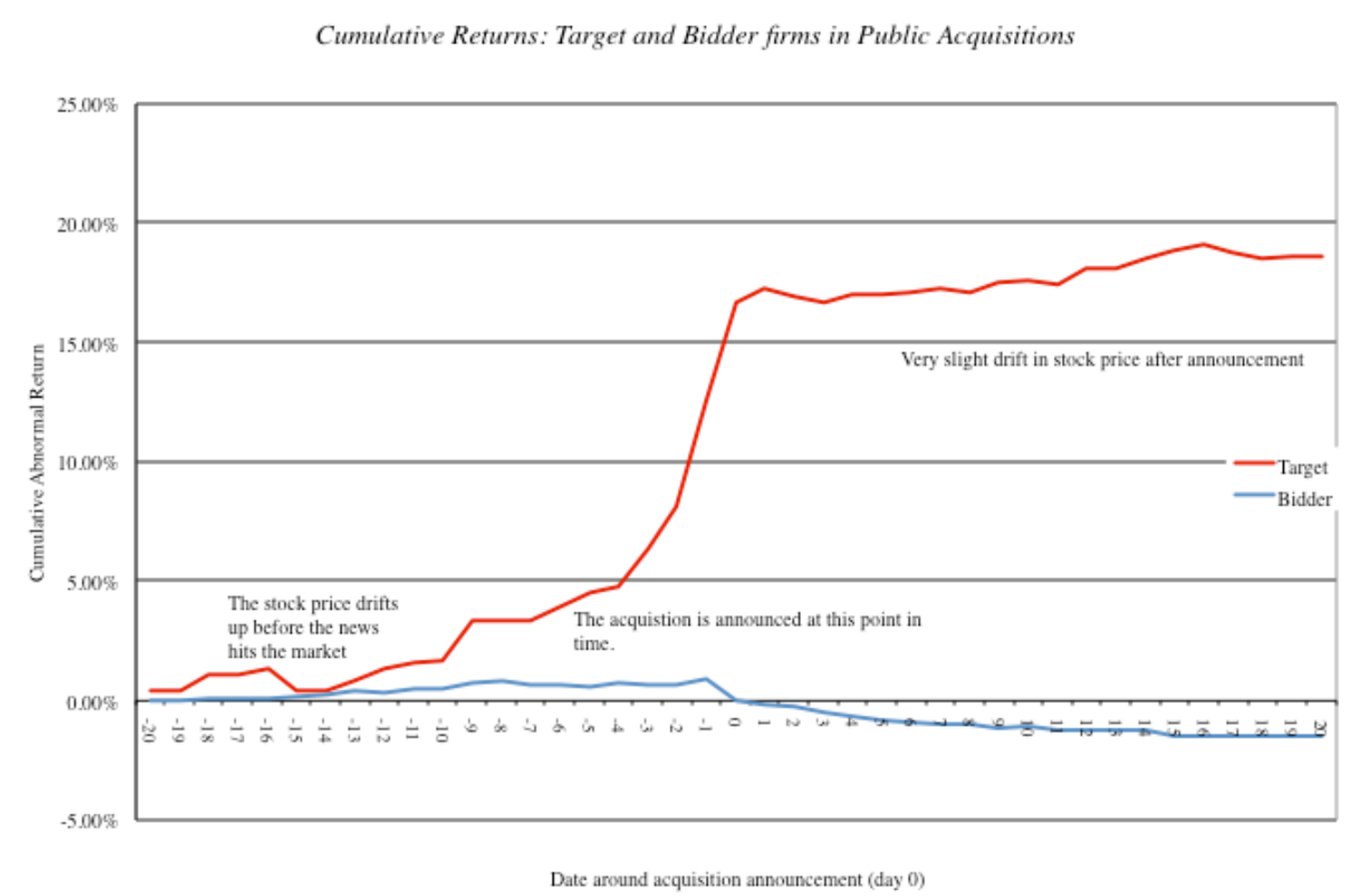
Acquirers Anonymous: Seven Steps to Business Sobriety…

Aswath Damodaran

The truth shall set you free!

Acquisitions = Value Destruction run amok!

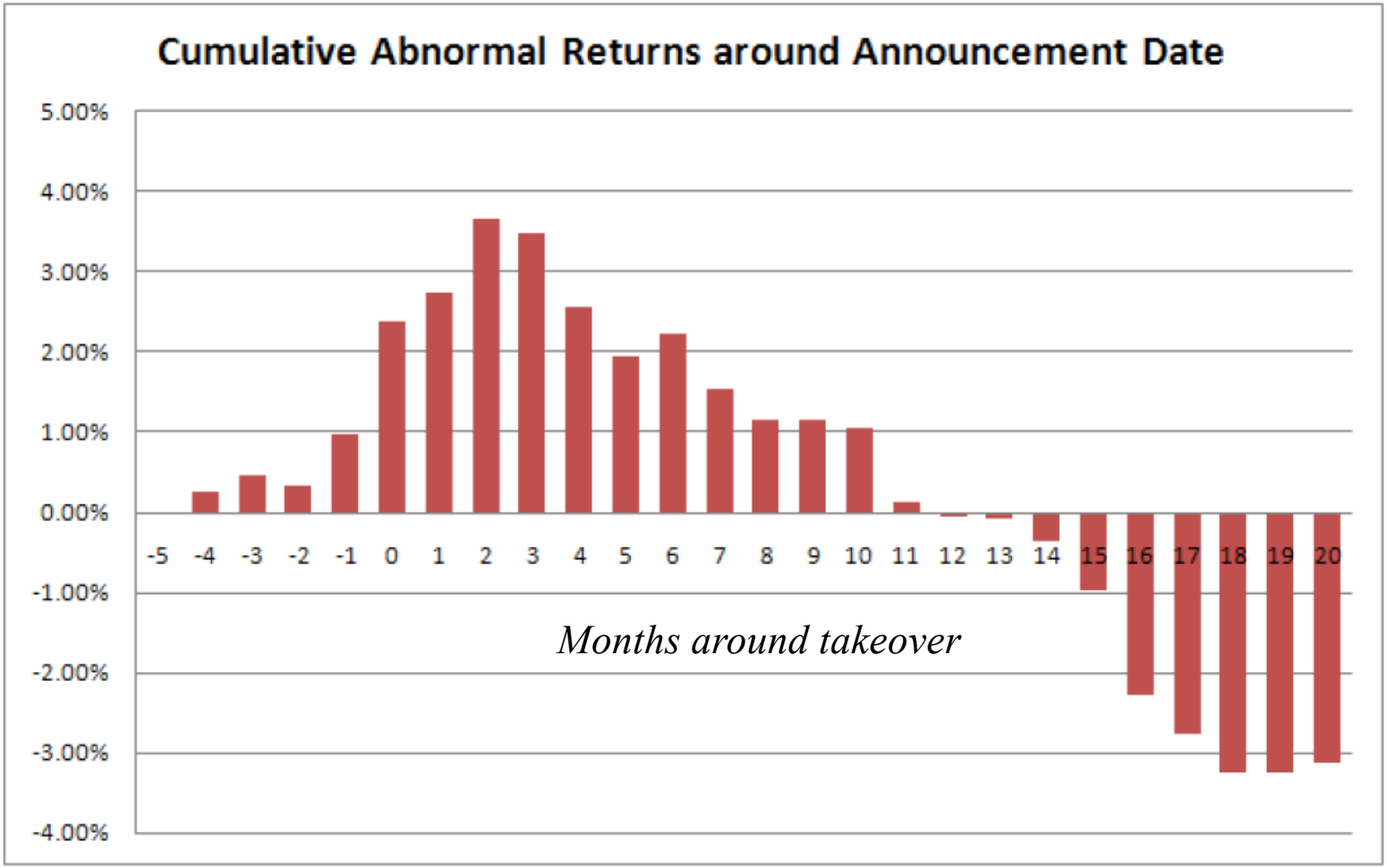
Acquisitions are great for target companies but not always for acquiring company stockholders…



And the long-term follow up is not positive either..

- Managers often argue that the market is unable to see the long term benefits of mergers that they can see at the time of the deal. If they are right, mergers should create long term benefits to acquiring firms.
- The evidence does not support this hypothesis:
  1. McKinsey and Co. has examined acquisition programs at companies on whether acquirers earn more than the cost of capital and whether they outperform their peers and find most wanting.
  2. Synergy is elusive. KPMG in a study of global acquisitions concludes that most mergers (>80%) fail - the merged companies do worse than their peer group.
  3. A large number of acquisitions that are reversed within fairly short time periods. About 20% of the acquisitions made between 1982 and 1986 were divested by 1988. In studies that have tracked acquisitions for longer time periods (ten years or more) the divestiture rate of acquisitions rises to almost 50%.

The disease is spreading… Indian firms acquiring US targets – 1999 - 2005

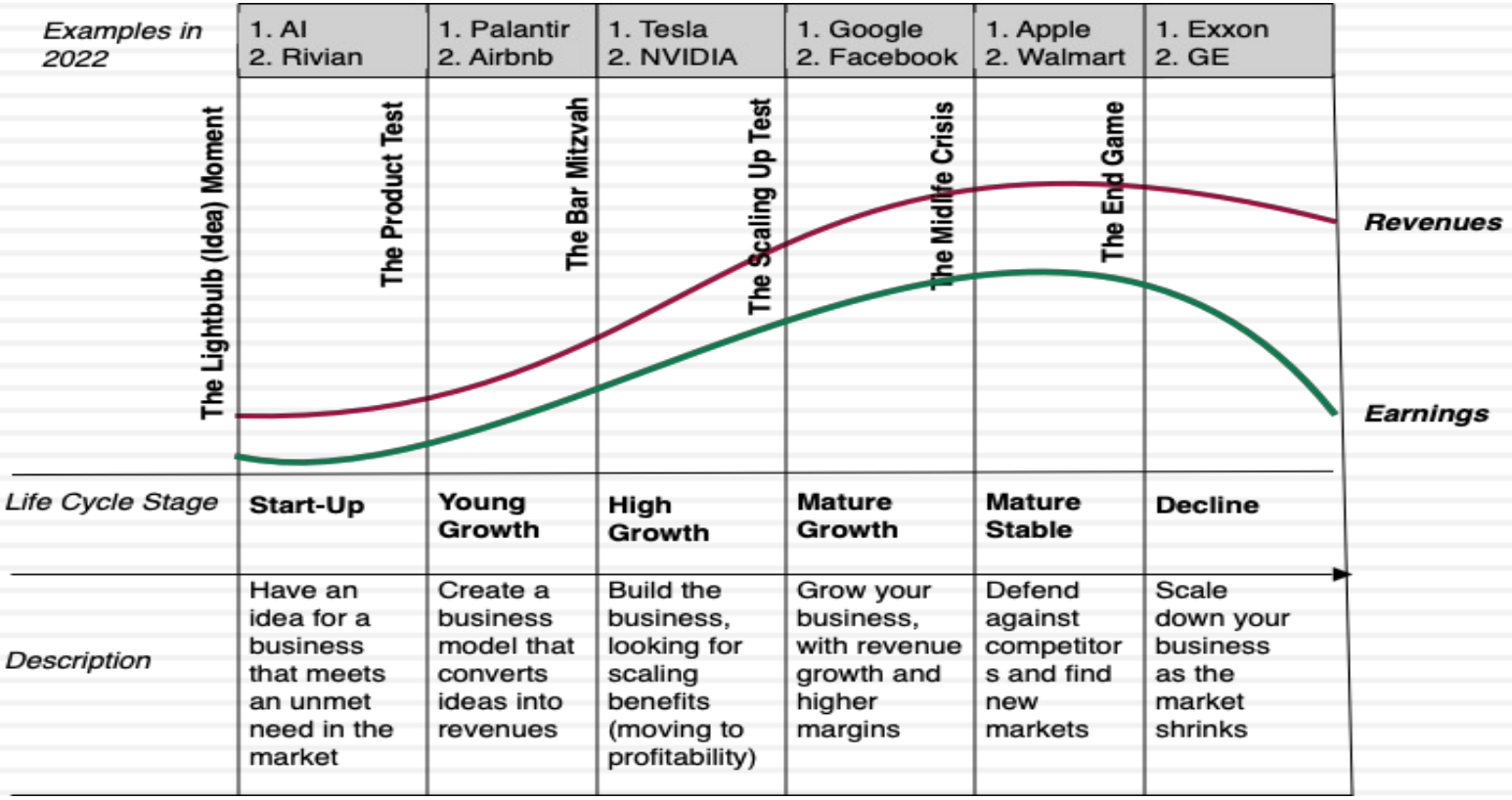


Growing through acquisitions is a "loser's game"

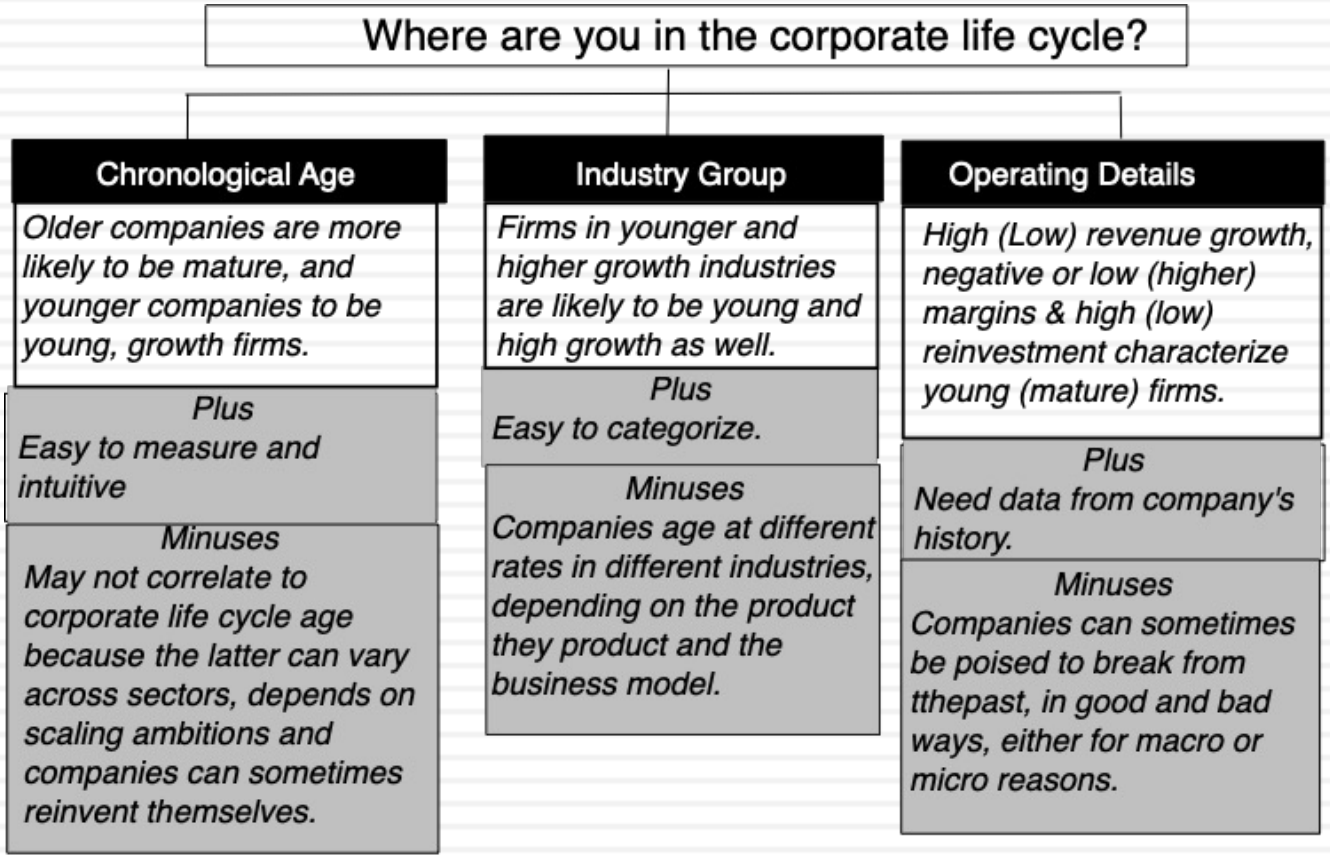
- Firms that grow through acquisitions have generally had far more trouble creating value than firms that grow through internal investments.
- In general, acquiring firms tend to
  - Pay too much for target firms
  - Over estimate the value of "synergy" and "control"
  - Have a difficult time delivering the promised benefits
- Worse still, there seems to be very little learning built into the process. The same mistakes are made over and over again, often by the same firms with the same advisors.
- **Conclusion: There is something structurally wrong with the process for acquisitions which is feeding into the mistakes.**

