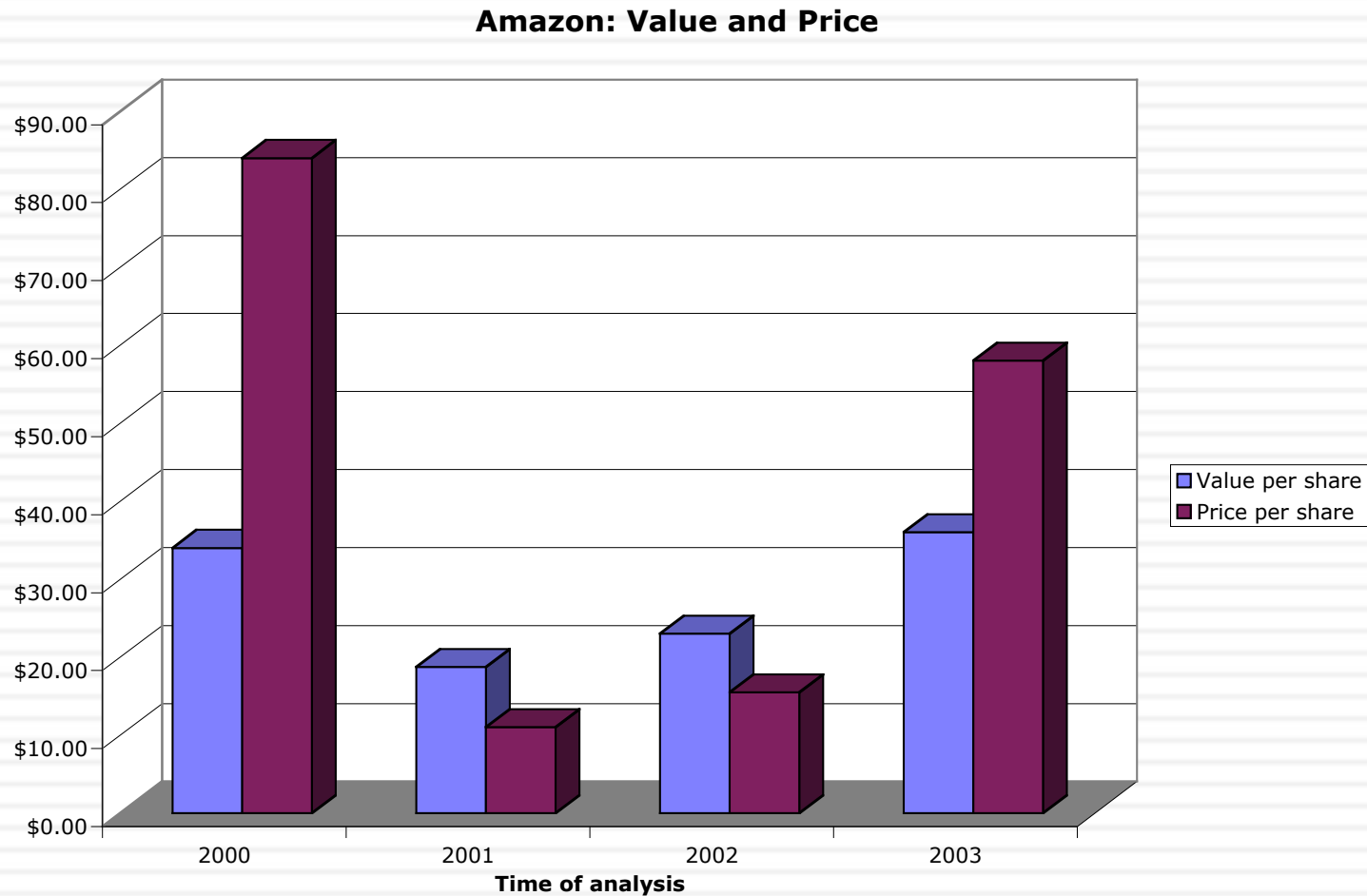


And the market is often “more wrong”....



Assessing my 2000 forecasts, in 2014

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Year	Revenues		Operating Income		Operating Margin	
	My forecast (2000)	Actual	My forecast (2000)	Actual	My forecast (2000)	Actual
2000	\$2,793	\$2,762	-\$ 373	-\$ 664.00	-13.35%	-24.04%
2001	\$5,585	\$3,122	-\$ 94	-\$ 231.00	-1.68%	-7.40%
2002	\$9,774	\$3,932	\$ 407	\$ 106.00	4.16%	2.70%
2003	\$14,661	\$5,264	\$ 1,038	\$ 271.00	7.08%	5.15%
2004	\$19,059	\$6,921	\$ 1,628	\$ 440.00	8.54%	6.36%
2005	\$23,862	\$8,490	\$ 2,212	\$ 432.00	9.27%	5.09%
2006	\$28,729	\$10,711	\$ 2,768	\$ 389.00	9.63%	3.63%
2007	\$33,211	\$14,835	\$ 3,261	\$ 655.00	9.82%	4.42%
2008	\$36,798	\$19,166	\$ 3,646	\$ 842.00	9.91%	4.39%
2009	\$39,006	\$24,509	\$ 3,883	\$ 1,129.00	9.95%	4.61%
2010	\$41,346	\$34,204	\$ 4,135	\$ 1,406.00	10.00%	4.11%
2011	\$43,827	\$48,077	\$ 4,383	\$ 862.00	10.00%	1.79%
2012	\$46,457	\$61,093	\$ 4,646	\$ 676.00	10.00%	1.11%
2013	\$49,244	\$74,452	\$ 4,925	\$ 745.00	10.00%	1.00%
2014 (LTM)	\$51,460	\$85,247	\$ 5,146.35	\$ 97.00	10.00%	0.11%

Amazon

The Greatest (and most Feared) Disruptive Platform in History

Amazon will complete its metaphorsis from being a retail company to one that can take its competitive advantages - access to capital & willingness to lose money for long periods, while disrupting and changing the status quo - to any business that it targets, giving it the potential for high revenue growth on top of already-large revenues. It will be able to use the pricing power it accumulates in each business it is in, to increase profit margins, partly through economies of scale and partly through higher prices. Its low debt ratio and divergent business mix give it a low cost of capital.

The Assumptions

	Base year	Years 1-5	Years 6-10		After year 10	Link to story
Revenues (a)	\$ 208,125	15.00% 	3.00%		3.00%	Expanding into new businesses
Operating margin (b)	7.71%	7.71% 	12.50%		12.50%	Economies of scale and pricing power increase margins
Tax rate	20.20%	20.20% 	24.00%		24.00%	Converging on a global tax rate of 25%
Reinvestment (c)		Sales to capital ratio 5.95		RIR =	30.00%	Big payoffs from investing in technology and content
Return on capital	15.24%	Marginal ROIC =	89.16%		10.00%	The last man standing...
Cost of capital (d)		7.97% 	7.50%		7.50%	Low debt & diverse business mix

The Cash Flows

	Revenues	Operating Margin	EBIT	EBIT (1-t)	Reinvestment	FCFF
1	\$ 239,344	8.67%	\$ 20,753	\$ 16,560	\$ 5,249	\$ 11,311
2	\$ 275,245	9.63%	\$ 26,501	\$ 21,147	\$ 6,037	\$ 15,110
3	\$ 316,532	10.59%	\$ 33,506	\$ 26,736	\$ 6,942	\$ 19,794
4	\$ 364,012	11.54%	\$ 42,017	\$ 33,527	\$ 7,983	\$ 25,544
5	\$ 418,614	12.50%	\$ 52,327	\$ 41,754	\$ 9,181	\$ 32,573
6	\$ 471,359	12.50%	\$ 58,920	\$ 46,568	\$ 8,869	\$ 37,699
7	\$ 519,438	12.50%	\$ 64,930	\$ 50,825	\$ 8,084	\$ 42,741
8	\$ 559,954	12.50%	\$ 69,994	\$ 54,258	\$ 6,813	\$ 47,446
9	\$ 590,191	12.50%	\$ 73,774	\$ 56,628	\$ 5,084	\$ 51,544
10	\$ 607,897	12.50%	\$ 75,987	\$ 57,750	\$ 2,977	\$ 54,773
Terminal year	\$ 626,134	12.50%	\$ 78,267	\$ 59,483	\$ 17,845	\$ 41,638

The Value

Terminal value	\$ 925,287		
PV(Terminal value)	\$ 435,438		
PV (CF over next 10 years)	\$ 206,707		
Value of operating assets =	\$ 642,144		
Adjustment for distress	\$ -	Probability of failure =	0.00%
- Debt & Mnority Interests	\$ 45,435		
+ Cash & Other Non-operating assets	\$ 27,050		
Value of equity	\$ 623,759		
- Value of equity options	\$ -		
Number of shares	497.00		
Value per share	\$ 1,255.05	Stock was trading at =	\$1,970.19

Amazon

The Disruption Platform Rolls on

Amazon continues on its transformation from online retailer to disruption platform, willing to enter any business that it perceives as inefficiently run, and changing it. Along the way, it will invest large amounts of capital and wait for long periods to attain profitability.

