caveat emptor!
  - Deal intermediaries: Get the deal done (even if it is not a good deal)!
- The muddled middle
  - Academic value: The cognitive dissonance of the "efficient market"
  - Accounting value: Rule maker, rule maker, make up your mind!
  - Legal value: The bane of the expert witness!
- The investors
  - Owners of businesses: Except if you want to run it for the long term.
  - Investors in companies: With faith and patience, you can take advantage of Mr. Market.
  - Long term consultants: You have to live with the consequences of the advice that you mete out to your clients.

The Value versus Price Debate

	To value	To price
Assets	Can be valued based upon expected cashflows, with higher cashflows & lower risk = higher value.	Can be priced against similar assets, after controlling for cash flows and risk.
Commodity	Can be value based upon utilitarian demand and supply, but with long lags in both.	Can be priced against its own history (normalized price over time)
Currency	Cannot be value	Can be priced against other currencies, with greater acceptance & more stable purchasing power = higher price.
Collectible	Cannot be value	Can be priced based upon scarcity and desirability.

Pricing Bitcoin..

In the muddled middle, what you get is neither price nor value, but mush..

- The "fair value accounting" oxymoron: Fair value accounting requires accountants to value assets based upon what "market participants" will pay for those assets in arms length transactions today.
- Legal Valuation: In courts, experts witnesses are generally asked to opine on the values of assets, often in the abstract. It is unclear whether they are being asked to price assets or value assets, and that allows them to stake extreme positions (depending on which side is paying them).
- Academic valuation: Much of what passes for valuation in financial theory is just pricing.

In the investing world, there are three views of "the gap"

	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.

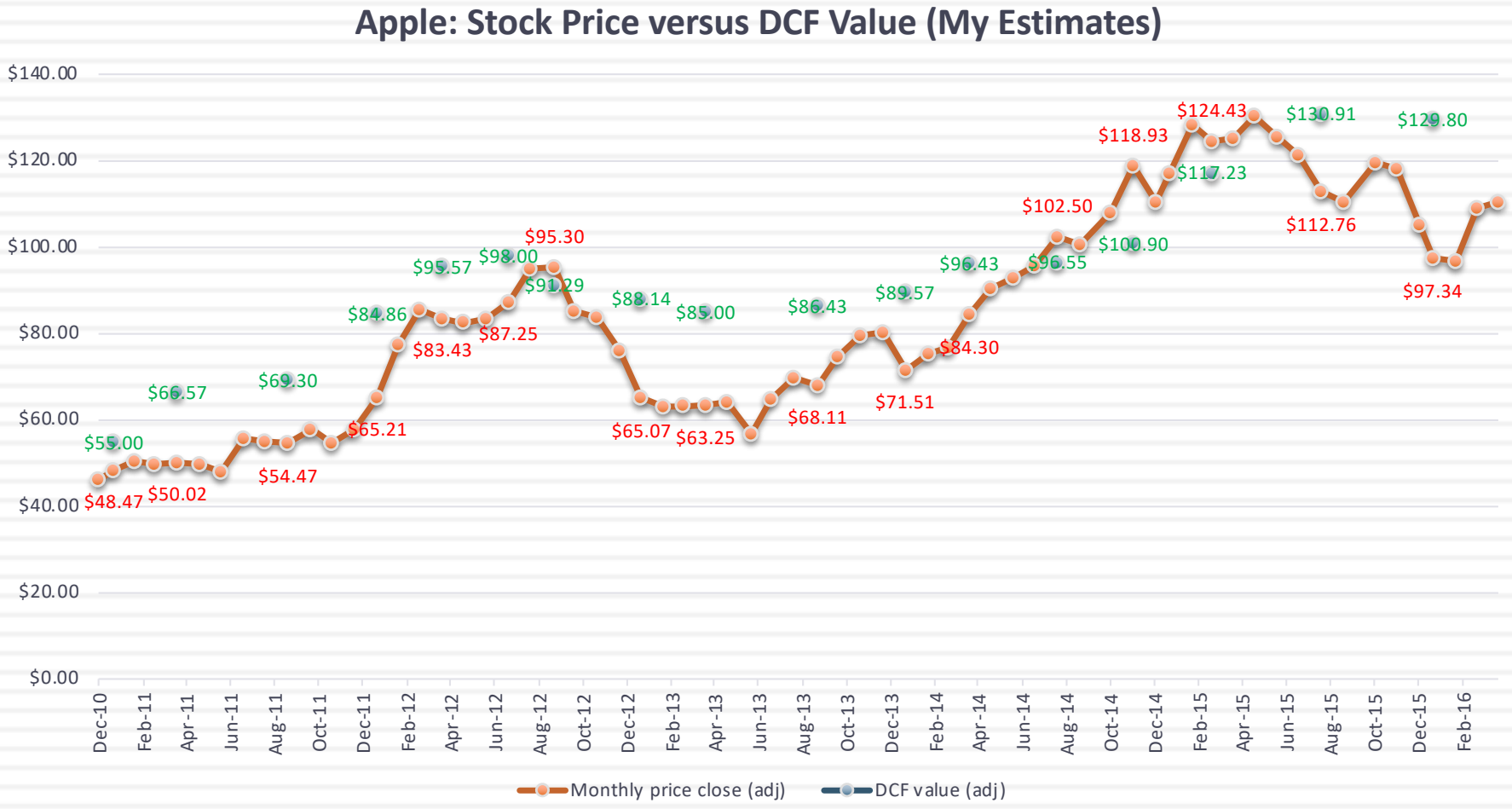
The pricer's dilemma..