The Growth Imperative

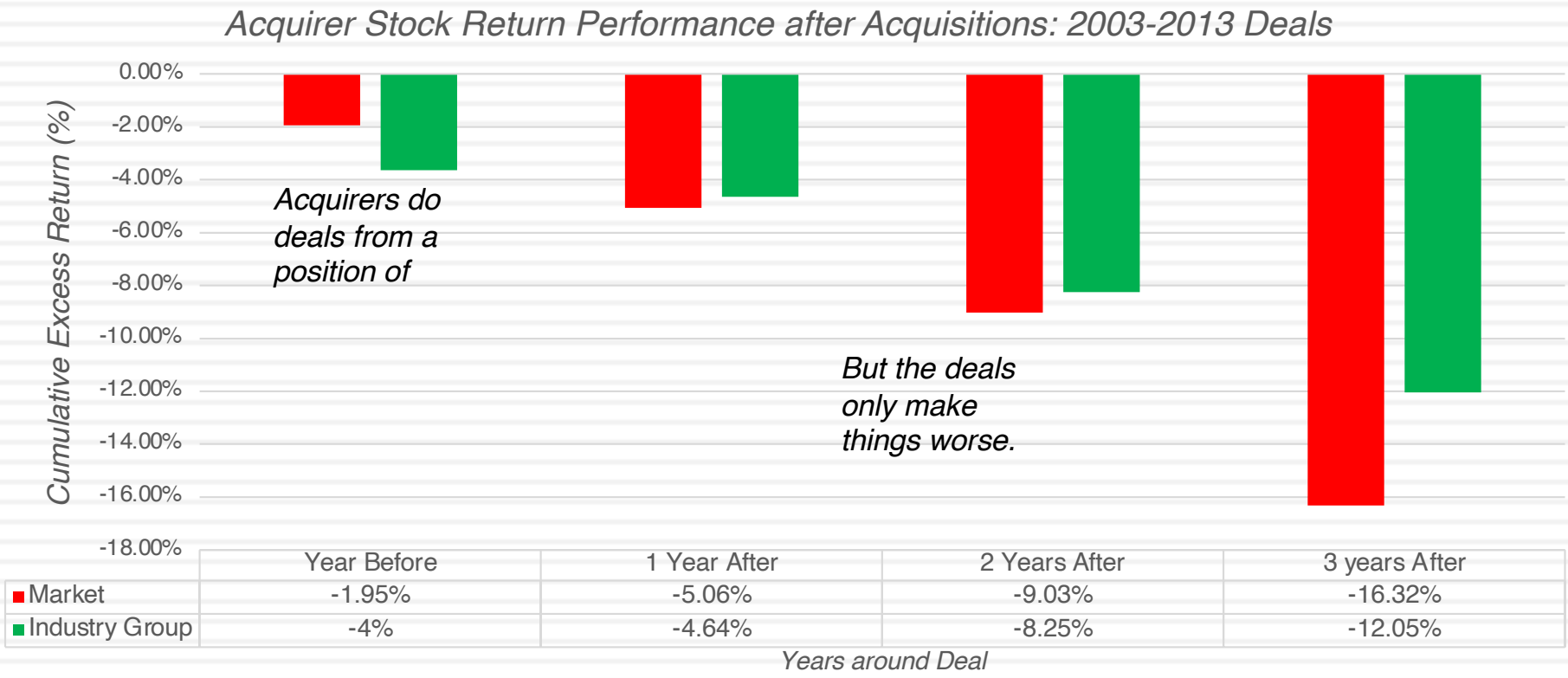
The Corporate Life Cycle



Life Cycle Diagnostics



The False Promise of Acquisitions



And growth at any cost…

	Actual Return		Required Return		Excess Return
Business	$ROIC = \frac{\text{Operating Income (after taxes)}}{\text{Invested Capital}}$	–	Cost of Capital	=	ROIC – Cost of Capital
Equity	$ROE = \frac{\text{Net Income}}{\text{BV of Equity}}$	–	Cost of Equity	=	ROE – Cost of Equity

		ROE - Cost of Equity				ROIC - Cost of Capital			
Region	# Firms	25th	Median	75th	% positive	25th	Median	75th	% positive
Africa and Middle East	1,836	-18.89%	-6.98%	4.10%	33.22%	-11.98%	-5.01%	1.88%	29.96%
Australia & NZ	1,747	-45.31%	-19.82%	-2.12%	22.36%	-36.31%	-15.49%	0.41%	25.72%
Canada	2,722	-51.41%	-23.53%	-6.72%	17.13%	-39.17%	-18.23%	-2.56%	19.96%
China	6,955	-12.54%	-5.60%	0.97%	27.96%	-11.70%	-5.77%	0.97%	27.25%
EU & Environs	5,243	-19.58%	-4.96%	5.61%	36.99%	-12.08%	-3.72%	6.42%	37.74%
Eastern Europe & Russia	287	-14.72%	-6.01%	3.67%	32.87%	-11.88%	-6.34%	1.70%	28.83%
India	3,574	-13.42%	-5.99%	4.27%	34.00%	-12.00%	-6.09%	2.18%	29.63%
Japan	3,787	-10.59%	-5.19%	-0.34%	23.75%	-7.70%	-4.11%	2.02%	30.83%
Latin America & Caribbean	821	-17.97%	-6.46%	3.79%	32.21%	-9.50%	-2.20%	5.73%	40.90%
Small Asia	8,792	-16.95%	-7.29%	0.96%	27.71%	-11.92%	-6.43%	-0.11%	24.71%
UK	1,052	-24.17%	-7.02%	5.04%	33.22%	-13.97%	-2.90%	8.96%	41.53%
United States	5,593	-36.19%	-8.32%	5.92%	35.20%	-19.34%	-1.11%	14.11%	46.89%
Global	**42,409**	**-18.90%**	**-6.77%**	**1.85%**	**29.49%**	**-12.61%**	**-5.37%**	**2.59%**	**30.64%**

Intrinsic Valuation 101

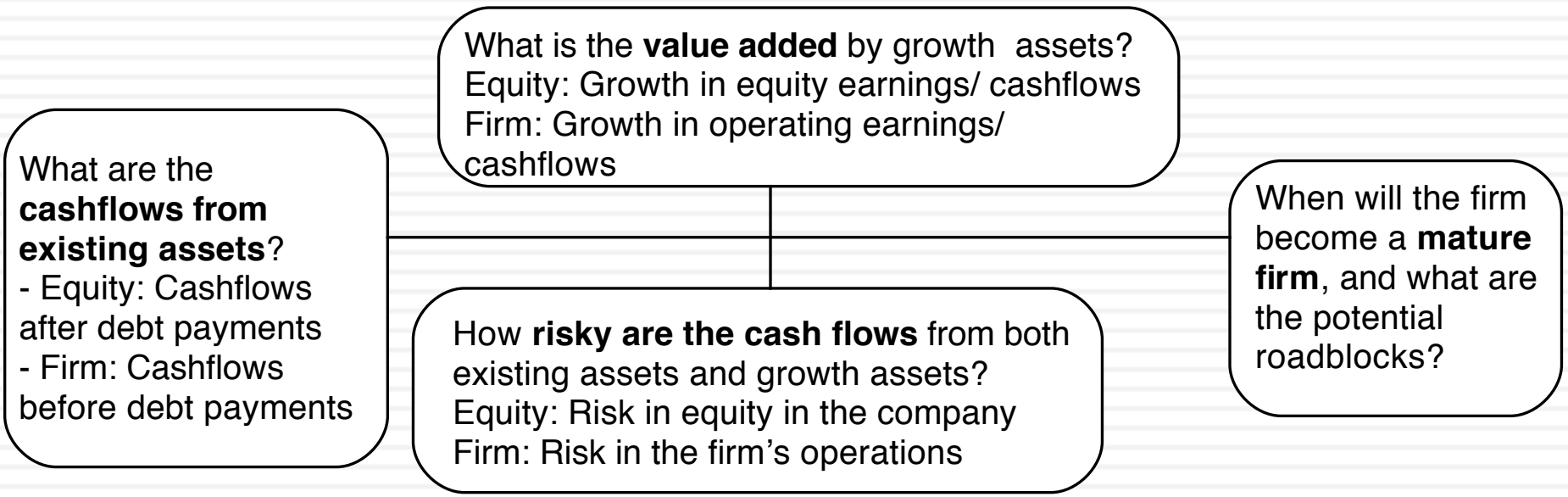
DCF: Unraveling the Mysteries

- The value of a risky asset can be estimated by discounting the expected cash flows on the asset over its life at a risk-adjusted discount rate:

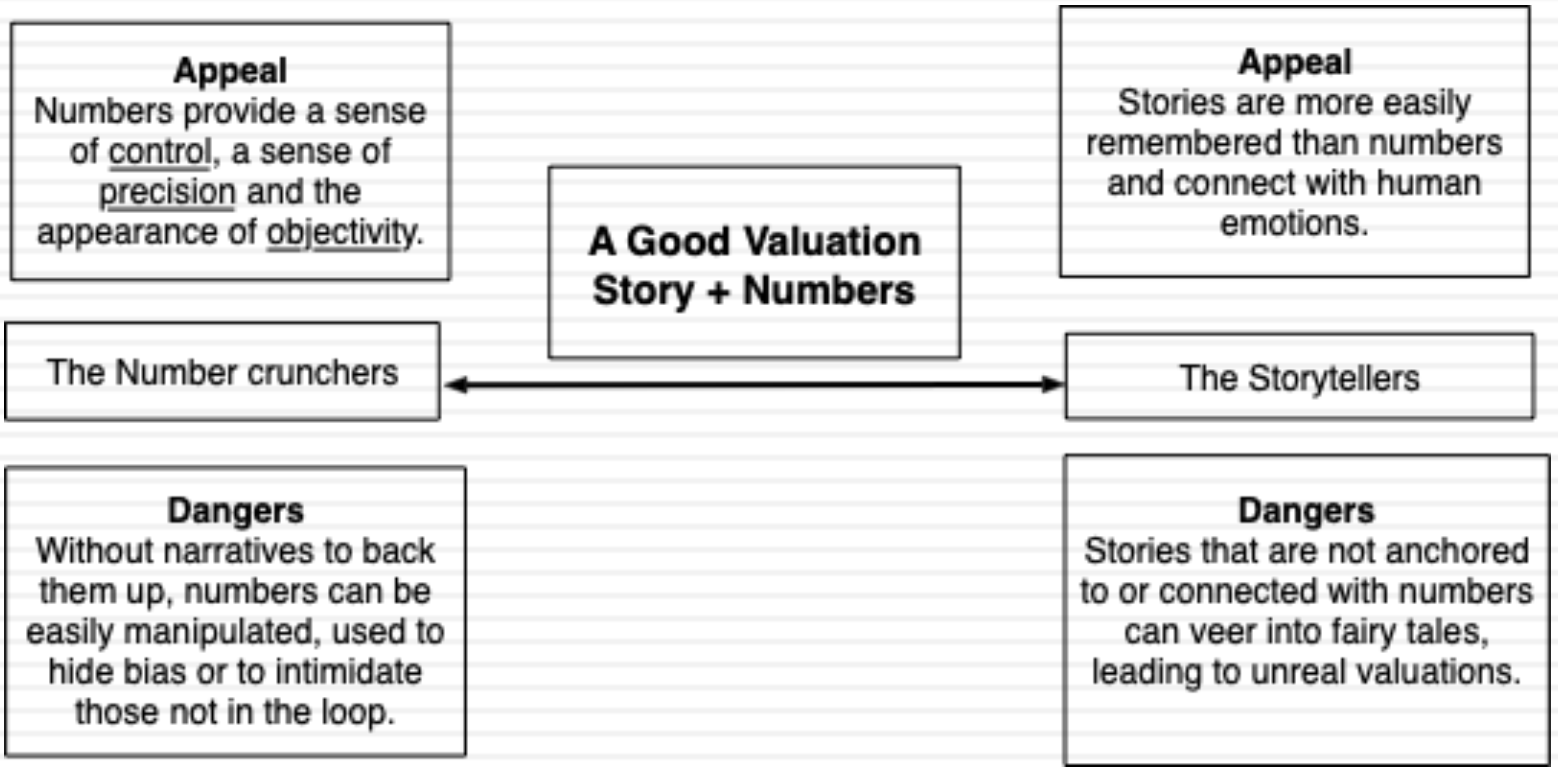
$$\text{Value of asset} = \frac{E(CF_1)}{(1+r)} + \frac{E(CF_2)}{(1+r)^2} + \frac{E(CF_3)}{(1+r)^3} \ldots\ldots + \frac{E(CF_n)}{(1+r)^n}$$

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 Key Questions in valuation…