The Assumptions

	Base year	In 2020	Years 1-5	Years 6-10	After year 10	Link to story
Revenues (a)	\$ 321,782	25.0%	20.00%	2.00%	2.00%	Disruption platform in multiple businesses
Operating margin (b)	7.99%	7.5%	7.99%	12.00%	12.00%	Margins improve, aided by cloud business & continued economies of scale.
Tax rate	16.99%		16.99%	25.00%	25.00%	Global/US marginal tax rate over time
Reinvestment (c)		Sales to Capital =		1.95	16.67%	Maintained at Amazon's current level
Return on capital	12.91%	Marginal ROIC =		25.94%	12.00%	Stronger competitive edges
Cost of capital (d)			6.11%	6.11%	6.11%	Cost of capital close to median company

The Cash Flows

	Revenues	Operating Margin	EBIT	EBIT (1-t)	Reinvestment	FCFF
1	\$ 402,228	7.50%	\$ 30,167	\$ 25,043	\$ 41,356	\$ (16,313)
2	\$ 482,673	8.40%	\$ 40,545	\$ 33,658	\$ 41,356	\$ (7,698)
3	\$ 579,208	8.85%	\$ 51,260	\$ 42,553	\$ 49,627	\$ (7,074)
4	\$ 695,049	9.30%	\$ 64,640	\$ 53,660	\$ 59,552	\$ (5,893)
5	\$ 834,059	9.75%	\$ 81,321	\$ 67,507	\$ 71,463	\$ (3,955)
6	\$ 970,845	10.40%	\$ 100,943	\$ 82,178	\$ 70,319	\$ 11,859
7	\$ 1,095,113	10.80%	\$ 118,251	\$ 94,374	\$ 63,884	\$ 30,490
8	\$ 1,195,863	11.20%	\$ 133,921	\$ 104,734	\$ 51,794	\$ 52,939
9	\$ 1,262,831	11.60%	\$ 146,480	\$ 112,208	\$ 34,427	\$ 77,780
10	\$ 1,288,088	12.00%	\$ 154,571	\$ 115,928	\$ 12,984	\$ 102,944
Terminal year	\$ 1,313,850	12.00%	\$ 157,662	\$ 118,246	\$ 19,708	\$ 98,539

The Value

Terminal value	\$ 2,396,245		
PV(Terminal value)	\$ 1,323,967		
PV (CF over next 10 years)	\$ 128,131		
Value of operating assets =	\$ 1,452,098		
Adjustment for distress	\$ -	Probability of failure =	0.00%
- Debt & Mnority Interests	\$ 91,401		
+ Cash & Other Non-operating assets	\$ 71,391		
Value of equity	\$ 1,432,088		
- Value of equity options	\$ -		
Number of shares	506.50		
Value per share	\$ 2,827.42	Stock was trading at =	\$3,260.48

II. Mature Companies in transition..

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- Mature companies are generally the easiest group to value. They have long, established histories that can be mined for inputs. They have investment policies that are set and capital structures that are stable, thus making valuation more grounded in past data.
- However, this stability in the numbers can mask real problems at the company. The company may be set in a process, where it invests more or less than it should and does not have the right financing mix. In effect, the policies are consistent, stable and bad.
- If you expect these companies to change or as is more often the case to have change thrust upon them,

The perils of valuing mature companies...

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Figure 7.1: Estimation Issues - Mature Companies

Lots of historical data on earnings and cashflows. Key questions remain if these numbers are volatile over time or if the existing assets are not being efficiently utilized.

Growth is usually not very high, but firms may still be generating healthy returns on investments, relative to cost of funding. Questions include how long they can generate these excess returns and with what growth rate in operations. Restructuring can change both inputs dramatically and some firms maintain high growth through acquisitions.

What is the value added by growth assets?

What are the cashflows from existing assets?

Equity claims can vary in voting rights and dividends.

What is the value of equity in the firm?

How risky are the cash flows from both existing assets and growth assets?

Operating risk should be stable, but the firm can change its financial leverage. This can affect both the cost of equity and capital.

When will the firm become a mature firm, and what are the potential roadblocks?

Maintaining excess returns or high growth for any length of time is difficult to do for a mature firm.

Hormel Foods: The Value of Control Changing

Hormel Foods sells packaged meat and other food products and has been in existence as a publicly traded company for almost 80 years. In 2008, the firm reported after-tax operating income of \$315 million, reflecting a compounded growth of 5% over the previous 5 years.

The Status Quo

Run by existing management, with conservative reinvestment policies (reinvestment rate = 14.34% and debt ratio = 10.4%.

Anemic growth rate and short growth period, due to reinvestment policy

Low debt ratio affects cost of capital

Year	Operating income after taxes	Expected growth rate	ROC	Reinvestment Rate	Reinvestment	FCFF	Cost of capital	Present Value
Trailing 12 months	\$315							
1	\$324	2.75%	14.34%	19.14%	\$62	\$262	6.79%	\$245
2	\$333	2.75%	14.34%	19.14%	\$64	\$269	6.79%	\$236
3	\$342	2.75%	14.34%	19.14%	\$65	\$276	6.79%	\$227
Beyond	\$350	2.35%	7.23%	32.52%	\$114	\$4,840	7.23%	\$3,974
Value of operating assets								\$4,682
(Add) Cash								\$155
(Subtract) Debt								\$491
(Subtract) Management Options								\$53
Value of equity in common stock								\$4,293
Value per share								\$31.91

New and better management

More aggressive reinvestment which increases the reinvestment rate (to 40%) and tlength of growth (to 5 years), and higher debt ratio (20%).

Operating Restructuring ①

Expected growth rate = $ROC \times \text{Reinvestment Rate}$
 Expected growth rate (status quo) = $14.34\% \times 19.14\% = 2.75\%$
 Expected growth rate (optimal) = $14.00\% \times 40\% = 5.60\%$
 ROC drops, reinvestment rises and growth goes up.

Financial restructuring ②

Cost of capital = Cost of equity (1-Debt ratio) + Cost of debt (Debt ratio)
 Status quo = $7.33\% (1-.104) + 3.60\% (.104) = 6.79\%$
 Optimal = $7.75\% (1-.20) + 3.60\% (.20) = 6.63\%$
 Cost of equity rises but cost of capital drops.