- No anchor: If you do not believe in intrinsic value and make no attempt to estimate it, you have no moorings when you invest. You will therefore be pushed back and forth as the price moves from high to low. In other words, everything becomes relative and you can lose perspective.
- Reactive: Without a core measure of value, your investment strategy will often be reactive rather than proactive.
- Crowds are fickle and tough to get a read on: The key to being successful as a pricer is to be able to read the crowd mood and to detect shifts in that mood early in the process. By their nature, crowds are tough to read and almost impossible to model systematically.

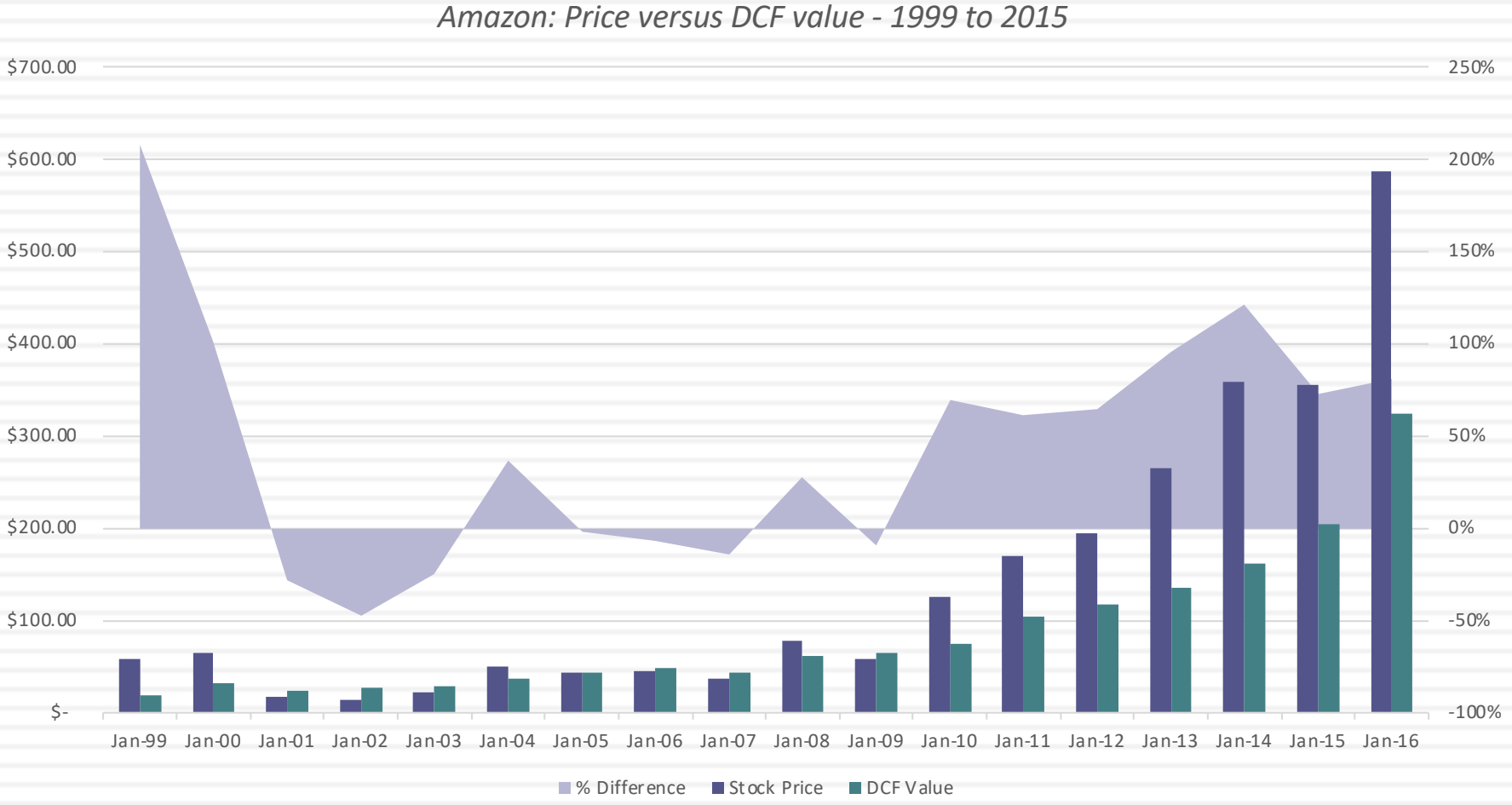
The valuer's dilemma

- 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.

An Investor's Dream: When it works..



An Investor's Nightmare: When it does not



The choice is yours (and there is no right one)

1. Do your job: There is no right or wrong way to put a number on an asset. If your job is to price it, that is exactly what you should do. If it is to value it, go for an intrinsic value approach.
2. Don't be delusional: If you are pricing an asset, don't get distracted too much by fundamentals and intrinsic value concerns. If you are valuing an asset, don't let the pricing process (mood & momentum) feed back into your valuation.
3. Play to your strengths: To be a successful investor, you have to know what makes you tick and pick the approach that best fits you.