Theme 3: Good valuation = Story + Numbers



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

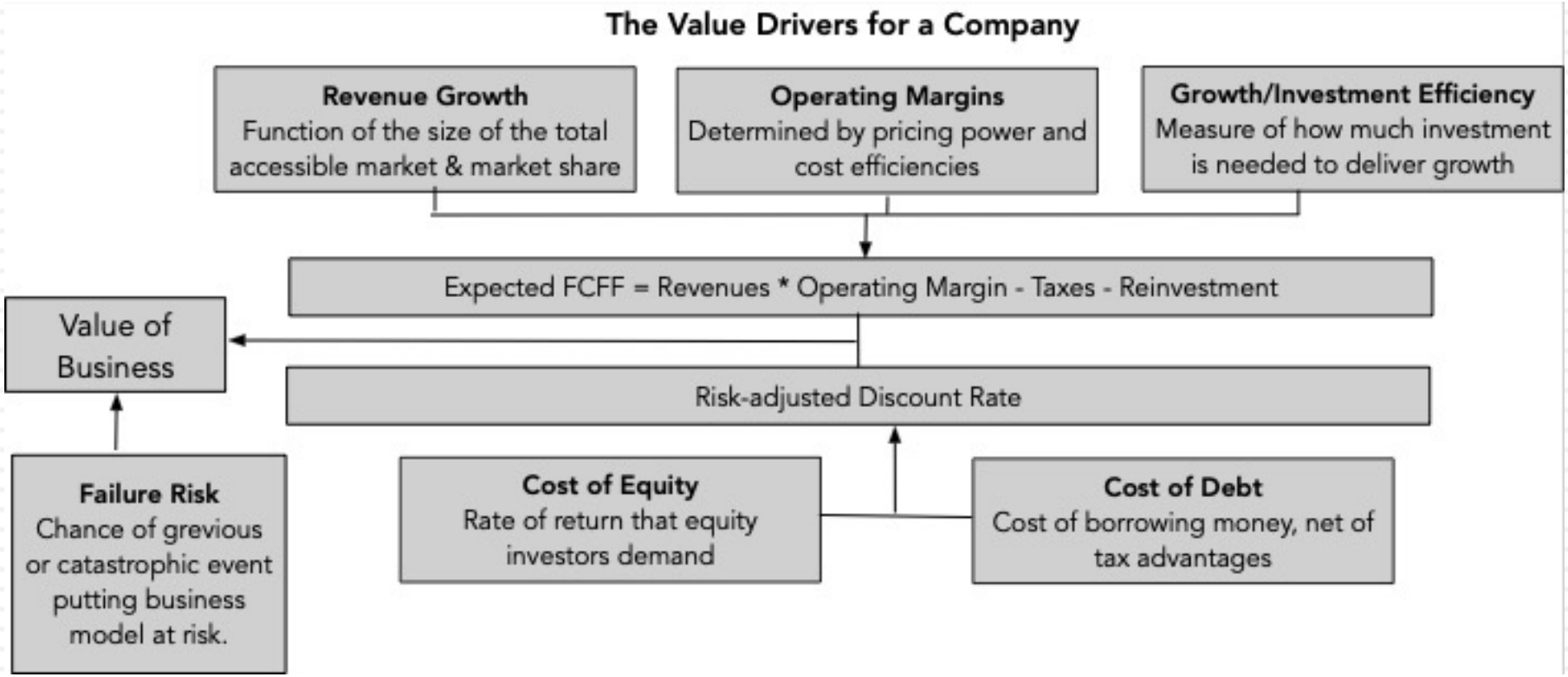
Cash flows from existing assets
The base earnings will reflect the earnings power of the existing assets of the firm, net of taxes and any reinvestment needed to sustain the base earnings.

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

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.

And Business Drivers that determine value…



1. Revenue Growth

Revenue Growth and Magnitude

Market Size and Growth	X	Market Share
1. Current Market size: The size of the market for the company's products & services, given geography it is targeting and product type. *2. Expected Growth in Market*: Gowth in total market, as technology and market conditions change.		*1. Company's current market share*: If company's current market share is low, potential for growth in market share at expense of competition. *2. Industry economics*: Nature of the business (a few big winners or splintered competition). *3. Strength of company's competitive advantages*: Stronger and more sustainable competitive advantages should allow for higher market share.

The potential for revenue growth is greater for companies with small revenues (and market share) in a big and growing market, especially if the company has strong competitive advantages in winner-take-all businesses.

2. Target Margins (and path there)…

Operating Margin: Target and Pathway

Target Operating Margin	→	Pathway to Profitability
1. Unit Economics: Profits on extra unit sold (Gross Margins), as percent of price, with higher profitability going with higher operating margin. *2. Economies of scale*: Costs growth relative to revenue growth, with greater economies of scale allowing for higher margins. *3. Competition*: Pricing behavior among competitiors, with more aggressive pricing leading to lower margins.		*1. Company's current operating margin:* The lower a company's current margin, relative to the target, the steeper the path to profitability. *2. Profitability versus Growth trade off:* Companies that put growth ahead of profitability will wait longer before getting to target margin. *3. Business model:* The more well formed a business model, the speedier the pathway to the target margin.

While all companies would like higher margins in steady state, the level of these margins will be determined by the sector in which a firm operates and its choice of business model, and the speed with which you move towards those target margins will be determined by a company's ambitions and business model choices.

3. Sales to Invested Capital: A Pathway to estimating Reinvestment

Sales to Invested Capital: Reinvestment

Current (Historical) Sales to Capital	Future Sales to Capital
The sales to invested capital ratio relates the revenues of the firm to its invested capital, with the latter defined the same way that you would in the return on invested capital calculation. Sales to Capital = Revenues/ (Book Equity + Book Debt – Cash) The ratio measures the efficiency with which a firm delivers its revenue growth, with higher values indicating more efficiency. You can look at: 1. The company's historical sales to capital ratio 2. The industry average sales to capital ratio	1. Scaling Effects: As companies get bigger, the sales to invested capital ratio can rise or fall, depending on the sector being analyzed. (Looking at the peer group may give some guidance). 2. Excess Capacity: If a company has excess capacity, created by past investments, it should be able to generate revenue growth with less investment, i.e., with higher sales to capital ratios. 3. Lag between investment and growth: If reinvestment creates growth quickly (or instantaneously), the reinvestment in a year can be estimated based upon revenue change in that year. If there is a lag, the reinvestment may have to be tied to revenue change in a future year.

A company with higher expected growth in revenues will need to reinvest more, though how much will be determined by the businesss that it operates in, with less reinvestment needed if it has excess capacity and a lag between reinvestment and growth.

Acquisition Sins

The seven sins in acquisitions…

1. Risk Transference: Attributing acquiring company risk characteristics to the target firm.
2. Debt subsidies: Subsiding target firm stockholders for the strengths of the acquiring firm.
3. Auto-pilot Control: The "20% control premium" and other myths…
4. Elusive Synergy: Misidentifying and mis-valuing synergy.
5. Its all relative: Transaction multiples, exit multiples…
6. Verdict first, trial afterwards: Deal first, valuation to follow
7. Not my fault: Holding no one responsible for delivering results.

Lets start with a target firm

- The target firm has the following income statement:

	Next Year
Revenues	$ 100.00
Operating Expenses (includes depreciation of $20 million)	$ 80.00
Pre-tax Operating Income	$ 20.00
Taxes	$ 8.00
After-tax Operating Income	$ 12.00

- Assume that this firm will generate this operating income forever (with no growth) and that the cost of equity for this firm is 20%. The firm has no debt outstanding. What is the value of this firm?

Test 1: Risk Transference

Risk Transference…

- Assume that as an acquiring firm, you are in a much safer business and have a cost of equity of 10%. What is the value of the target firm to you?

a) $60 million

b) $90 million

c) $120 million

d) Other

Lesson 1: Don't transfer your risk characteristics to the target firm

- Let's start with a basic capital budgeting principle, which is often ignored: **The discount rate used for an investment should reflect the risk of the investment and not the risk characteristics of the investor who raised the funds.**
  - Risky businesses cannot become safe just because the buyer of these businesses is in a safe business.
  - The right cost of equity to use in valuation is the one that reflects the risk in equity in the target firm.

If you fail this test..

- Risky firms will look cheap to you: If you use your (acquirer's) cost of equity and capital in valuing a target firm, you will find that risky firms look under valued.
- You will pay too much for these risky firms: It follows then that you will pay a premium over what you should pay (even though it looks like a bargain relative to your assessed value.
- You will become a risky (and bad) firm: Over time, you (the acquiring firm) will become not just a much riskier firm, but one that has been built up through over investing in risky projects.

Test 2: The Debt Trick

Cheap debt + Debt Capacity

- Assume as an acquirer that you have both excess debt capacity (because you have not chosen to borrow as much as you could have, given your assets) and access to cheap debt.
- You plan to borrow money at 4% (in after-tax terms) and that you plan to fund half the acquisition with debt. How much would you be willing to pay for the target firm?

Lesson 2: Render unto the target firm owners that which is theirs, not a penny more..

- As an acquiring firm, it is entirely possible that you can borrow much more than the target firm can on its own and at a much lower rate.
- If you build these characteristics into the valuation of the target firm, you are essentially transferring wealth from your firm's stockholder to the target firm's stockholders.
- When valuing a target firm, use a cost of capital that reflects the debt capacity and the cost of debt that would apply to the firm.

If you fail this test…

- You will subsidize target firms: If you use your (acquirer's) cost of debt and debt capacity to compute a cost of capital to value a target firm, you will be subsidizing the target firm shareholders for something (your debt capacity + low cost of debt) that they had no role in creating. That is investing malpractice.
- The subsidy gets worse, if you are not adjusting your cost of debt for the higher debt that you will have, post-acquisition, and the changed riskiness of the combined firm, after the deal.

Test 3: Control Premiums

The 20% Control Premium

- Assume that you are now told that it is conventional to pay a 20% premium for control in acquisitions.
- That premium is justified by pointing to historical studies that show that this is what acquirers pay for control, i.e., pay roughly a 20% premium over the market price.
  1. How much would you be willing to pay for the target firm?
  2. Assuming that you are paying a control premium, how would you justify it?

The Shaky Origins of the 20% Control Premium!

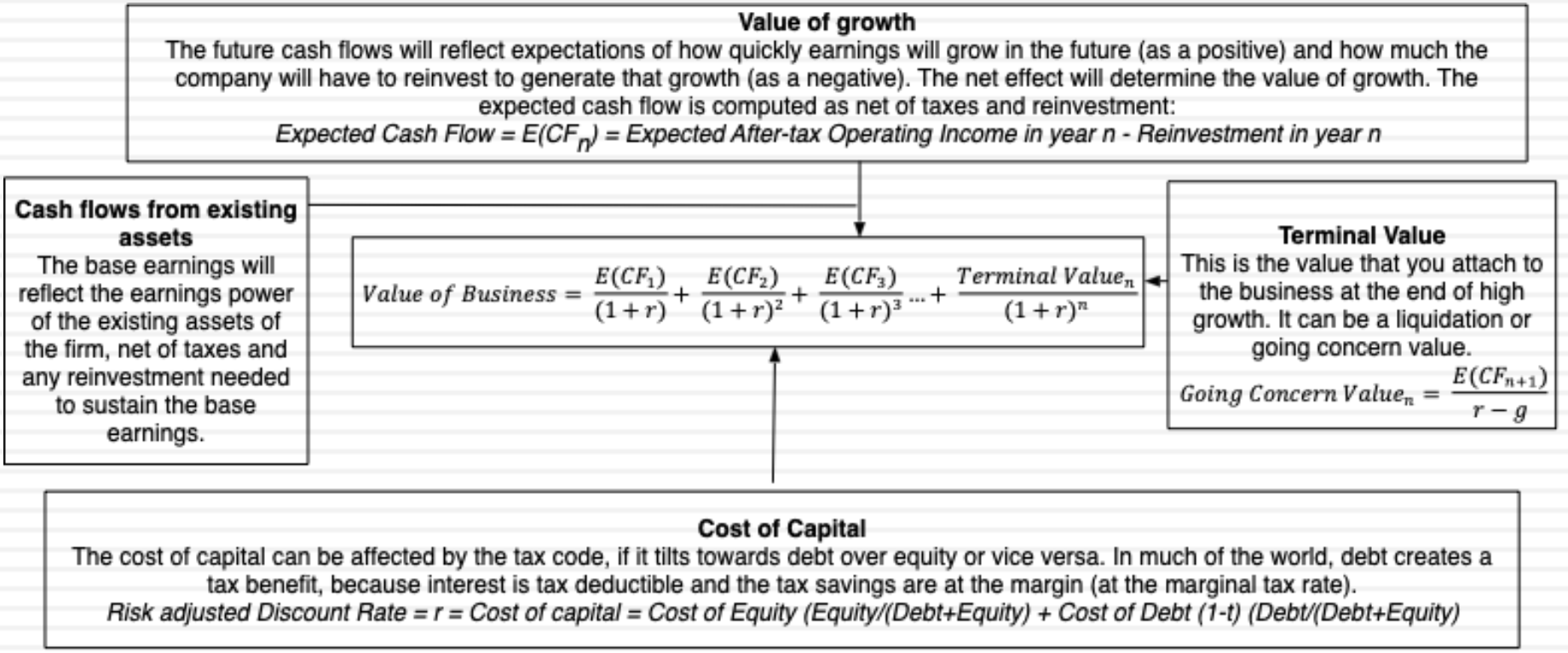
- Me-tooism is not great rationale: Just because everyone does it does not make it right.
- Price premium also covers other motives: Even if this is the right premium, on average, it is a premium for everything in a merger, not just control.
- And if it is on a publicly traded firm, it is a pricing premium: The premium is the premium over the market price, not intrinsic value.