Year	Operating income after taxes	Expected growth rate	ROC	Reinvestment Rate	Reinvestment	FCFF	Cost of capital	Present Value
Trailing 12 months	\$315							
1	\$333	5.60%	14.00%	40.00%	\$133	\$200	6.63%	\$187
2	\$351	5.60%	14.00%	40.00%	\$141	\$211	6.63%	\$185
3	\$371	5.60%	14.00%	40.00%	\$148	\$223	6.63%	\$184
4	\$392	5.60%	14.00%	40.00%	\$260	\$235	6.63%	\$182
5	\$414	5.60%	14.00%	40.00%	\$223	\$248	6.63%	\$180
Beyond	\$423	2.35%	6.74%	34.87%	\$148	\$6,282	6.74%	\$4,557
Value of operating assets								\$5,475
(Add) Cash								\$155
(Subtract) Debt								\$491
(Subtract) Management Options								\$53
Value of equity in common stock								\$5,085
Value per share								\$37.80

Lesson 1: Cost cutting and increased efficiency are easier accomplished on paper than in practice... and require commitment

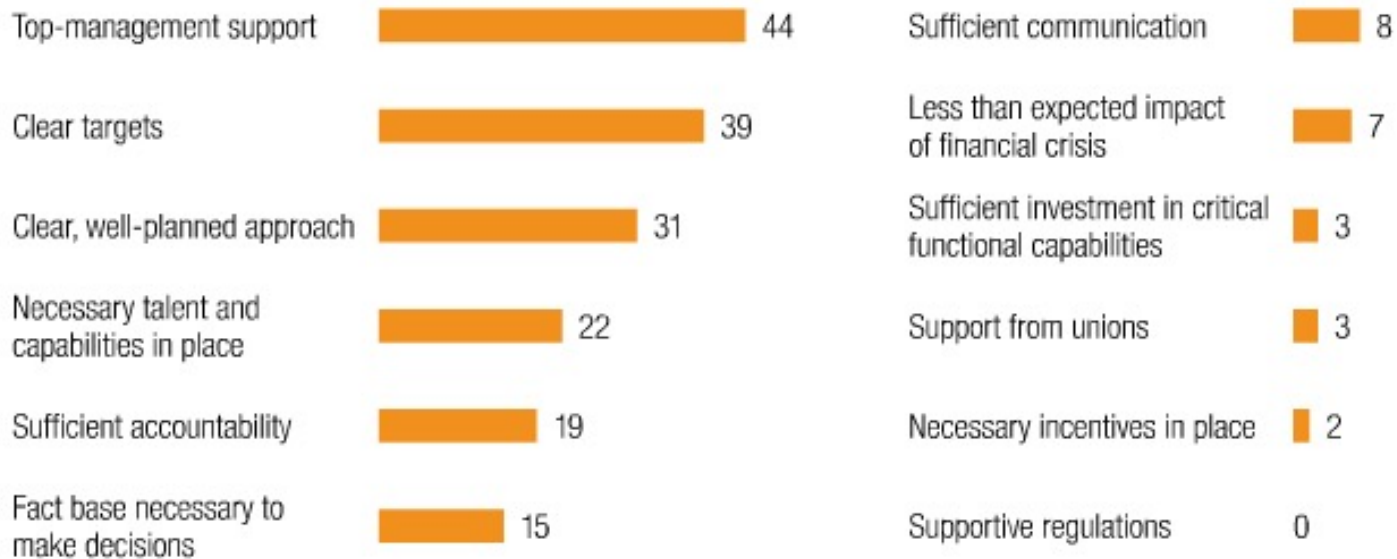
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Exhibit 4: Top factors for meeting targets

expand 

% of respondents whose companies have met their cost reduction strategies,¹ n = 178

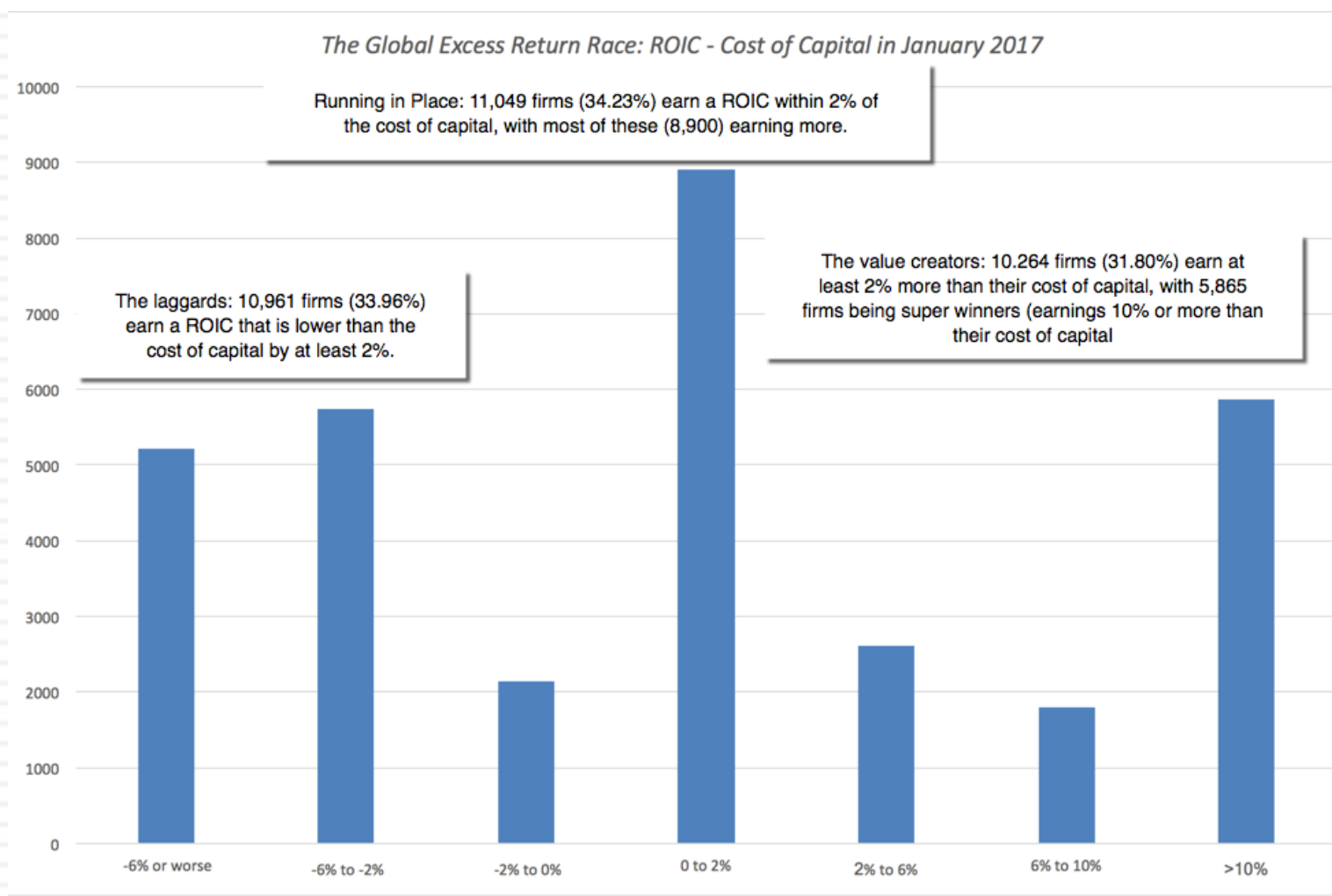
Top two factors most responsible for companies meeting cost targets or goals



¹ Respondents who answered “don’t know” are not shown.

Lesson 2: Increasing growth is not always a value creating option.. And it may destroy value at times..

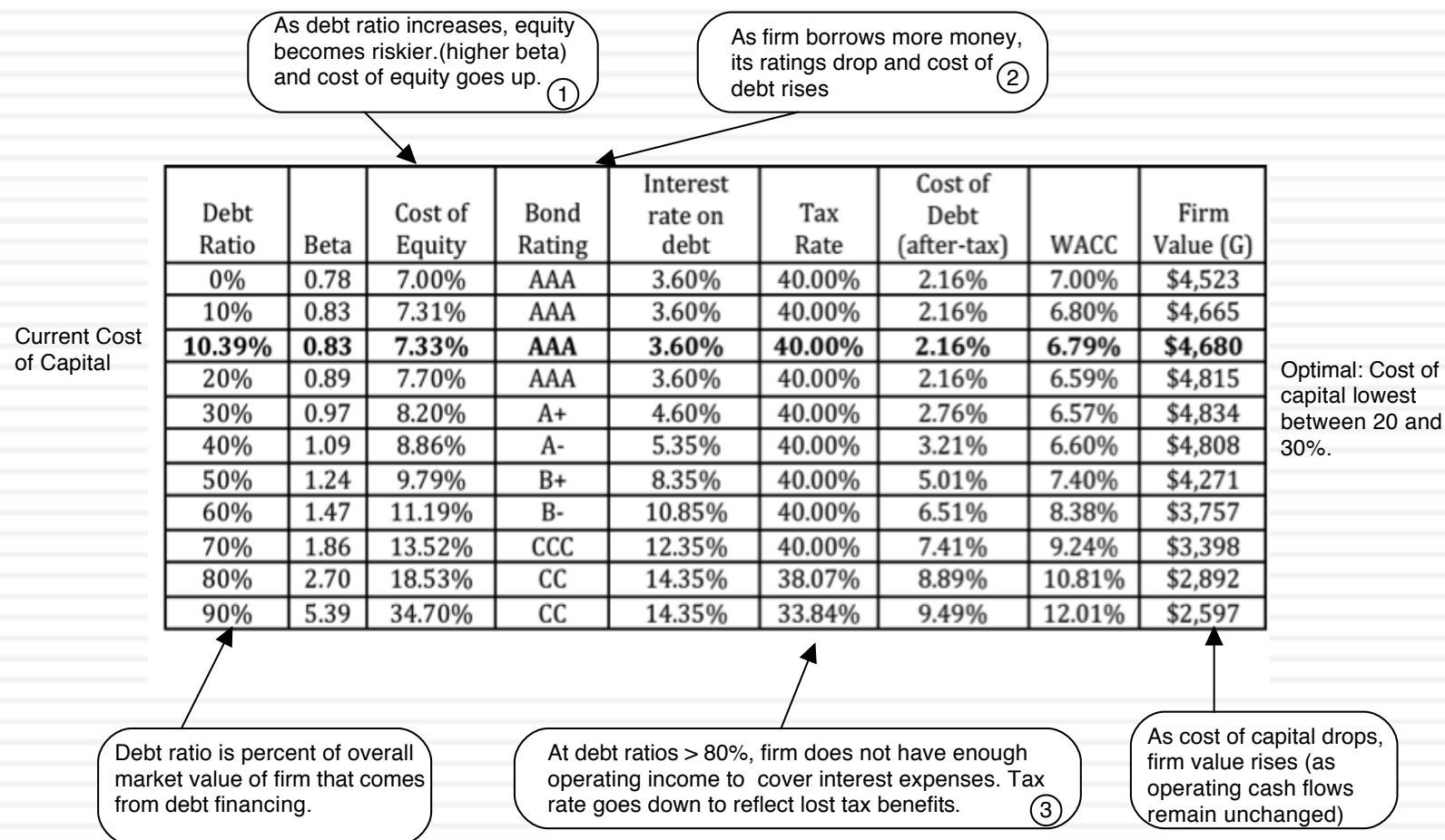
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Lesson 3: Financial leverage is a double-edged sword..

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Exhibit 7.1: Optimal Financing Mix: Hormel Foods in January 2009



III. Dealing with decline and distress...

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Historical data often reflects flat or declining revenues and falling margins. Investments often earn less than the cost of capital.

Growth can be negative, as firm sheds assets and shrinks. As less profitable assets are shed, the firm's remaining assets may improve in quality.

What is the value added by growth assets?

What are the cashflows from existing assets?

Underfunded pension obligations and litigation claims can lower value of equity. Liquidation preferences can affect value of equity

What is the value of equity in the firm?

How risky are the cash flows from both existing assets and growth assets?

Depending upon the risk of the assets being divested and the use of the proceeds from the divestiture (to pay dividends or retire debt), the risk in both the firm and its equity can change.

When will the firm become a mature firm, and what are the potential roadblocks?

There is a real chance, especially with high financial leverage, that the firm will not make it. If it is expected to survive as a going concern, it will be as a much smaller entity.

a. Dealing with Decline

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- In decline, firms often see declining revenues and lower margins, translating in negative expected growth over time.
- If these firms are run by good managers, they will not fight decline. Instead, they will adapt to it and shut down or sell investments that do not generate the cost of capital. This can translate into negative net capital expenditures (depreciation exceeds cap ex), declining working capital and an overall negative reinvestment rate. The best case scenario is that the firm can shed its bad assets, make itself a much smaller and healthier firm and then settle into long-term stable growth.
- As an investor, your worst case scenario is that these firms are run by managers in denial who continue to expand the firm by making bad investments (that generate lower returns than the cost of capital). These firms may be able to grow revenues and operating income but will destroy value along the way.

Figure 14.5: A Valuation of JC Penney

Declining business: Revenues expected to drop by 3% a year for next 5 years

Margins improve gradually to median for US retail sector (6.25%)

As stores shut down, cash released from real estate.

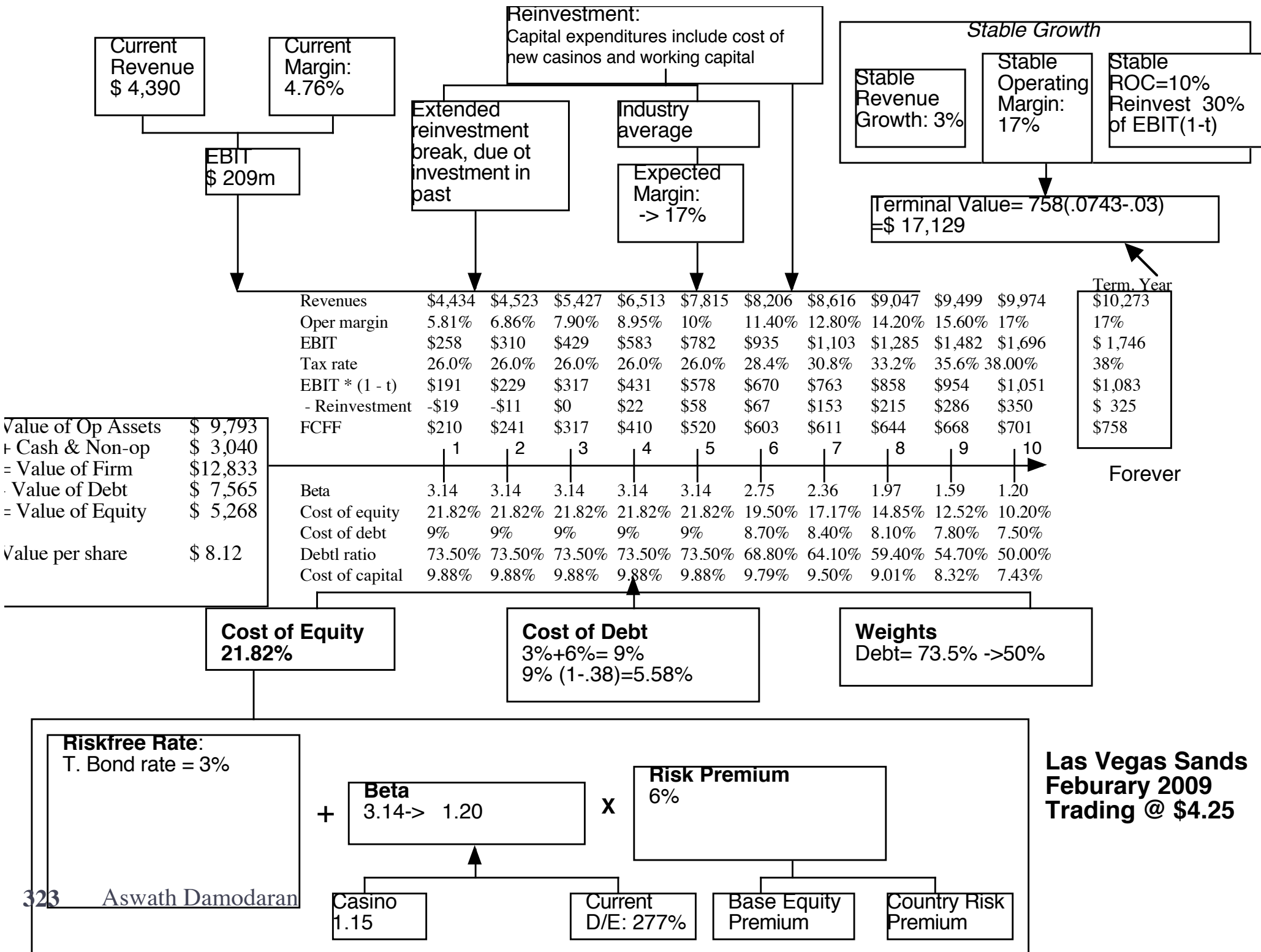
The cost of capital is at 9%, higher because of high cost of debt.