The Expected Value of Control

- The value of the control premium that will be paid to acquire a block of equity will depend upon two factors -
  - **Probability that control of firm will change**: This refers to the probability that incumbent management will be replaced. This can be either through acquisition or through existing stockholders exercising their muscle.
  - **Value of Gaining Control of the Company:** The value of gaining control of a company arises from two sources - the increase in value that can be wrought by changes in the way the company is managed and run, and the side benefits and perquisites of being in control

Value of Gaining Control = Present Value (Value of Company with change in control - Value of company without change in control)

The Drivers of Value…



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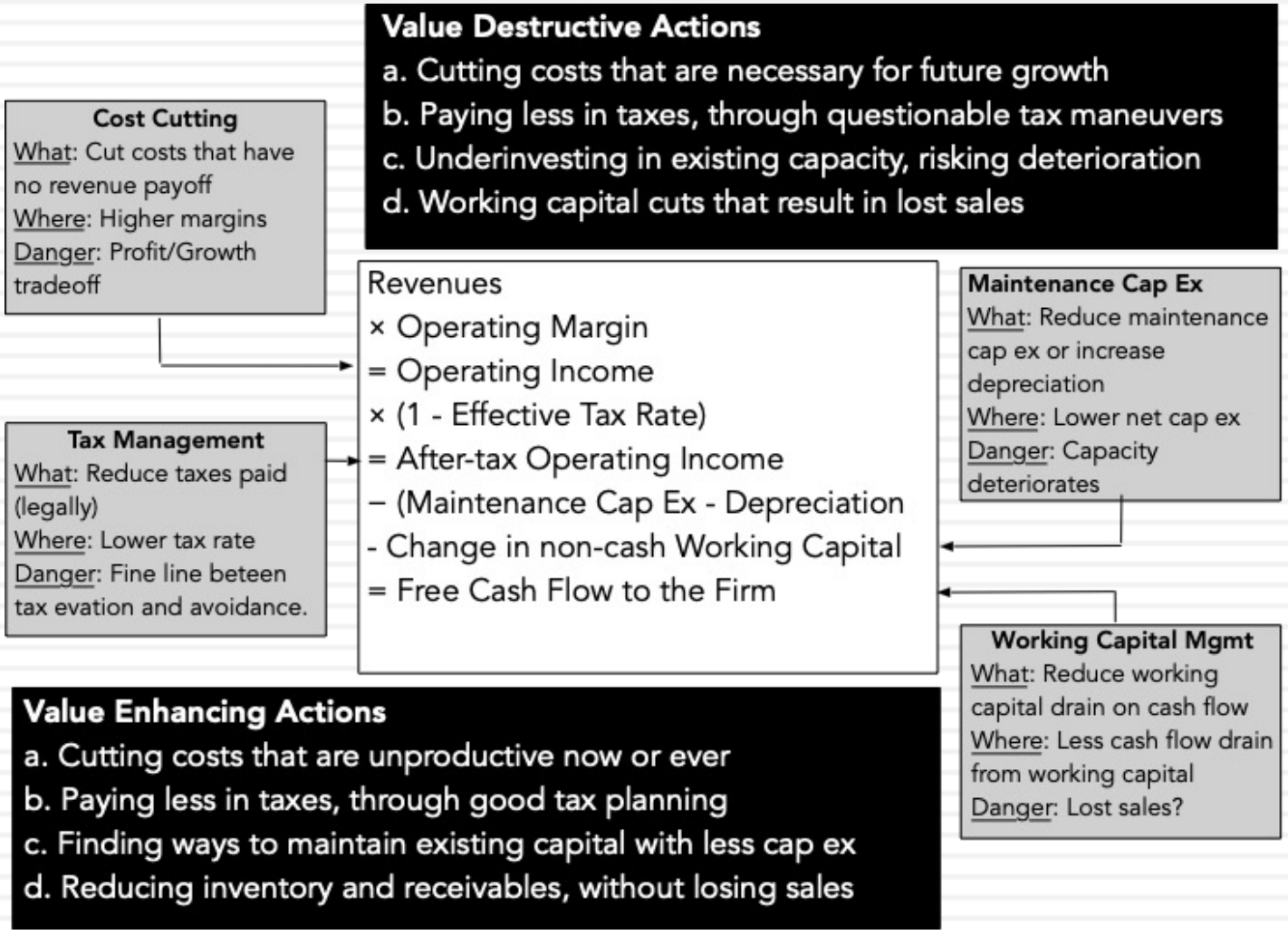
The Paths to Value Creation

- Using the DCF framework, there are four basic ways in which the value of a firm can be enhanced:
  - The cash flows from existing assets to the firm can be increased, by either
    - increasing after-tax earnings from assets in place or
    - reducing reinvestment needs (net capital expenditures or working capital)
  - The expected growth rate in these cash flows can be increased by either
    - Increasing the rate of reinvestment in the firm
    - Improving the return on capital on those reinvestments
  - The length of the high growth period can be extended to allow for more years of high growth.
  - The cost of capital can be reduced by
    - Reducing the operating risk in investments/assets
    - Changing the financial mix
    - Changing the financing composition

Value Creation 1: Increase Cash Flows from Assets in Place



Divest, Abandon or Hold on: The Math!

- The conventional wisdom, when you are put in charge of a troubled firm, is to sell or abandon the worst-performing assets, usually ones that earn less than the cost of capital.
- Every asset/business that a company owns has three values:
  - Continuation value: the value of the expected cash flows from continuing to own and operate the asset
  - Abandonment value: the salvage value of the asset or assets in the business
  - Divestiture value: the value that the best buyer will pay for the asset or business.
- For value enhancement, you pick the highest of the three values, and ironically, the ones that you may most benefit from divesting are your best-regarded, rather than your worst performing, assets.

Value Creation 2: Increase Value from Expected Growth

Are you in a business where you can find more investments that generate returns that exceed the cost of capital?

No

Reinvest less and grow at a lower rate. If the business is bad enough, shrink your company.

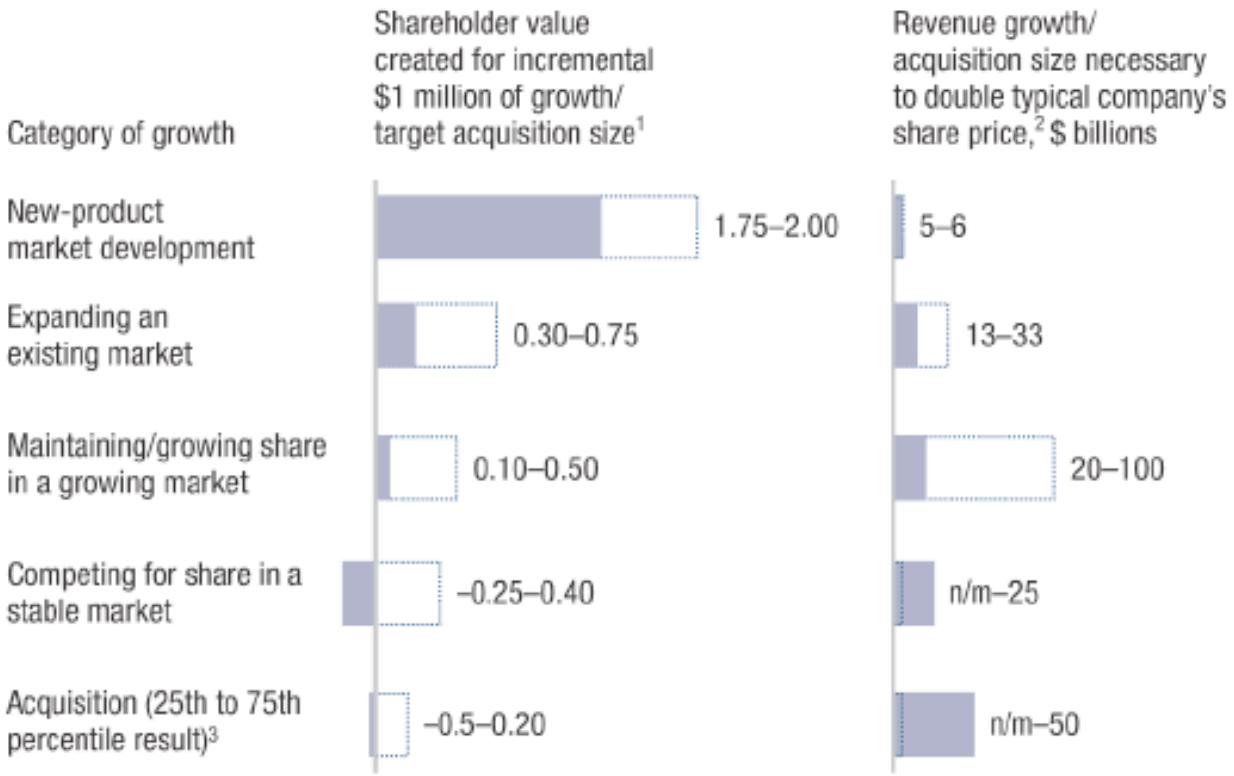
Yes

Reinvest more, as long as you can earn more than your cost of capital, and grow faster, with lower cash flows.

Region	# firms	ROE	COE	% of firms with ROE>COE	ROIC	WACC	% of firms with ROIC>WACC	% of firms with ROIC-WACC>5%	% of firms with ROIC-WACC<5%
Africa and Middle East	2,423	7.55%	10.98%	32.03%	4.77%	9.33%	25.05%	16.59%	83.41%
Australia & NZ	1,798	-12.08%	8.51%	18.19%	-11.59%	8.36%	19.24%	13.68%	86.32%
Canada	2,791	-20.66%	8.64%	11.64%	-18.59%	8.41%	12.54%	8.10%	91.90%
China	7,504	4.34%	10.07%	23.87%	3.36%	8.94%	25.49%	15.27%	84.73%
EU & Environs	5,925	6.73%	9.83%	33.96%	5.48%	8.59%	33.59%	24.76%	75.24%
Eastern Europe & Russia	325	10.17%	10.38%	34.46%	4.32%	9.17%	26.46%	16.31%	83.69%
India	4,446	8.32%	11.12%	34.14%	5.61%	9.90%	29.94%	19.50%	80.50%
Japan	4,020	7.14%	10.05%	33.23%	7.15%	8.62%	41.32%	26.87%	73.13%
Latin America & Caribbean	984	9.28%	12.30%	35.37%	7.37%	9.76%	35.98%	24.19%	75.81%
Small Asia	9,876	5.19%	10.86%	25.65%	3.81%	9.37%	23.78%	14.14%	85.86%
UK	1,125	1.47%	9.71%	29.16%	4.76%	8.74%	37.16%	28.80%	71.20%
United States	6,481	2.64%	8.80%	26.68%	0.05%	7.91%	23.59%	17.74%	82.26%
Global	47,698	4.93%	9.92%	27.54%	3.73%	8.68%	27.12%	18.02%	81.98%

Value Creating Growth… Evaluating the Alternatives..

Modes of organic growth vary in value creation intensity—consumer goods industry



III. Building Competitive Advantages: Increase length of the growth period

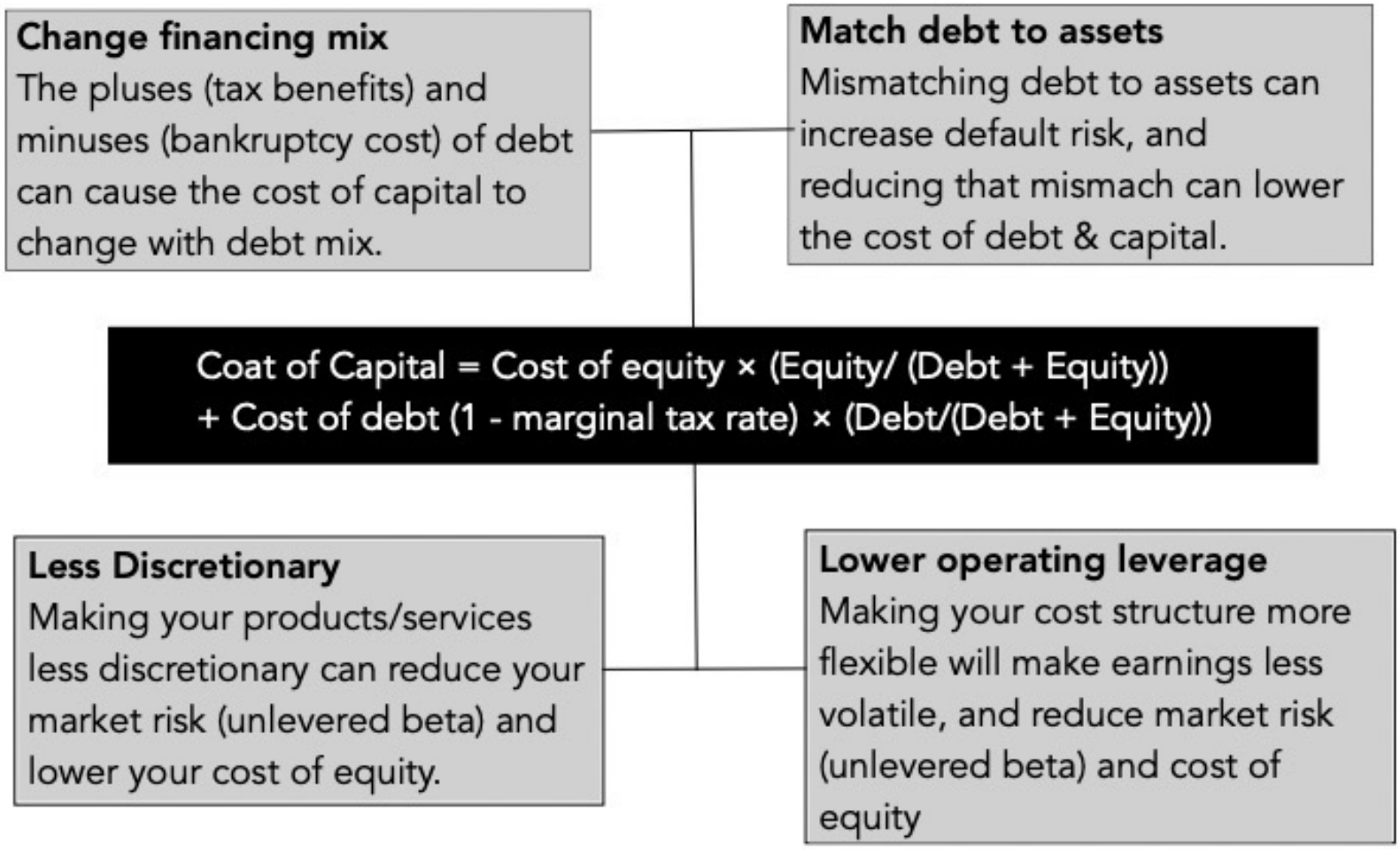
- Value comes from earning returns that exceed your cost of capital, and those excess returns, in turn, come from competitive advantages.
- Stronger competitive advantages (moats) increase how long you can add value from growth.

		Type of competitive advantage (moat)				
		Brand Name	Switching Costs	Network Benefis	Cost Advantages	Legal Protection
Moat Width	Wide	Top brand	Infinite	Global	Permanent	Full
	Narrow	Name brand	High	Local	Temporary	Partial
	No Moat	Generic	None	None	None	None
Place in story		*Margins*	*Customer Retention*	*Market Share*	*Profit margins*	*Pricing Power*

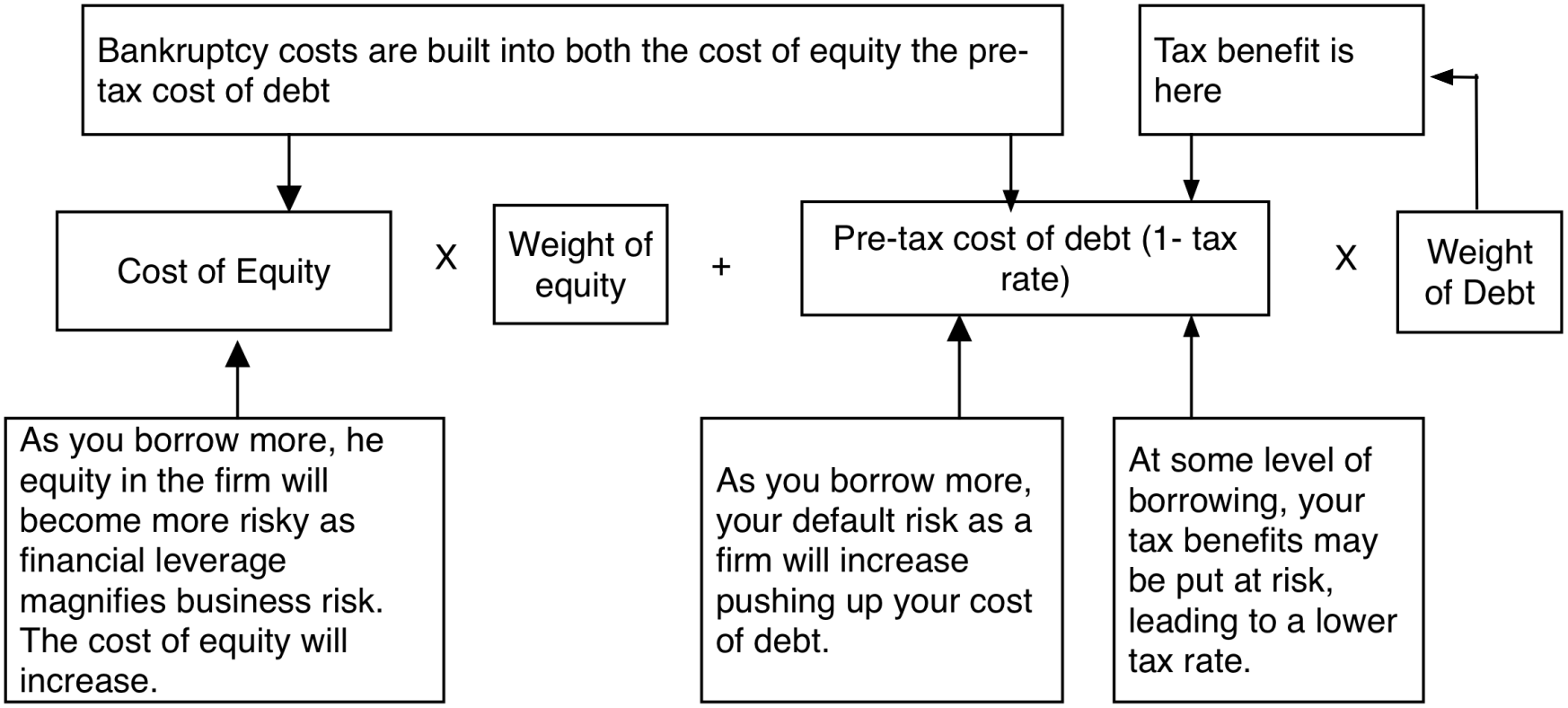
Measuring the Moat

- The only financial measure of the moat is the difference between the return you earn on existing assets and the cost of capital. Unfortunately, there are three problems;
  - The return on equity (and capital) is an accounting number, and may not be reflective of the true return.
  - It can be volatile, shifting over time.
  - It is for past investments, not future ones.
- The truth is that moat reading remains subjective, with a multitude of factors going into it.

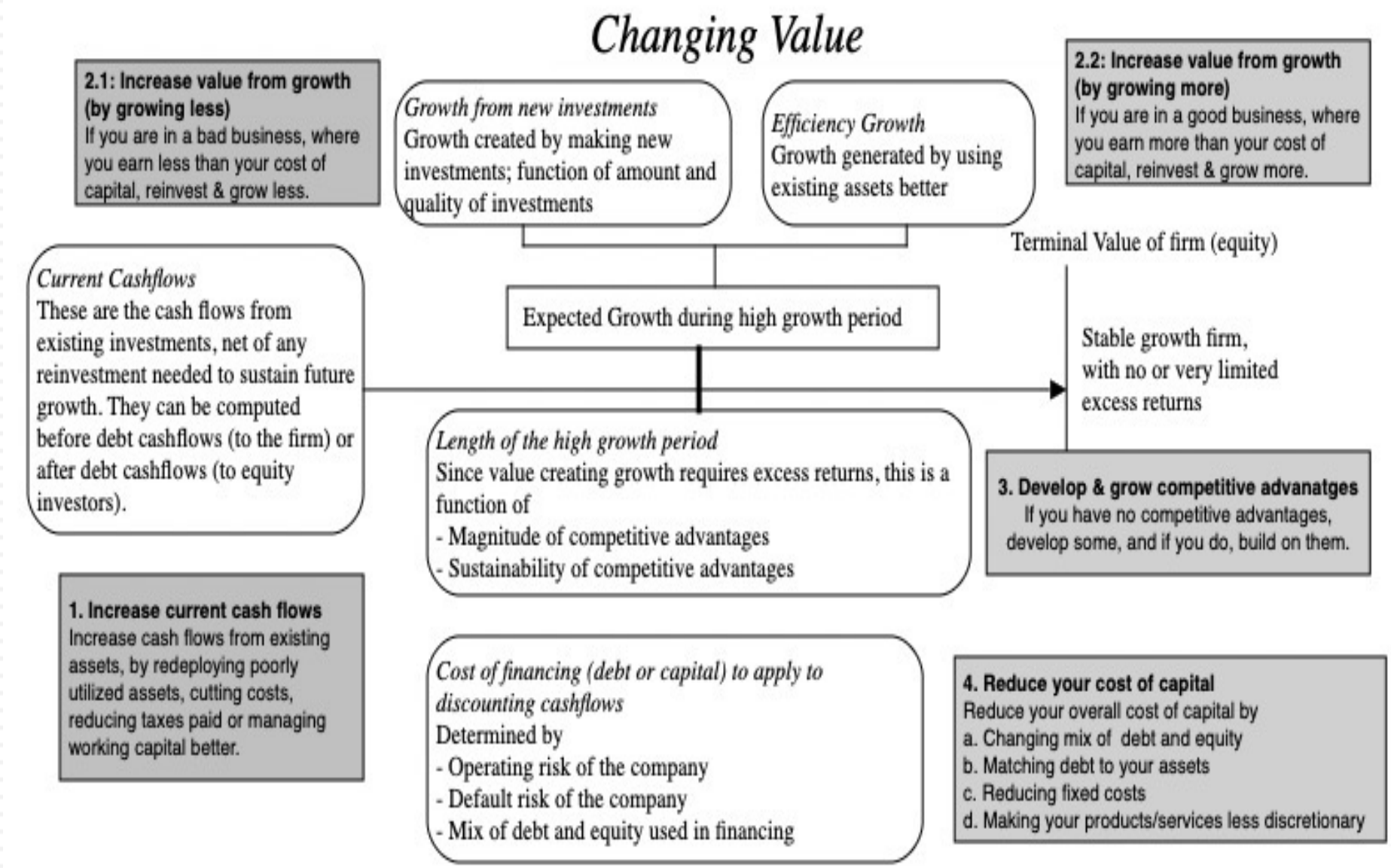
Value Creation 4: Reduce Cost of Capital



Myth: Borrowing money always lowers your cost of capital



The trade off: As you use more debt, you replace more expensive equity with cheaper debt but you also increase the costs of equity and debt. The net effect will determine whether the cost of capital will increase, decrease or be unchanged as debt ratio changes.


Changing Value
2.1: Increase value from growth (by growing less)
If you are in a bad business, where you earn less than your cost of capital, reinvest & grow less.
Growth from new investments
Growth created by making new investments; function of amount and quality of investments
Efficiency Growth
Growth generated by using existing assets better
2.2: Increase value from growth (by growing more)
If you are in a good business, where you earn more than your cost of capital, reinvest & grow more.
Terminal Value of firm (equity)
Current Cashflows
These are the cash flows from existing investments, net of any reinvestment needed to sustain future growth. They can be computed before debt cashflows (to the firm) or after debt cashflows (to equity investors).
Expected Growth during high growth period
Stable growth firm, with no or very limited excess returns
Length of the high growth period
Since value creating growth requires excess returns, this is a function of
- Magnitude of competitive advantages
- Sustainability of competitive advantages
3. Develop & grow competitive advanatges
If you have no competitive advantages, develop some, and if you do, build on them.
1. Increase current cash flows
Increase cash flows from existing assets, by redeploying poorly utilized assets, cutting costs, reducing taxes paid or managing working capital better.
Cost of financing (debt or capital) to apply to discounting cashflows
Determined by
- Operating risk of the company
- Default risk of the company
- Mix of debt and equity used in financing
4. Reduce your cost of capital
Reduce your overall cost of capital by
a. Changing mix of debt and equity
b. Matching debt to your assets
c. Reducing fixed costs
d. Making your products/services less discretionary

Lesson 3: Control is not worth 20%.. It could be worth nothing or 100%

- The value of control is target-specific: The value of control will depend upon how well or badly managed the target firm is, and how easily the mismanagement can be fixed by a new management (presumably you).
- Without a plan, that value will not delivered: Control does not happen by accident. To enhance value, you need to know what (in the target firm) needs changing and what should be left alone and.
- And if you pay it all as a premium, why bother? If you pay the entire value of control as a premium, you are putting in the hard work and target shareholders are reaping the benefits.

If you fail this test

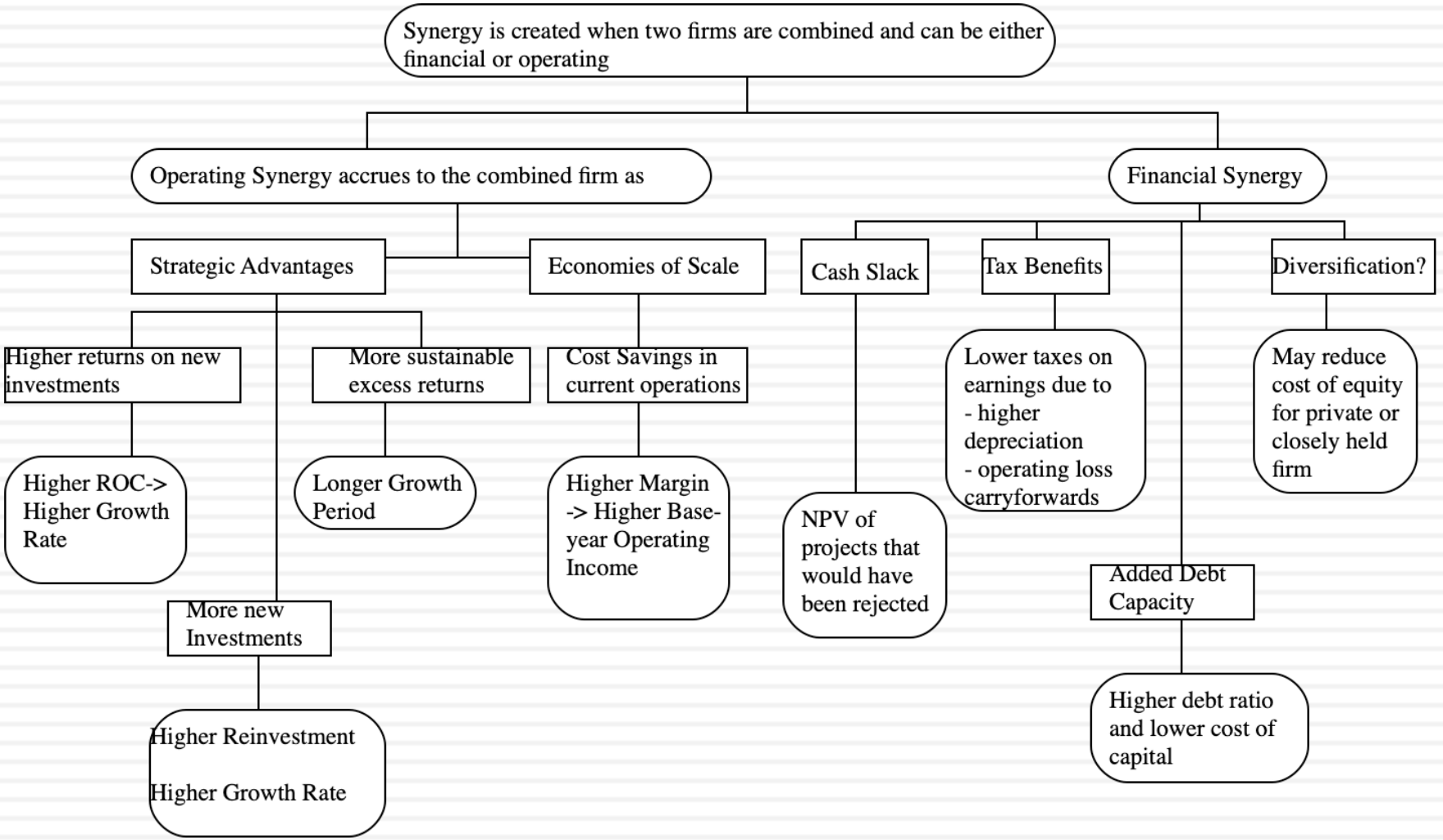
- Pointless Premiums: If control is always worth 20%, you will find a way to pay a premium for any company, even if you have no good reason for doing acquisitions.
- Control ≠ Change: If you do not do your homework on what you plan to change after you acquire a firm you will either change nothing or use cookbook solutions (borrow money & buy back stock).
- Leave all value on table: If you do not value control explicitly, you will leave it all on the table or even pay more than it is worth to target shareholders.

Test 4: Synergy Magic

Synergy….

1. Assume that you are told that the combined firm will be less risky than the two individual firms and that it should have a lower cost of capital (and a higher value). Is this likely?
   a) Yes
   b) No
2. Assume now that you are told that there are potential growth and cost savings synergies in the acquisition. Would that constitute value added?
   a) Yes
   b) No
3. Should you pay this as a premium?
   a) Yes
   b) No

The Value of Synergy



Valuing Synergy

1. Step 1: The firms involved in the merger are valued independently, by discounting expected cash flows to each firm at the weighted average cost of capital for that firm.
2. Step 2: The value of the combined firm, with no synergy, is obtained by adding the values obtained for each firm in the first step.
3. Step 3: The effects of synergy are built into expected growth rates and cash flows, and the combined firm is re-valued with synergy.

Value of Synergy = Value of the combined firm, with synergy - Value of the combined firm, without synergy

Synergy 1.1: Why lower risk is an illusion..

- When we estimate the cost of equity for a publicly traded firm, we focus only on the risk that cannot be diversified away in that firm (which is the rationale for using beta or betas to estimate the cost of equity).
- When two firms merge, it is true that the combined firm may be less risky than the two firms individually, but the risk that is reduced is 'firm specified risk'.
- By definition, market risk is risk that cannot be diversified away and the beta of the combined firm will always be a weighted average of the betas of the two firms in the merger.
- When does it make sense to "merge" to reduce total risk?

Synergy 1.2: Higher growth and cost savings can create value

	P&G	Gillette	Piglet: No Synergy	Piglet: Synergy	
Free Cashflow to Equity	$5,864.74	$1,547.50	$7,412.24	$7,569.73	Annual operating expenses reduced by $250 million
Growth rate for first 5 years	12%	10%	11.58%	12.50%	Slighly higher growth rate
Growth rate after five years	4%	4%	4.00%	4.00%	
Beta	0.90	0.80	0.88	0.88	
Cost of Equity	7.90%	7.50%	7.81%	7.81%	Value of synergy
Value of Equity	$221,292	$59,878	$281,170	$298,355	**$17,185**

Synergy 1.3: Paying that synergy as a premium on price is a mistake

- Premium on value versus price: If you have valued the acquiring and target companies and derived the value of synergy by valuing the combined firm, that synergy value is over intrinsic value, not price. You have to compute the premium over price, which can be much smaller (usually) or bigger (sometimes).
- Fair share? If you pay the entire synergy as a premium, you are effectively delivering the entire value to the target company stockholders and keeping none for yourself.