	Base year	1	2	3	4	5	6	7	8	9	10
Revenue growth rate		-3.00%	-3.00%	-3.00%	-3.00%	-3.00%	-2.00%	-1.00%	0.00%	1.00%	2.00%
Revenues	\$ 12,522	\$12,146	\$11,782	\$11,428	\$11,086	\$10,753	\$10,538	\$10,433	\$10,433	\$10,537	\$10,748
EBIT (Operating) margin	1.32%	1.82%	2.31%	2.80%	3.29%	3.79%	4.28%	4.77%	5.26%	5.76%	6.25%
EBIT (Operating income)	\$ 166	\$ 221	\$ 272	\$ 320	\$ 365	\$ 407	\$ 451	\$ 498	\$ 549	\$ 607	\$ 672
Tax rate	35.00%	35.00%	35.00%	35.00%	35.00%	35.00%	36.00%	37.00%	38.00%	39.00%	40.00%
EBIT(1-t)	\$ 108	\$ 143	\$ 177	\$ 208	\$ 237	\$ 265	\$ 289	\$ 314	\$ 341	\$ 370	\$ 403
- Reinvestment		\$ (188)	\$ (182)	\$ (177)	\$ (171)	\$ (166)	\$ (108)	\$ (53)	\$ -	\$ 52	\$ 105
FCFF		\$ 331	\$ 359	\$ 385	\$ 409	\$ 431	\$ 396	\$ 366	\$ 341	\$ 318	\$ 298
Cost of capital		9.00%	9.00%	9.00%	9.00%	9.00%	8.80%	8.60%	8.40%	8.20%	8.00%
PV(FCFF)		\$ 304	\$ 302	\$ 297	\$ 290	\$ 280	\$ 237	\$ 201	\$ 173	\$ 149	\$ 129
Terminal value	\$ 5,710										
PV(Terminal value)	\$ 2,479										
PV (CF over next 10 years)	\$ 2,362										
Sum of PV	\$ 4,841										
Probability of failure =	20.00%	High debt load and poor earnings put survival at risk. Based on bond rating, 20% chance of failure and liquidation will bring in 50% of book value									
Proceeds if firm fails =	\$2,421										
Value of operating assets =	\$4,357										

b. Dealing with the “downside” of Distress

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- A DCF valuation values a firm as a going concern. If there is a significant likelihood of the firm failing before it reaches stable growth and if the assets will then be sold for a value less than the present value of the expected cashflows (a distress sale value), DCF valuations will overstate the value of the firm.
- $\text{Value of Equity} = \text{DCF value of equity} (1 - \text{Probability of distress}) + \text{Distress sale value of equity} (\text{Probability of distress})$
- There are three ways in which we can estimate the probability of distress:
 - Use the bond rating to estimate the cumulative probability of distress over 10 years
 - Estimate the probability of distress with a probit
 - Estimate the probability of distress by looking at market value of bonds..
- The distress sale value of equity is usually best estimated as a percent of book value (and this value will be lower if the economy is doing badly and there are other firms in the same business also in distress).



Adjusting the value of LVS for distress..

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- In February 2009, LVS was rated B+ by S&P. Historically, 28.25% of B+ rated bonds default within 10 years. LVS has a 6.375% bond, maturing in February 2015 (7 years), trading at \$529. If we discount the expected cash flows on the bond at the riskfree rate, we can back out the probability of distress from the bond price:

$$529 = \sum_{t=1}^{t=7} \frac{63.75(1 - \Pi_{\text{Distress}})^t}{(1.03)^t} + \frac{1000(1 - \Pi_{\text{Distress}})^7}{(1.03)^7}$$

- Solving for the probability of bankruptcy, we get:
 - π_{istress} = Annual probability of default = 13.54%
 - Cumulative probability of surviving 10 years = $(1 - .1354)^{10} = 23.34\%$
 - Cumulative probability of distress over 10 years = $1 - .2334 = .7666$ or 76.66%
- If LVS is becomes distressed:
 - Expected distress sale proceeds = \$2,769 million < Face value of debt
 - Expected equity value/share = \$0.00
- Expected value per share = $\$8.12 (1 - .7666) + \$0.00 (.7666) = \$1.92$

The Story

Boeing is in deep trouble. Already exposed to significant pain because of its mishandling of the Boeing 737 Max, which caused revenues to plummet in 2019, the company is facing a mountain of pain with the Corona Virus decimating the airline business (Boeing's customers). I assume more pain the year to come, with revenues dropping even with the 737 Max returning to the fold and increased losses. After that, i assume that there will be higher growth, as airlines start playing catch up and buy more aircraft from a duopoly. I assume that margins will revert back to pre-2018 levels over the next 5 years and that during the next year, Boeing is exposed to a risk of failure, not so much because it will go out of business (it is too big to fail) but from needing a bailout from the government that is large enough to wipe out equity (as was the case with GM in 2009).

The Assumptions

	Base year	Years 1-5	Years 6-10		After year 10	Link to story
Revenues (a)	\$ 76,559	15.00%	2.00%		2.00%	
Operating margin (b)	-2.75%	-2.75%	9.60%		9.60%	
Tax rate	25.00%	25.00%	25.00%		25.00%	
Reinvestment (c)		Sales to capital ratio 3.79		RIR =	20.00%	
Return on capital	-10.42%	Marginal ROIC =	74.72%		10.00%	
Cost of capital (d)		9.25%	7.50%		7.50%	

The Cash Flows

	Revenues	Operating Margin	EBIT	EBIT (1-t)	Reinvestment	FCFF
1	\$ 68,903	-5.00%	\$ (3,445)	\$ (3,445)	\$ (2,019)	\$ (1,426)
2	\$ 79,239	4.73%	\$ 3,751	\$ 3,675	\$ 2,726	\$ 949
3	\$ 91,124	9.60%	\$ 8,749	\$ 6,562	\$ 3,135	\$ 3,427
4	\$ 104,793	9.60%	\$ 10,061	\$ 7,546	\$ 3,605	\$ 3,941
5	\$ 120,512	9.60%	\$ 11,571	\$ 8,678	\$ 4,146	\$ 4,532
6	\$ 135,455	9.60%	\$ 13,005	\$ 9,754	\$ 3,941	\$ 5,813
7	\$ 148,730	9.60%	\$ 14,280	\$ 10,710	\$ 3,501	\$ 7,209
8	\$ 159,439	9.60%	\$ 15,308	\$ 11,481	\$ 2,824	\$ 8,657
9	\$ 166,773	9.60%	\$ 16,012	\$ 12,009	\$ 1,934	\$ 10,075
10	\$ 170,108	9.60%	\$ 16,333	\$ 12,249	\$ 880	\$ 11,370
Terminal year	\$ 173,510	9.60%	\$ 16,659	\$ 12,494	\$ 2,499	\$ 9,996

The Value

Terminal value	\$ 181,737		
PV(Terminal value)	\$ 78,764		
PV (CF over next 10 years)	\$ 29,119		
Value of operating assets =	\$ 107,883		
Adjustment for distress	\$ 10,788	Probability of failure =	20.00%
- Debt & Minority Interests	\$ 28,580		
+ Cash & Other Non-operating assets	\$ 10,030		
Value of equity	\$ 78,545		
- Value of equity options	\$ -		
Number of shares	566.00		
Value per share	\$ 138.77	Stock was trading at =	\$127.68

IV. Emerging Market Companies

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Estimation Issues - Emerging Market Companies

Big shifts in economic environment (inflation, interest rates) can affect operating earnings history. Poor corporate governance and weak accounting standards can lead to lack of transparency on earnings.

Growth rates for a company will be affected heavily by growth rate and political developments in the country in which it operates.

What is the value added by growth assets?

What are the cashflows from existing assets?