Lesson 4: Value synergy first and make sure you negotiate for your fair share.

1. You have to value synergy, before you decide how much to pay (not after): Synergy will be the buzzword that explains away the premium that you are paying.
2. To value synergy, you need specifics: Before you value synergy, you need to be specific about what synergies you see in a merger and where they will show up in a valuation.
3. Don't mistake control for synergy: If the benefits can be generated by just one of the two entities in the merger, it is not synergy.
4. Negotiate for your fair share: As the acquiring firm, you should negotiate for your share of the synergy, not pay it all off as a premium.

If you fail this test

1. Synergy will become a plug variable: Synergy will be your explanation for the difference between what you paid and what you should have.
2. No plan, no synergy: If you are not explicit about the form synergy will take, you cannot plan for it and check to see whether it is being delivered. That may explain:
    1. Why synergy does not manifest itself in so many mergers, after the mergers.
    2. Why no one seems to lose their jobs, even after the worst mergers.

Test 5: The Pricing Game

Exit Multiples and Comparables

- Now assume that you are told that an analysis of other acquisitions reveals that acquirers have been willing to pay 5 times EBITDA.. Given that your target firm has EBITDA of $ 40 million, would you be willing to pay $ 200 million for the acquisition?

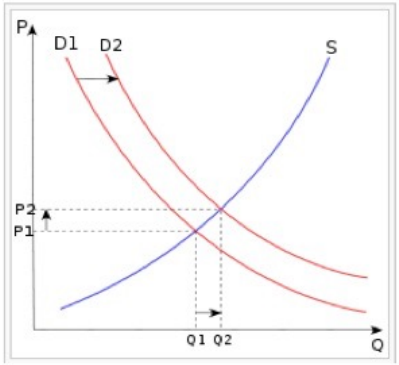
- What if I estimate the terminal value using an exit multiple of 5 times EBITDA?

Pricing ≠ Value

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



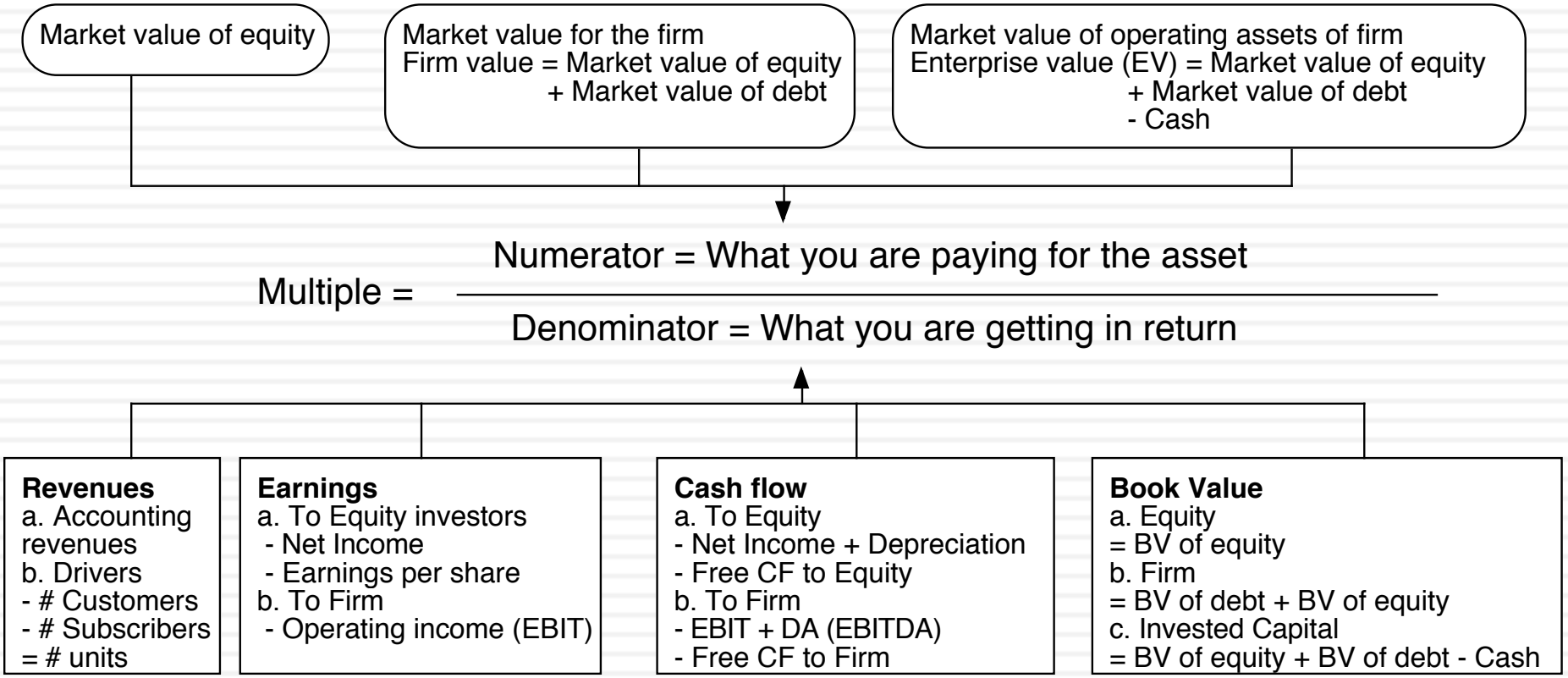
INTRINSIC VALUE → Value → THE GAP: Is there one? Will it close? ← Price ← PRICE

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

The tool for pricing: A multiple



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.

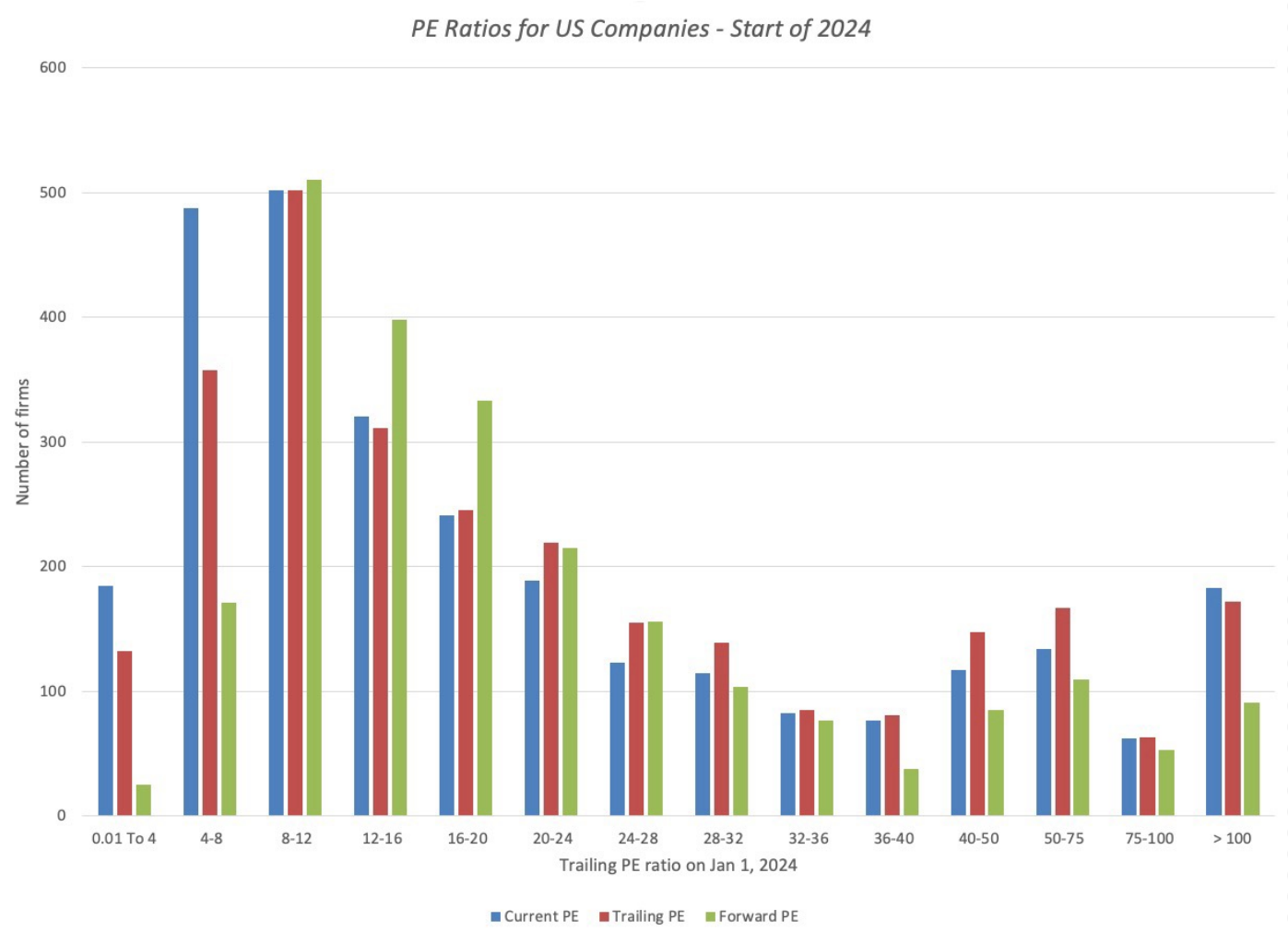
1. Definitional Tests

- 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.

2. 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?

Multiples have skewed distributions…



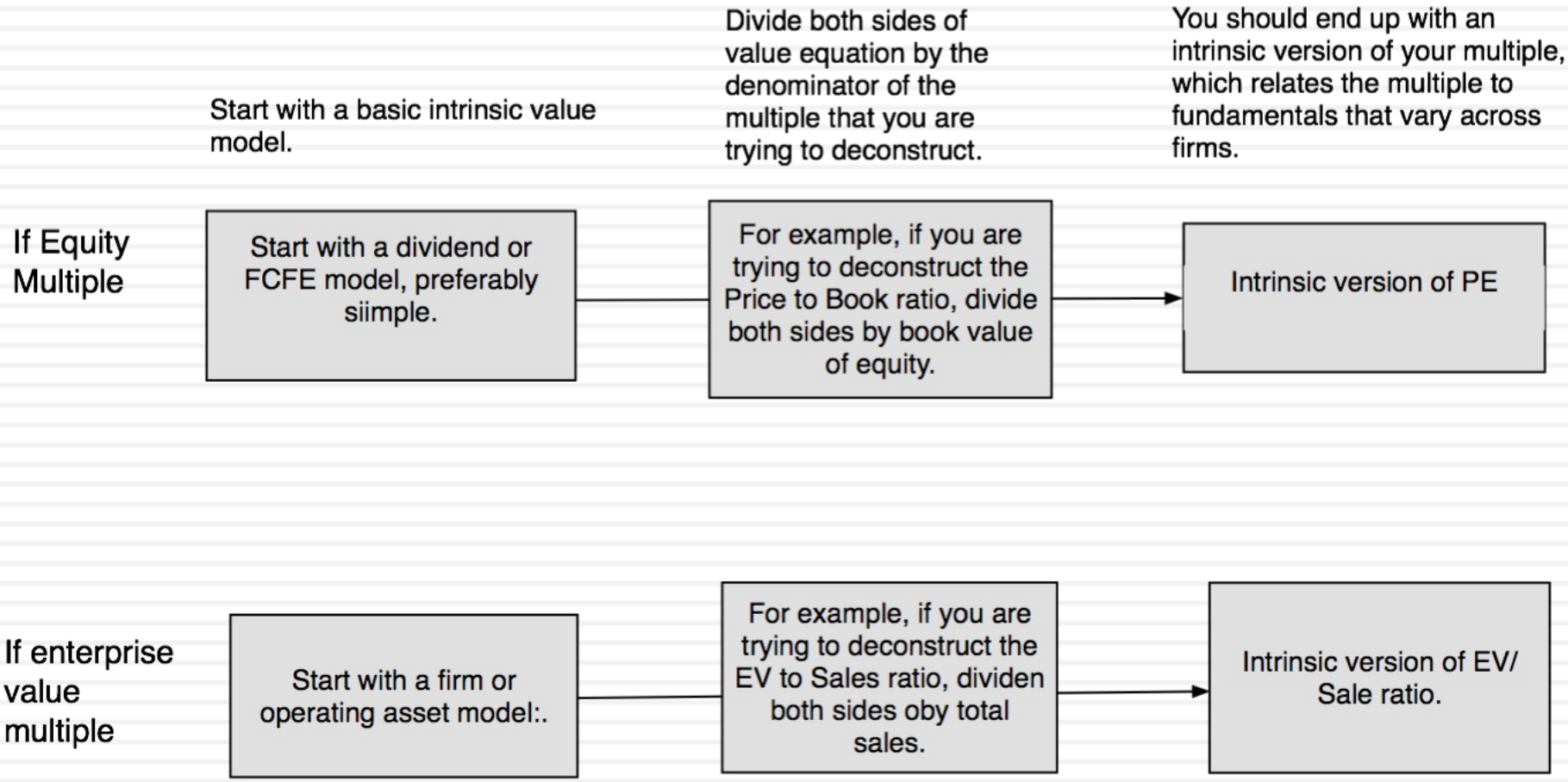
Making statistics "dicey"

	Current	*Trailing*	*Forward*
# firms	6481	6481	6481
# firms with PE	2817	2779	2363
% with no PE	56.53%	57.12%	63.54%
Average	121.65	52.28	31.98
25h Percentile	8.19	9.34	11.19
Median	14.95	17.08	16.85
75th Percentile	29.89	32.71	27.20
Maximum	103000.00	6471.43	2183.33
Standard Deviation	2207.22	254.86	84.26
Standard Error	41.59	4.83	1.73
Skewness	39.11	15.71	15.83

3. Analytical Tests

- What are the fundamentals that determine and drive these multiples?
  - Proposition 2: 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 3: 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



PE Ratio: Understanding the Fundamentals

- To understand the fundamentals, start with a basic equity discounted cash flow model.
- With the dividend discount model,

$$P_0 = \frac{DPS_1}{r - g_n}$$

- Dividing both sides by the current earnings per share,

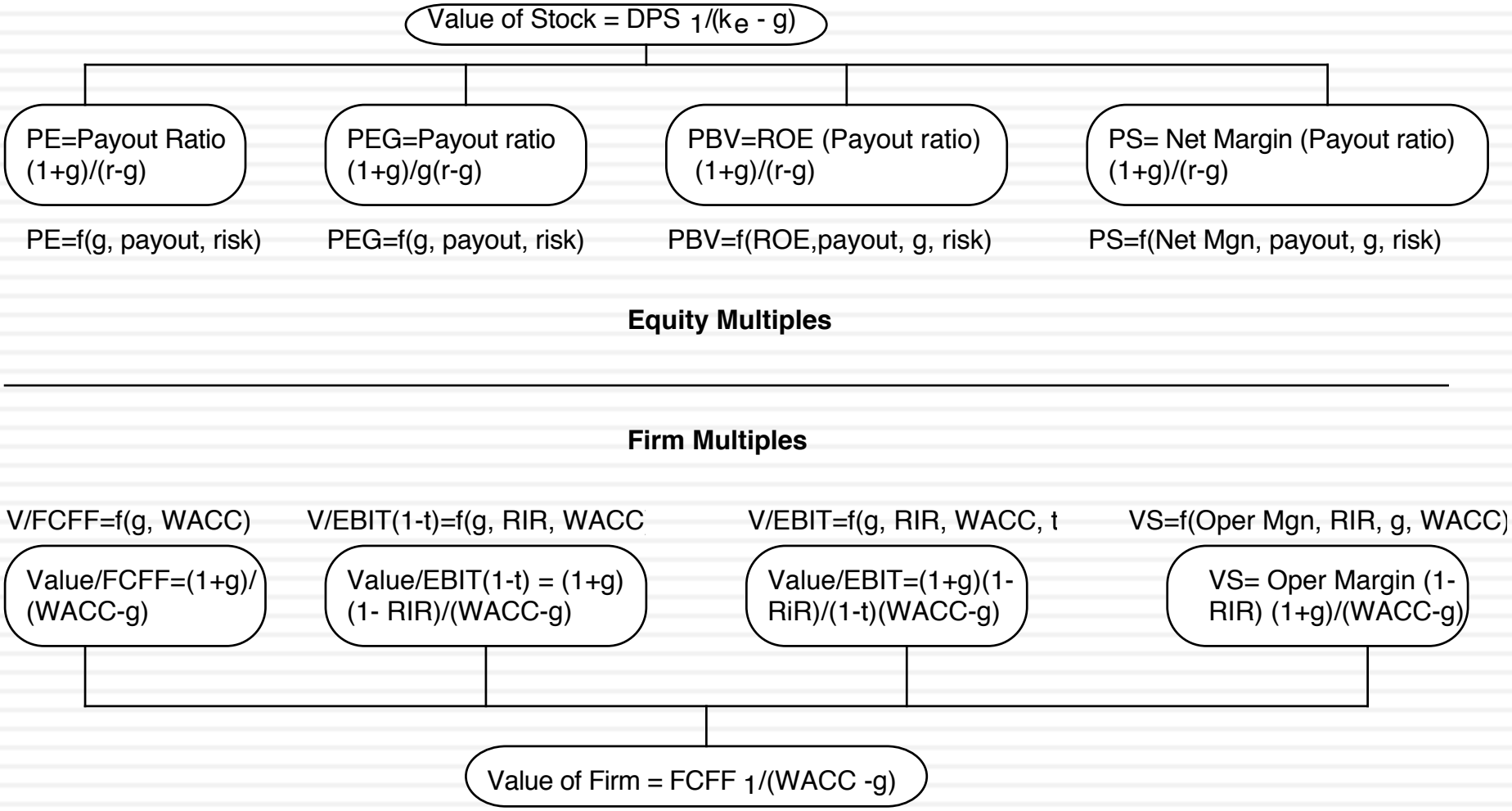
$$\frac{P_0}{EPS_0} = PE = \frac{\text{Payout Ratio} * (1 + g_n)}{r - g_n}$$

- If this had been a FCFE Model,

$$P_0 = \frac{FCFE_1}{r - g_n}$$

$$\frac{P_0}{EPS_0} = PE = \frac{(FCFE/Earnings) * (1 + g_n)}{r - g_n}$$

The Determinants of Multiples…



4. Application Tests

- 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.

The Problems in Acquisition Pricing

- Biased samples: Basing what you pay on what other acquirers have paid is a recipe for disaster. After all, we know that acquirers, on average, pay too much for acquisitions. By matching their prices, we risk replicating their mistakes.
- Game Playing with Metrics: Allowing analysts (especially if they have an agenda) to pick the multiple that they will use is a recipe for backing into a bad deal.
- Myopic Multipliers: One of the most distracting games in acquisitions is working out EPS accretion and dilution, and arguing that accretive mergers are good (they are not) and dilutive mergers should be avoided (again not true).
- And pushing into the terminal value does not make the problem go away: Creating a front end of cash flows, when the terminal value is coming from a multiple, is not a discounted cash flow valuation.

Lesson 5: If you are going to price a target firm, do it right..

- Pick your game: If you are acquiring other companies not for the cash flows but because you think that you can sell them to someone else at a higher price, it is perfectly okay to play the pricing game. If you are acquiring a firm for its cash flows, you have to play the value game.
- Don't get distracted: If you are playing the pricing game, dispense with the DCF and do an honest pricing. If you are playing the value game, stop looking at what other people are paying.
- To do an honest pricing, you have to be unbiased in your choice of multiple and comparable firms, and control for differences between your firm & the peer group.

If you fail this test..

1. You will over price the target: By using a biased sample (of acquirers who are more likely to be over paying), you will end up over paying as well.
2. You will open the door to bias in your choice of multiples: Since you pick the multiple, you will find bias guiding your choices.
3. You will end up paying twice for synergy and control: Even if other acquirers are paying a "fair" price on their acquisitions, that fair price will already include a control premium and perhaps a synergy premium. Paying these premiums on top of your assessed price will be double paying.

Test 6: The CEO wants this..

The CEO really wants to do this… Or your competitors are all in the game..

- Now assume that you know that the CEO of the acquiring firm really, really wants to do this acquisition and that the investment bankers on both sides have produced fairness opinions that indicate that the firm is worth $ 150 million. Would you be willing to go along?
  a) Yes
  b) No
- Now assume that you are told that your competitors are all doing acquisitions and that if you don't do them, you will be at a disadvantage? Would you be willing to go along?
  a) Yes
  b) No

CEO Egos and Overconfidence: The Dirty Secret in Mergers

- The Deal Rules: The premiums paid on acquisitions often have nothing to do with synergy, control or strategic considerations (though they may be provided as the reasons). They are just what you have to pay to get the deals done, because management really, really wants it done.
- The Ego Problem: They may just reflect the egos of the CEOs of the acquiring firms. There is evidence that "over confident" CEOs are more likely to make acquisitions and that they leave a trail across the firms that they run.

Defensive Mergers: Signs of a Deeper Rot?

- Me-tooism: Pre-emptive or defensive acquisitions, where you over pay, either because everyone else is overpaying or because you are afraid that you will be left behind if you don't acquire are dangerous.
- Weak businesses? If the only way you can stay competitive in a business is by making bad investments, it may be best to think about shrinking or even getting out of the business.
- There is no glory in survival, for the sake of survival. Corporate sustainability, as a corporate objective, is not just a joke, but an expensive one.

The Deal Process is broken..

1. Deal makers are deal analysts: If you were going to design a process that maximizes bias, you could not do much better than the current one, especially in a friendly merger.
2. Spending other People's Money: Managerial interests don't align with shareholder interests and they can advance them using shareholder money.
3. Boards of directors are managerial rubber stamps, mostly incapable or unwilling to check managerial egos.
4. The legal system is incapable of stopping bad acquisitions. Unwittingly, it has given acquiring firms a template to evade responsibility for bad mergers, with the expensive charade called "fairness opinions".

Fairness Opinions: A waste of time and money?

Question	Green	Red
1. Who is paying you to do this valuation and how much? Is any of the payment contingent on the deal happening?	Payment reflects reasonable payment for valuation services rendered and none of the payment is contingent on deal outcome.	Payment **is disproportionately large**, relative to valuation services provided, and/or a **large portion of it is contingent on deal occurring**.
2. Where are you getting the cash flows that you are using in this valuation?	**Appraiser estimates** revenues, operating margins and cash flows, **with input from management** on investment and growth plans.	Cash flows **supplied by management/** board of company.
3. Are the cash flows internally consistent? 	1. Currency: Cash flows & discount rate are in **same currency**, with same inflation assumptions. 2. Claim holders: Cash flows are to **equity (firm)** and discount rate is cost **of equity (capital)**. 3. Operations: **Reinvestment, growth and risk assumptions** matched up.	**No internal consistency tests** run and/or **DCF littered with inconsistencies**, in currency and/or assumptions. - High growth + Low reinvestment - Low growth + High reinvestment - High inflation in cash flows + Low inflation in discount rate
4. What discount rate are you using in your valuation?	A cost of equity (capital) that **starts with a sector average** and is **within the bounds of what is reasonable** for the sector.	A cost of equity (capital) that falls **outside the normal range for a sector**, with no credible explanation for difference.
5. How are you applying closure in your valuation?	A terminal value that is estimated with a **perpetual growth rate < growth rate of the economy** and reinvestment & risk to match.	A terminal value based upon a **perpetual growth rate > economy** or a **multiple** (of earnings or revenues) that is **not consistent with a healthy, mature** firm.
6. What valuation garnishes have you applied?	**None.**	A **large dose of premiums** (control, synergy etc.) pushing up value or a **mess of discounts** (illiquidity, small size etc.) pushing down value.
7. What does your final judgment [illegible]?	A **distribution of values**, with a base case value and statistics.	A **range of value so large** that any price can be justified.

Lesson 6: Egos and Conflicts of Interest are your biggest enemies

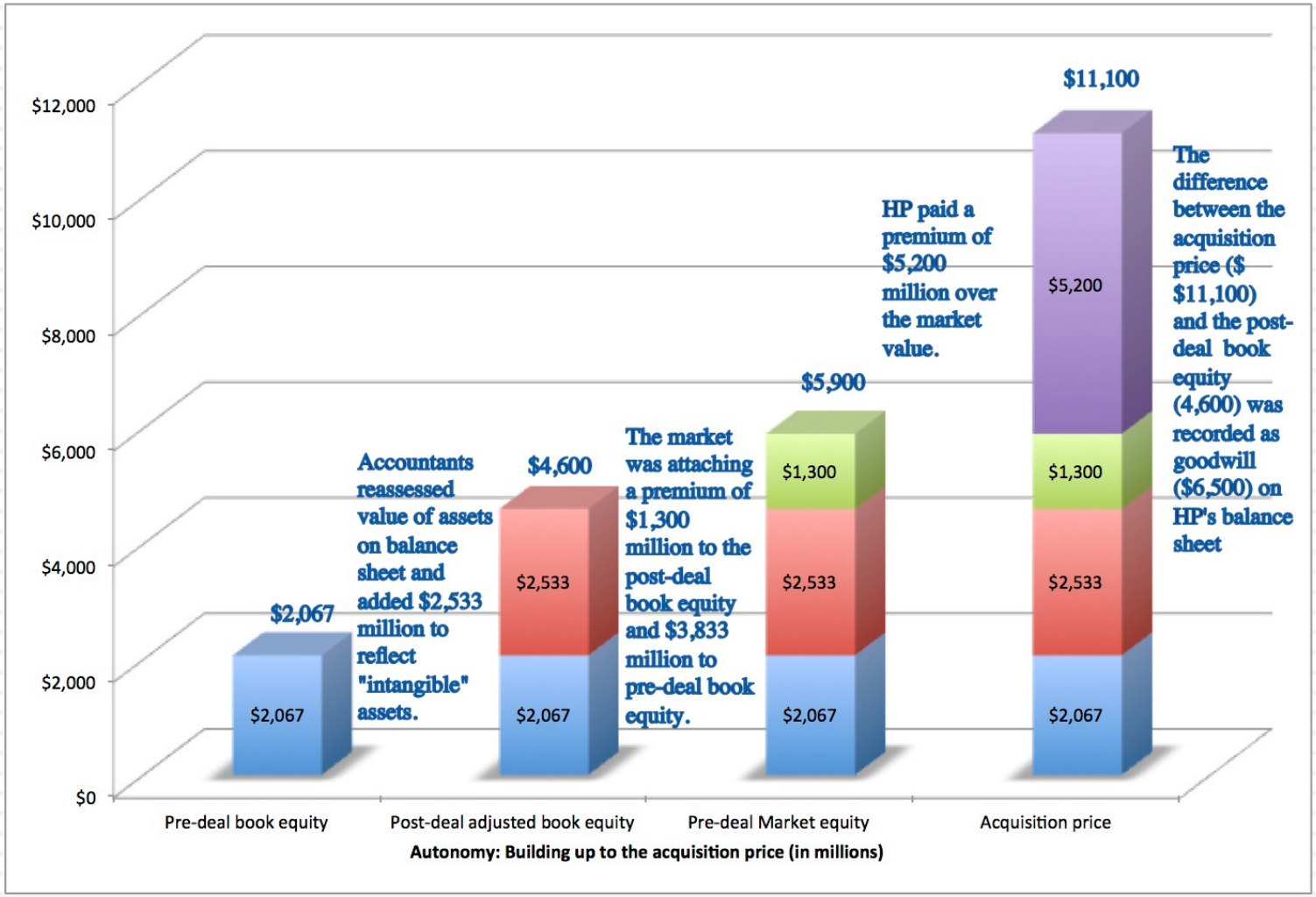
- Winning is not everything: If you define your objective in a bidding war as winning the auction at any cost, you will win. But beware the winner's curse!
- Bankers do what's in their best interests, not yours: If your rewards and compensation are contingent on the deal going through, you cannot be an honest advisor.
- It is easy to spend other people's money: In public companies, it is shareholder money that is being spent on acquisitions, often in the pursuit of managerial interests. Boards of directors need to do their jobs.

Test 7: Accountability

When deals fall apart..

- When deals fall apart, as many do, there seems to be little or no accountability in the system, and the larger the deal, the less accountability there is for mistakes.
- Breaking it down:
  - The managers who initiate these bad deals seem to face few consequences and often move up the ranks.
  - The boards that okay these deals protect themselves by claiming that the did due diligence and listened to experts.
  - The bankers keep their fees, arguing that their missed forecasts were just mistakes.