Cross holdings can affect value of equity

What is the value of equity in the firm?

How risky are the cash flows from both existing assets and growth assets?

Even if the company's risk is stable, there can be significant changes in country risk over time.

When will the firm become a mature firm, and what are the potential roadblocks?

Economic crises can put many companies at risk. Government actions (nationalization) can affect long term value.

Lesson 1: Country risk has to be incorporated... but with a scalpel, not a bludgeon

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- Emerging market companies are undoubtedly exposed to additional country risk because they are incorporated in countries that are more exposed to political and economic risk.
- Not all emerging market companies are equally exposed to country risk and many developed markets have emerging market risk exposure because of their operations.
- You can use either the “weighted country risk premium”, with the weights reflecting the countries you get your revenues from or the lambda approach (which may incorporate more than revenues) to capture country risk exposure.

Lesson 2: Currency should not matter

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- You can value any company in any currency. Thus, you can value a Brazilian company in nominal reais, US dollars or Swiss Francs.
- For your valuation to stay invariant and consistent, your cash flows and discount rates have to be in the same currency. Thus, if you are using a high inflation currency, both your growth rates and discount rates will be much higher.
- For your cash flows to be consistent, you have to use expected exchange rates that reflect purchasing power parity (the higher inflation currency has to depreciate by the inflation differential each year).

Valuing Infosys: In US\$ and Indian Rupees

	In Indian Rupees	In US \$
Risk free Rate	5.00%	2.00%
Expected inflation rate	4.00%	1.00%
Cost of capital		
- High Growth	12.50%	9.25%
- Stable Growth	10.39%	7.21%
Expected growth rate		
- High Growth	12.01%	8.78%
- Stable Growth	5.00%	2.00%
Return on Capital		
- High Growth	17.16%	13.78%
- Stable Growth	10.39%	7.21%
Value per share	Rs 614	\$12.79/share (roughly Rs 614 at current exchange rate)

Lesson 3: The “corporate governance” drag

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- Stockholders in Asian, Latin American and many European companies have little or no power over the managers of the firm. In many cases, insiders own voting shares and control the firm and the potential for conflict of interests is huge.
- This weak corporate governance is often a reason for given for using higher discount rates or discounting the estimated value for these companies.
- Would you discount the value that you estimate for an emerging market company to allow for this absence of stockholder power?
 - a. Yes
 - b. No.

6a. Tube Investments: Status Quo (in Rs)

Return on Capital
9.20%

Stable Growth
g = 5%; Beta = 1.00;
Debt ratio = 44.2%
Country Premium = 3%
ROC = 9.22%
Reinvestment Rate = 54.35%

Current Cashflow to Firm

EBIT(1-t) : 4,425
- Nt CpX 843
- Chg WC 4,150
= FCFF - 568
Reinvestment Rate = 112.82%

Reinvestment Rate
60%

Expected Growth
in EBIT (1-t)
.60 * .092 = .0552
5.52%

Terminal Value₅ = 2775 / (.1478 - .05) = 28,378

Firm Value: 19,578
+ Cash: 13,653
- Debt: 18,073
= Equity 15,158
- Options 0
Value/Share
Rs 61.57

EBIT(1-t)	\$4,670	\$4,928	\$5,200	\$5,487	\$5,790
- Reinvestment	\$2,802	\$2,957	\$3,120	\$3,292	\$3,474
FCFF	\$1,868	\$1,971	\$2,080	\$2,195	\$2,316

Term Yr
6,079
3,304
2,775

Discount at Cost of Capital (WACC) = 22.8% (.558) + 9.45% (0.442) = 16.90%

Cost of Equity
22.80%

Cost of Debt
(12% + 1.50%)(1 - .30)
= 9.45%

Weights
E = 55.8% D = 44.2%

In 2000, the stock was
trading at 102
Rupees/share.

Riskfree Rate:
Rs riskfree rate = 12%

+

Beta
1.17

x

Risk Premium
9.23%

Unlevered Beta for
Sectors: 0.75

Firm's D/E
Ratio: 79%

Mature risk
premium
4%

Country Risk
Premium
5.23%

6b. Tube Investments: Higher Marginal Return(in Rs)

Company earns higher returns on new projects

Current Cashflow to Firm

EBIT(1-t) : 4,425
 - Nt CpX 843
 - Chg WC 4,150
 = FCFF - 568
 Reinvestment Rate = 112.82%

Reinvestment Rate
 60%

Expected Growth in EBIT (1-t)

$.60 \times .122 = .0732$
 7.32%

Return on Capital
 12.20%

Stable Growth

$g = 5\%$; Beta = 1.00;
 Debt ratio = 44.2%
 Country Premium = 3%
 ROC = 12.2%
 Reinvestment Rate = 40.98%

Existing assets continue to generate negative excess returns.

Terminal Value₅ = $3904 / (.1478 - .05) = 39.921$

Firm Value: 25,185
 + Cash: 13,653
 - Debt: 18,073
 = Equity 20,765
 - Options 0
 Value/Share **84.34**

EBIT(1-t)	\$4,749	\$5,097	\$5,470	\$5,871	\$6,300
- Reinvestment	\$2,850	\$3,058	\$3,282	\$3,522	\$3,780
FCFF	\$1,900	\$2,039	\$2,188	\$2,348	\$2,520

Term Yr
 6,615
 2,711
 3,904

Discount at Cost of Capital (WACC) = $22.8\% (.558) + 9.45\% (0.442) = 16.90\%$

Cost of Equity
 22.80%

Cost of Debt
 $(12\% + 1.50\%)(1 - .30)$
 = 9.45%

Weights
 E = 55.8% D = 44.2%

Riskfree Rate:
 Rs riskfree rate = 12%

+

Beta
 1.17

x

Risk Premium
 9.23%

Unlevered Beta for
 Sectors: 0.75

Firm's D/E
 Ratio: 79%

Mature risk
 premium
 4%

Country Risk
 Premium
 5.23%

6c. Tube Investments: Higher Average Return

Current Cashflow to Firm

EBIT(1-t) : 4,425
 - Nt CpX 843
 - Chg WC 4,150
 = FCFF - 568
 Reinvestment Rate = 112.82%

Reinvestment Rate
 60%

Expected Growth

$60 \times .122 + .0581 = .1313$
13.13%

Return on Capital
 12.20%

Improvement on existing assets
 $\{ (1 + (.122 - .092) / .092)^{1/5} - 1 \}$

5.81%

Stable Growth
 $g = 5\%$; Beta = 1.00;
 Debt ratio = 44.2%
 Country Premium = 3%
 ROC = 12.2%
 Reinvestment Rate = 40.98%

Terminal Value₅ = $5081 / (.1478 - .05) = 51,956$

Firm Value: 31,829
 + Cash: 13,653
 - Debt: 18,073
 = Equity 27,409
 - Options 0
 Value/Share **111.3**

EBIT(1-t)	\$5,006	\$5,664	\$6,407	\$7,248	\$8,200
- Reinvestment	\$3,004	\$3,398	\$3,844	\$4,349	\$4,920
FCFF	\$2,003	\$2,265	\$2,563	\$2,899	\$3,280