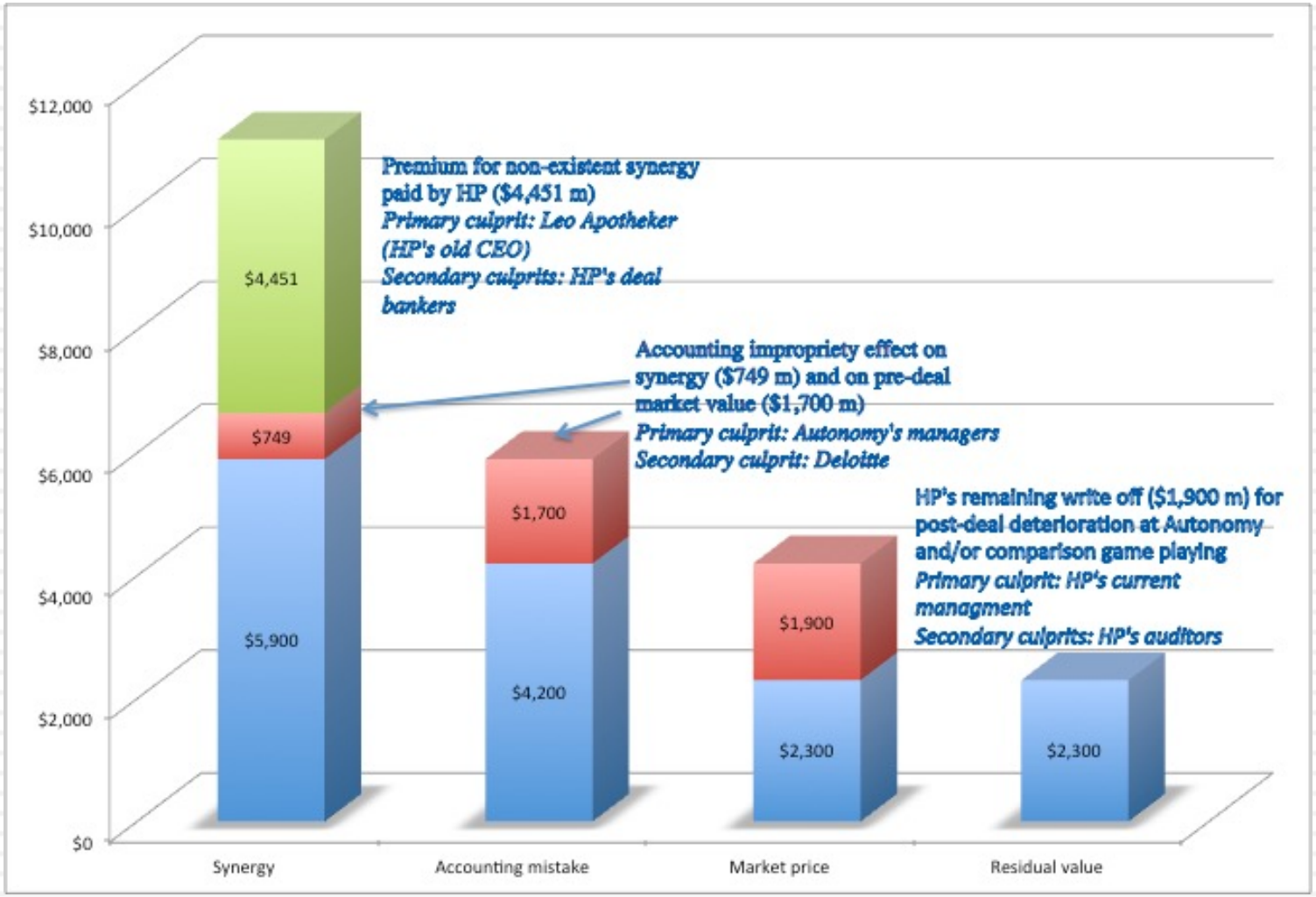
To illustrate: A bad deal is made, and justified by accountants & bankers



The CEO steps in… and digs a hole…

- Leo Apotheker was the CEO of HP at the time of the deal, brought in to replace Mark Hurd, the previous CEO who was forced to resign because of a "sex" scandal.
- In the face of almost universal feeling that HP had paid too much for Autonomy, Mr. Apotheker addressing a conference at the time of the deal: "We have a **pretty rigorous process inside H.P.** that we follow for **all our acquisitions**, which is a **D.C.F.-based model**," he said, in a reference to discounted cash flow, a standard valuation methodology. "And we try to take a **very conservative view**."
- Apotheker added, "Just to make sure everybody understands, Autonomy will be, on Day 1, **accretive to H.P**….. "**Just take it from us**. We did that analysis at **great length, in great detail**, and we feel that we paid a **very fair price** for Autonomy. And it will give a **great return to our shareholders**.

A year later… HP admits a mistake…and explains it…



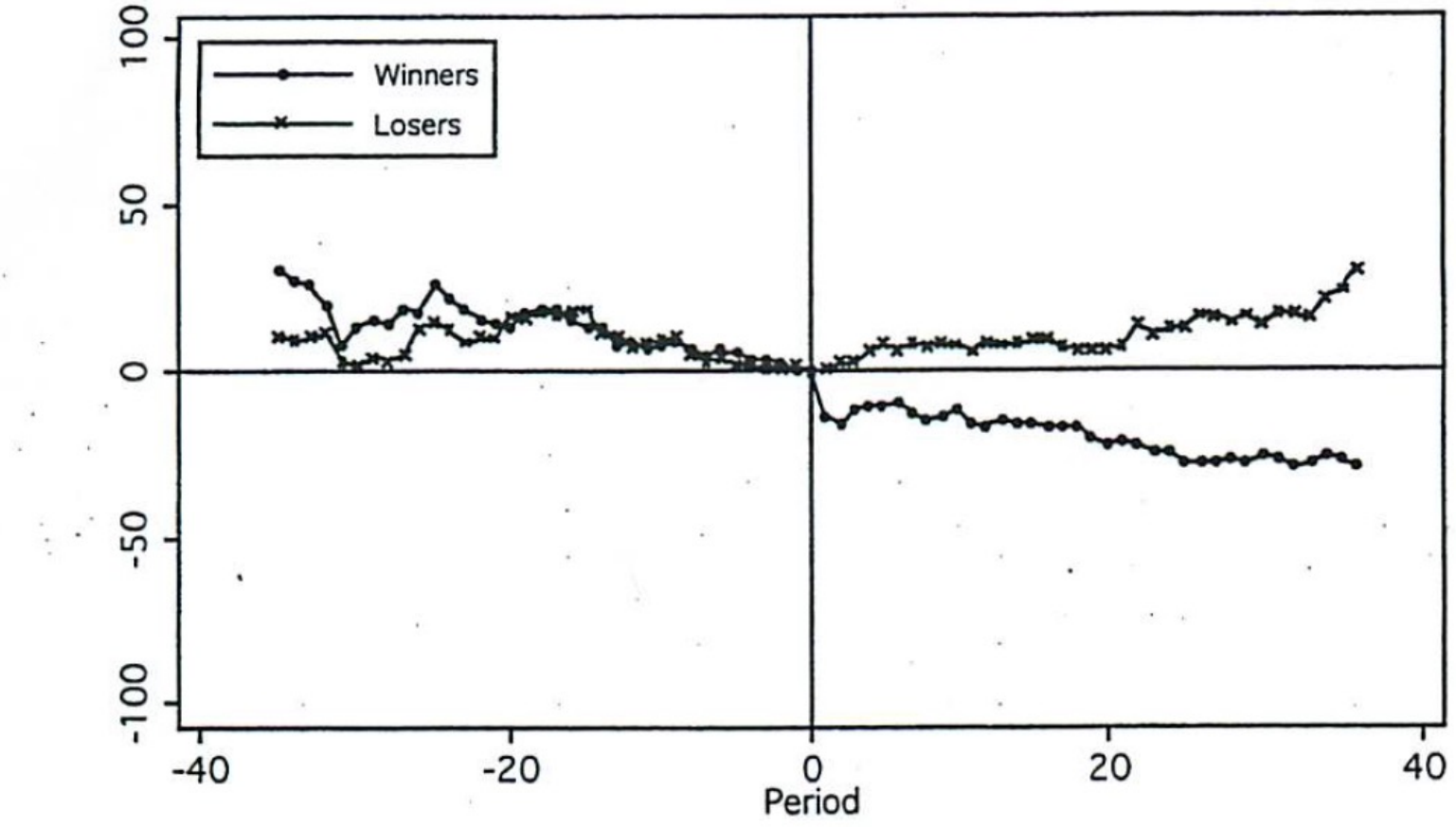
Glimmers of Hope!

Gauging the Odds

- The odds seem to be clearly weighted against success in acquisitions. If you were to create a strategy to grow, based upon acquisitions, which of the following offers your best chance of success?

This	Or this
Sole Bidder	Bidding War
Public target	Private target
Pay with cash	Pay with stock
Small target	Large target
Cost synergies	Growth synergies

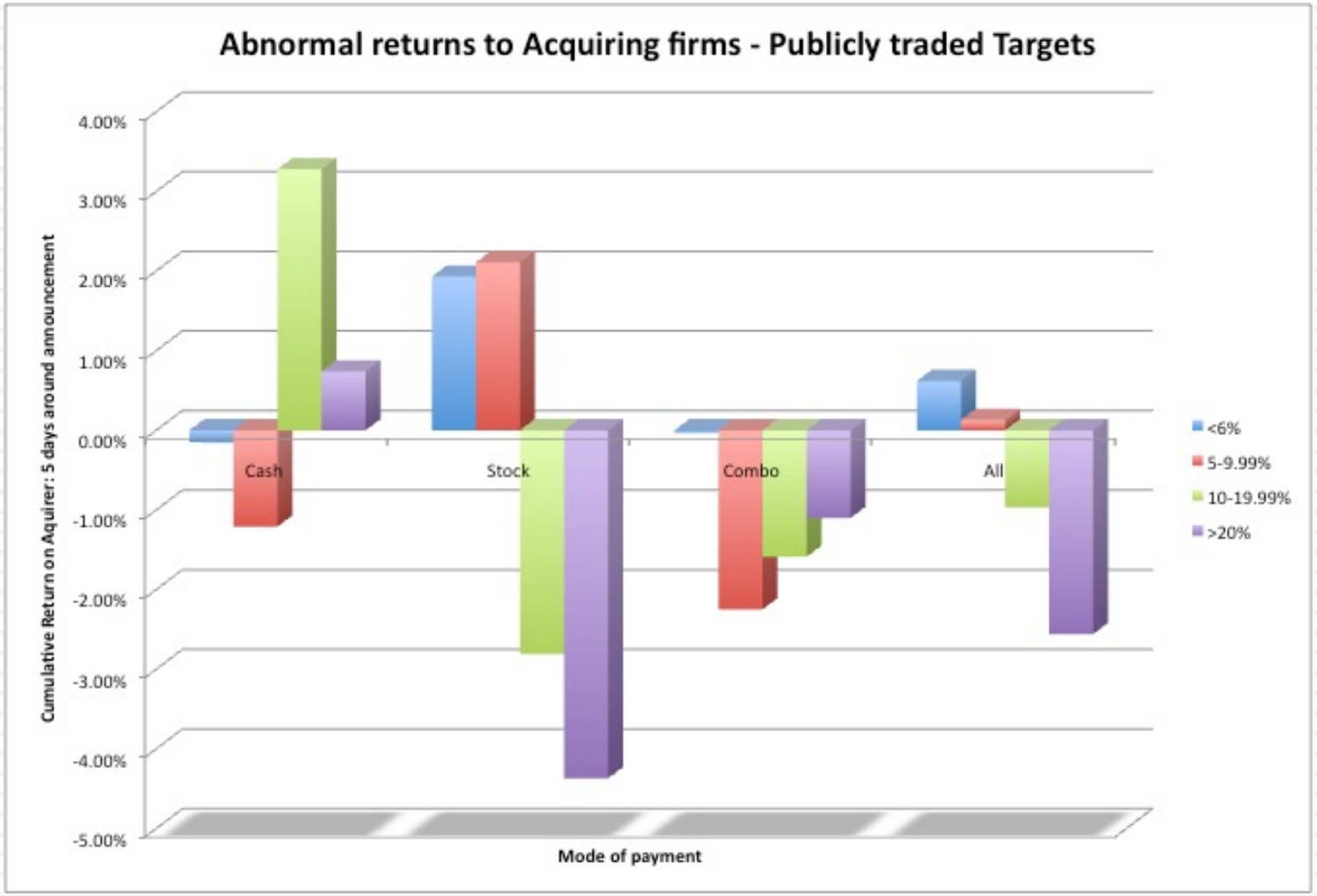
1. Better to lose a bidding war than to win one…



(a) Market-adjusted CARs

Returns in the 40 months before & after bidding war
Source: Malmendier, Moretti & Peters (2011)

2. Better off buying small rather than large targets…

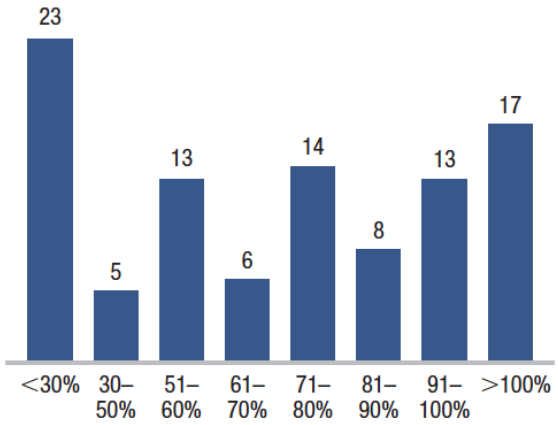


3. And focusing on private firms and subsidiaries, rather than public firms…

4. On cost synergies, not growth synergies

Top-line trouble: 70 percent of mergers failed to achieve expected revenue synergies

Mergers achieving stated percentage of expected revenue synergies, percent $N = 77$



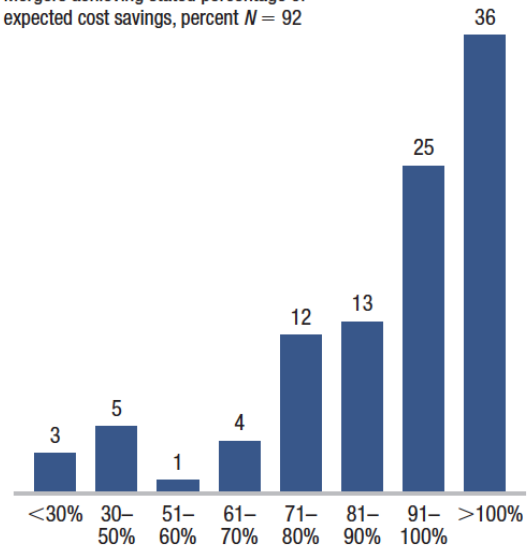
Typical sources of estimation error

- Ignoring or underestimating customer losses (typically 2% to 5%) that result from the integration
- Assuming growth or share targets out of line with overall market growth and competitive dynamics (no "outside view" calibration)

Source: McKinsey (2002) Postmerger Management Practice client survey; client case studies

Cost-synergy estimation is better, but there are patterns emerging in the errors

Mergers achieving stated percentage of expected cost savings, percent $N = 92$



Typical sources of estimation error

- Underestimating one-time costs
- Using benchmarks from noncomparable situations
- Not sanity-checking management estimates against precedent transactions
- Failing to ground estimates in bottom-up analysis (e.g., location-by-location review of overlaps

Source: McKinsey (2002) Postmerger Management Practice client survey; client case studies

For acquisitions to create value, you have to stay disciplined..

1. Staying disciplined is the only way to create value in acquisitions. Thus, if you find a way to create value by buying small, private businesses or divisions of other companies, you should stick with that strategy.
2. This strategy is time limited: Even the most successful acquirers will finds that an acquisition-based strategy runs out of steam because:
   - The acquiring firm becomes too big.
   - Imitators enter the game and push up the price of targets.
3. And it works best if you shut consultants and bankers out.