Term Yr
 8,610
 3,529
 5,081

Discount at Cost of Capital (WACC) = 22.8% (.558) + 9.45% (0.442) = 16.90%

Cost of Equity
22.80%

Cost of Debt
 $(12\% + 1.50\%)(1 - .30)$
 = 9.45%

Weights
 E = 55.8% D = 44.2%

Riskfree Rate:
 Rsl riskfree rate = 12%

+

Beta
 1.17

x

Risk Premium
 9.23%

Unlevered Beta for
 Sectors: 0.75

Firm's D/E
 Ratio: 79%

Mature risk
 premium
 4%

Country Risk
 Premium
 5.23%

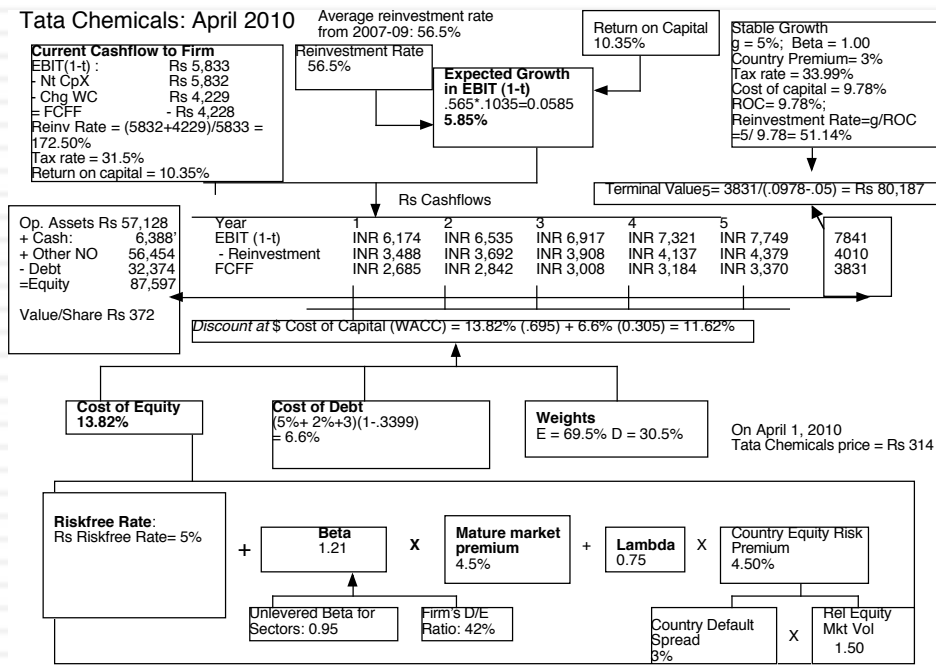
Lesson 4: Watch out for cross holdings...

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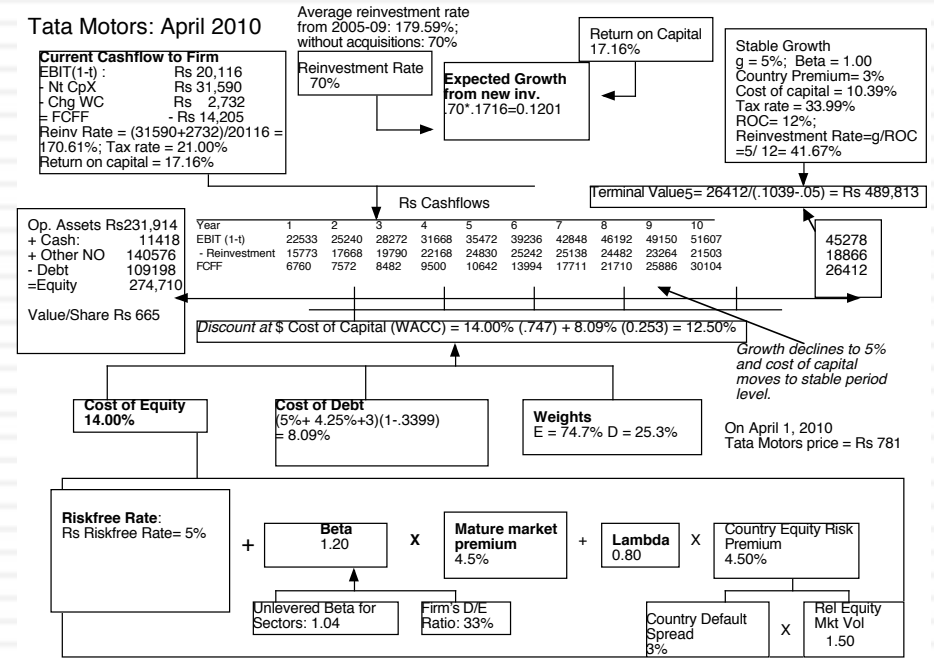
- Emerging market companies are more prone to having cross holdings than companies in developed markets. This is partially the result of history (since many of the larger public companies used to be family owned businesses until a few decades ago) and partly because those who run these companies value control (and use cross holdings to preserve this control).
- In many emerging market companies, the real process of valuation begins when you have finished your DCF valuation, since the cross holdings (which can be numerous) have to be valued, often with minimal information.

8. The Tata Group – April 2010

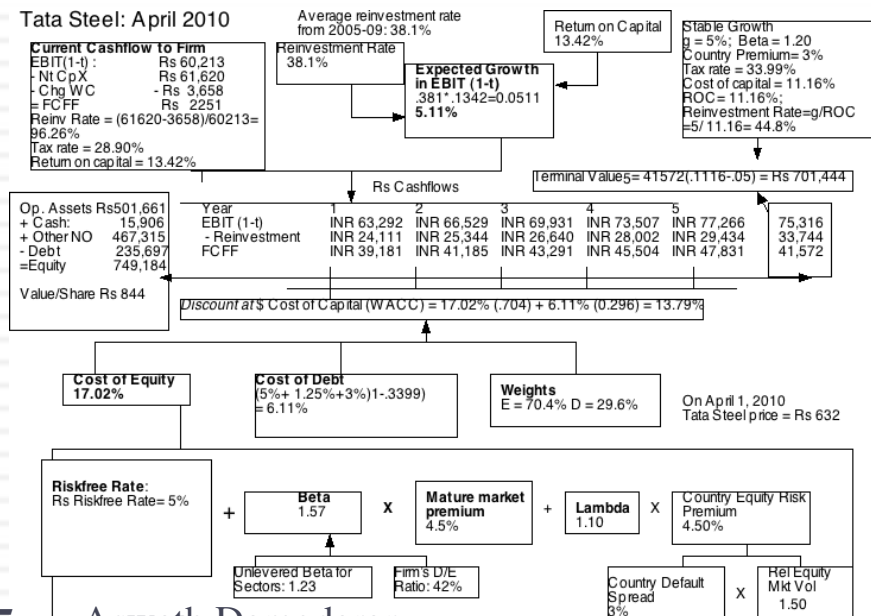
Tata Chemicals: April 2010



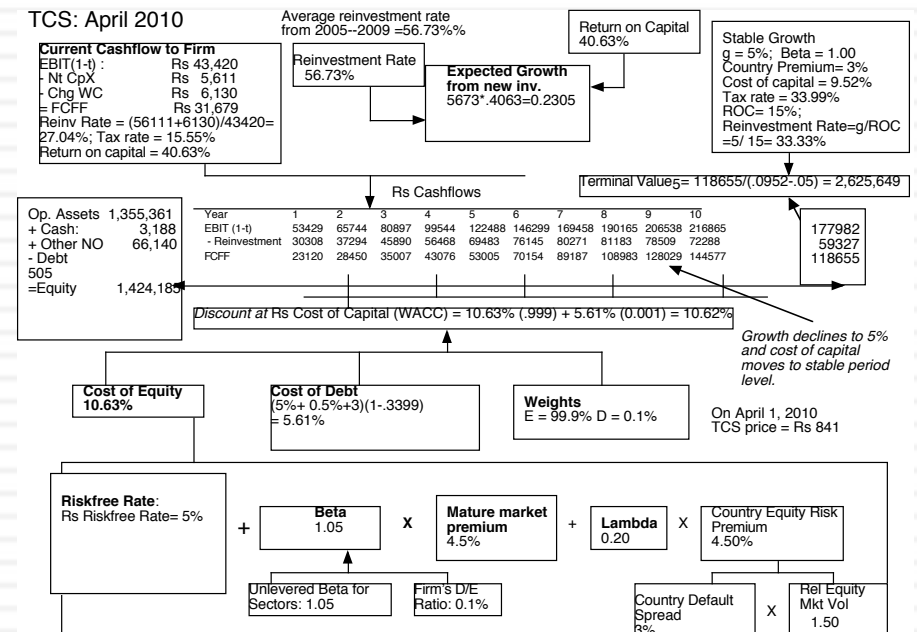
Tata Motors: April 2010



Tata Steel: April 2010

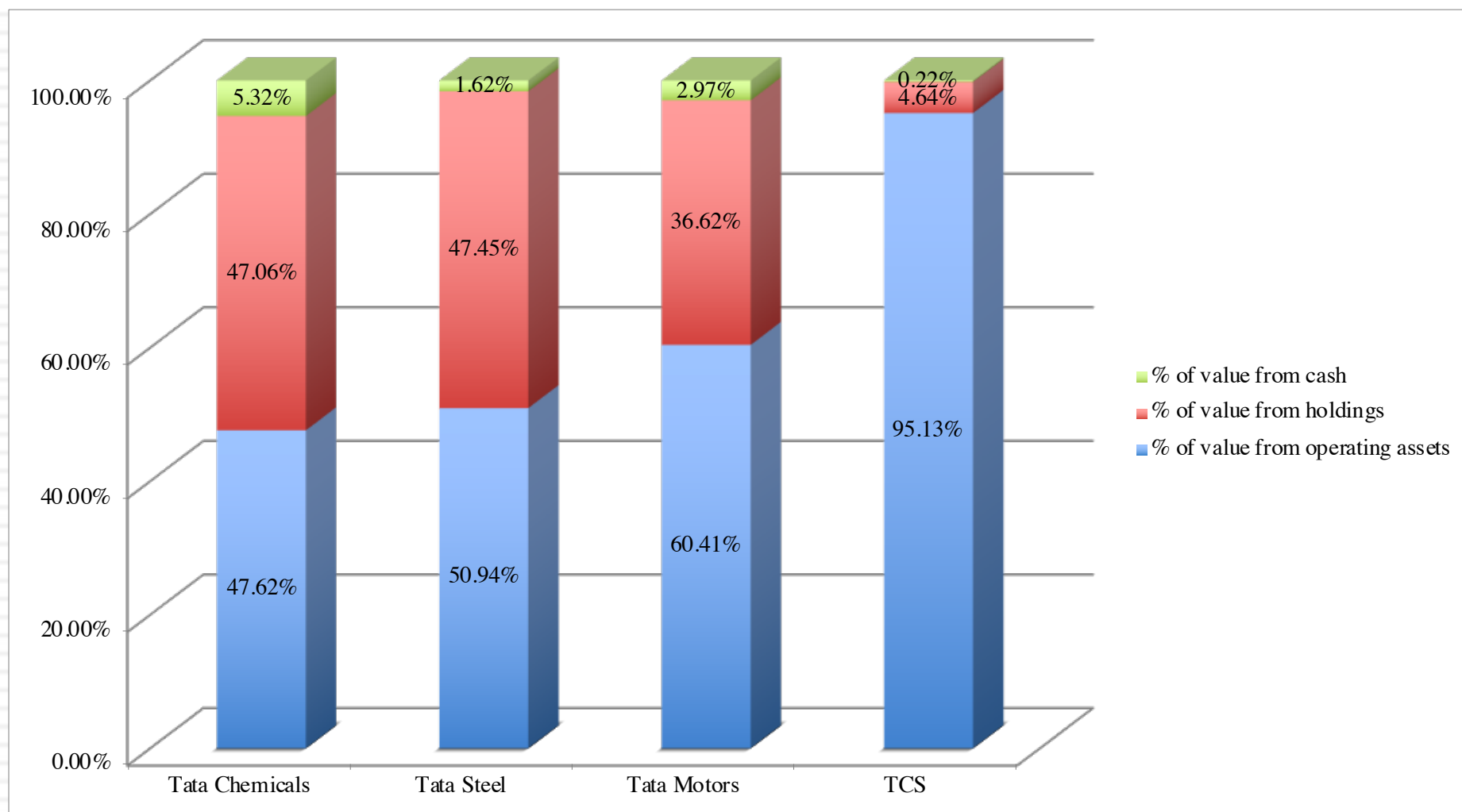


TCS: April 2010



Tata Companies: Value Breakdown

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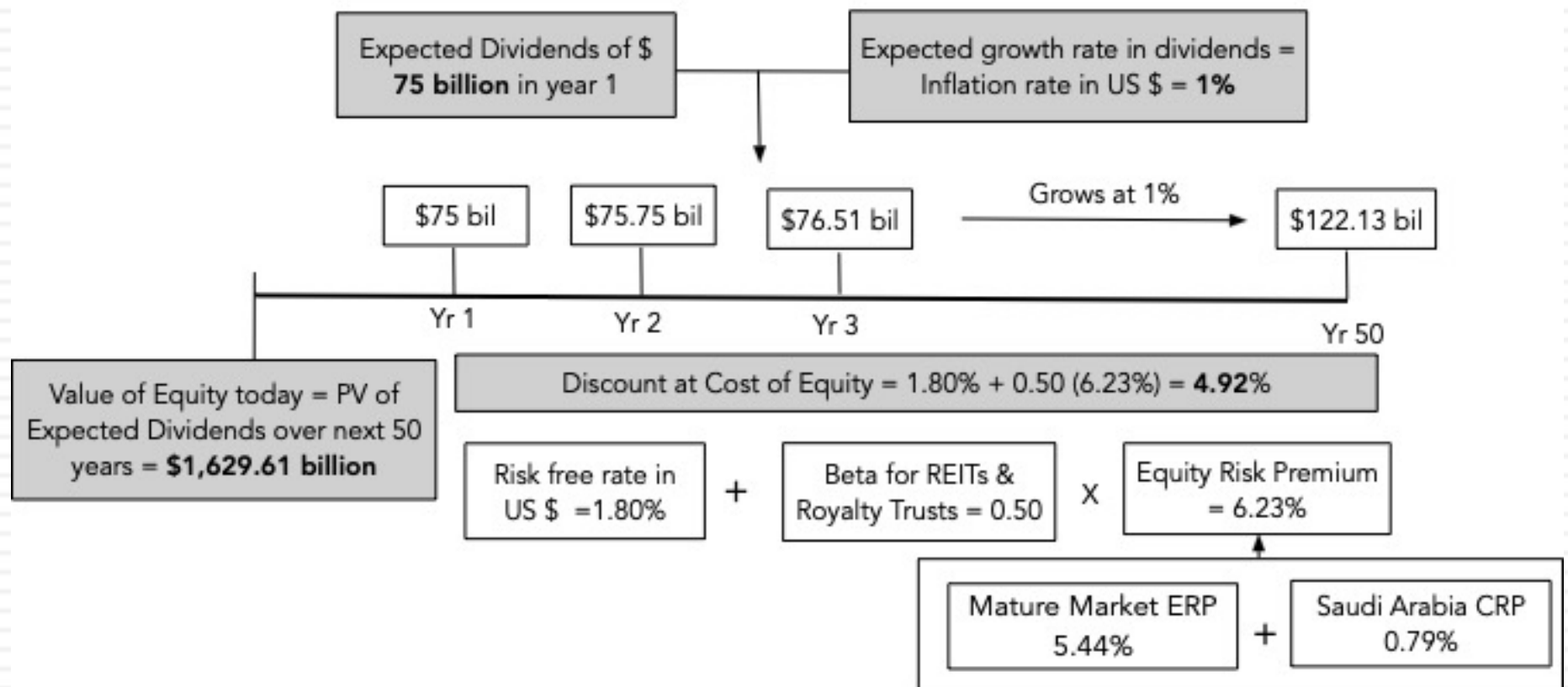
Lesson 5: Truncation risk can come in many forms...

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- Natural disasters: Small companies in some economies are much exposed to natural disasters (hurricanes, earthquakes), without the means to hedge against that risk (with insurance or derivative products).
- Terrorism risk: Companies in some countries that are unstable or in the grips of civil war are exposed to damage or destruction.
- Nationalization risk: While less common than it used to be, there are countries where businesses may be nationalized, with owners receiving less than fair value as compensation.

Valuing Aramco: Promised Dividends

A Dividend Discount Model Valuation of Aramco



Valuing Aramco: Potential Dividends



Adjusting for regime change

- If you believe that there is no chance of regime change, your expected value will remain \$1.65 trillion.
- If you believe that regime change is imminent, and that your equity will be fully expropriated, your expected value will be zero.
- If you believe that there remains a non-trivial chance (perhaps as high as 20%) that there will be a regime change and that if there is one, there will be changes that reduce, but not extinguish, your equity claim:

