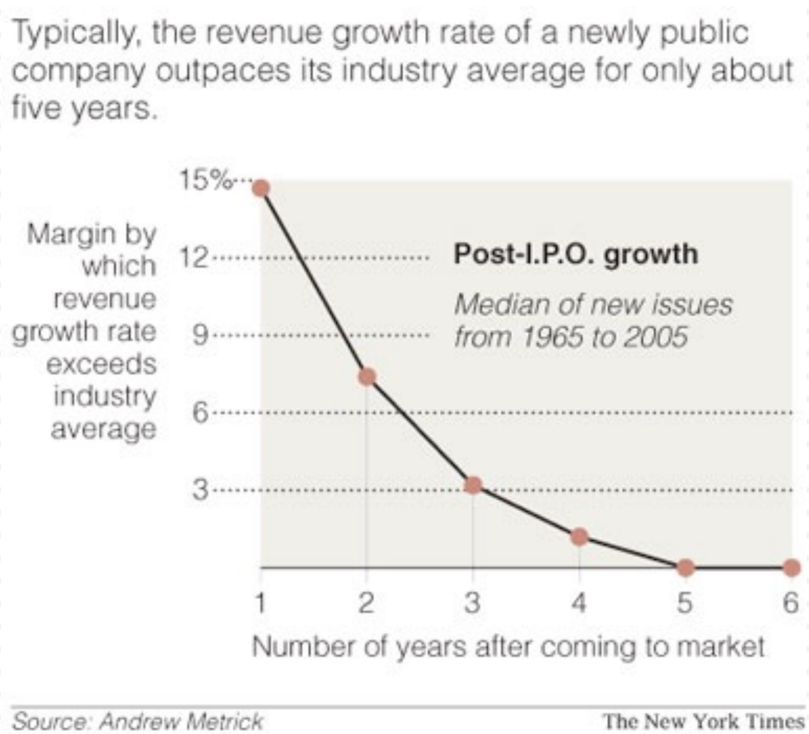
Lesson 2: Work backwards and keep it simple…

Year	Revenue Growth	Sales	Operating Margin	EBIT	EBIT (1-t)
Tr 12 mths		$1,117	-36.71%	-$410	-$410
1	150.00%	$2,793	-13.35%	-$373	-$373
2	100.00%	$5,585	-1.68%	-$94	-$94
3	75.00%	$9,774	4.16%	$407	$407
4	50.00%	$14,661	7.08%	$1,038	$871
5	30.00%	$19,059	8.54%	$1,628	$1,058
6	25.20%	$23,862	9.27%	$2,212	$1,438
7	20.40%	$28,729	9.64%	$2,768	$1,799
8	15.60%	$33,211	9.82%	$3,261	$2,119
9	10.80%	$36,798	9.91%	$3,646	$2,370
10	6.00%	$39,006	9.95%	$3,883	$2,524
TY	6.00%	$41,346	10.00%	$4,135	$2,688

Lesson 3: Scaling up is hard to do & failure is common



- Lower revenue growth rates, as revenues scale up.
- Keep track of dollar revenues, as you go through time, measuring against market size.

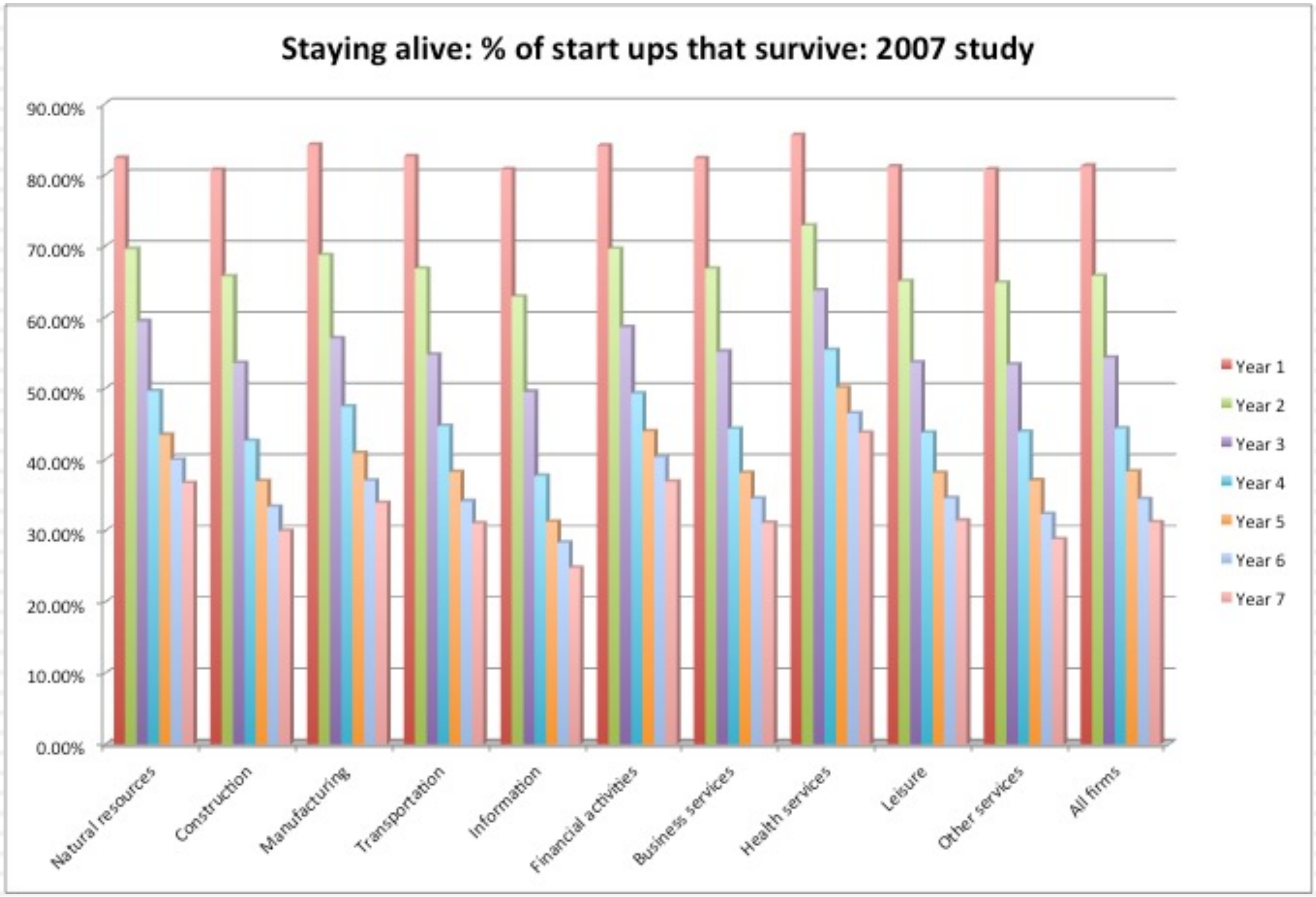
Lesson 4: Don't forget to pay for growth…

Year	Revenues	Δ Revenue	Sales/Cap	Δ Investment	Invested Capital	EBIT (1-t)	Imputed ROC
Tr 12 mths	$1,117				$ 487	-$410	
1	$2,793	$1,676	3.00	$559	$ 1,045	-$373	-76.62%
2	$5,585	$2,793	3.00	$931	$ 1,976	-$94	-8.96%
3	$9,774	$4,189	3.00	$1,396	$ 3,372	$407	20.59%
4	$14,661	$4,887	3.00	$1,629	$ 5,001	$871	25.82%
5	$19,059	$4,398	3.00	$1,466	$ 6,467	$1,058	21.16%
6	$23,862	$4,803	3.00	$1,601	$ 8,068	$1,438	22.23%
7	$28,729	$4,868	3.00	$1,623	$ 9,691	$1,799	22.30%
8	$33,211	$4,482	3.00	$1,494	$ 11,185	$2,119	21.87%
9	$36,798	$3,587	3.00	$1,196	$ 12,380	$2,370	21.19%
10	$39,006	$2,208	3.00	$736	$ 13,116	$2,524	20.39%
TY	$41,346	$2,340	NA		Assumed to be =		20.00%

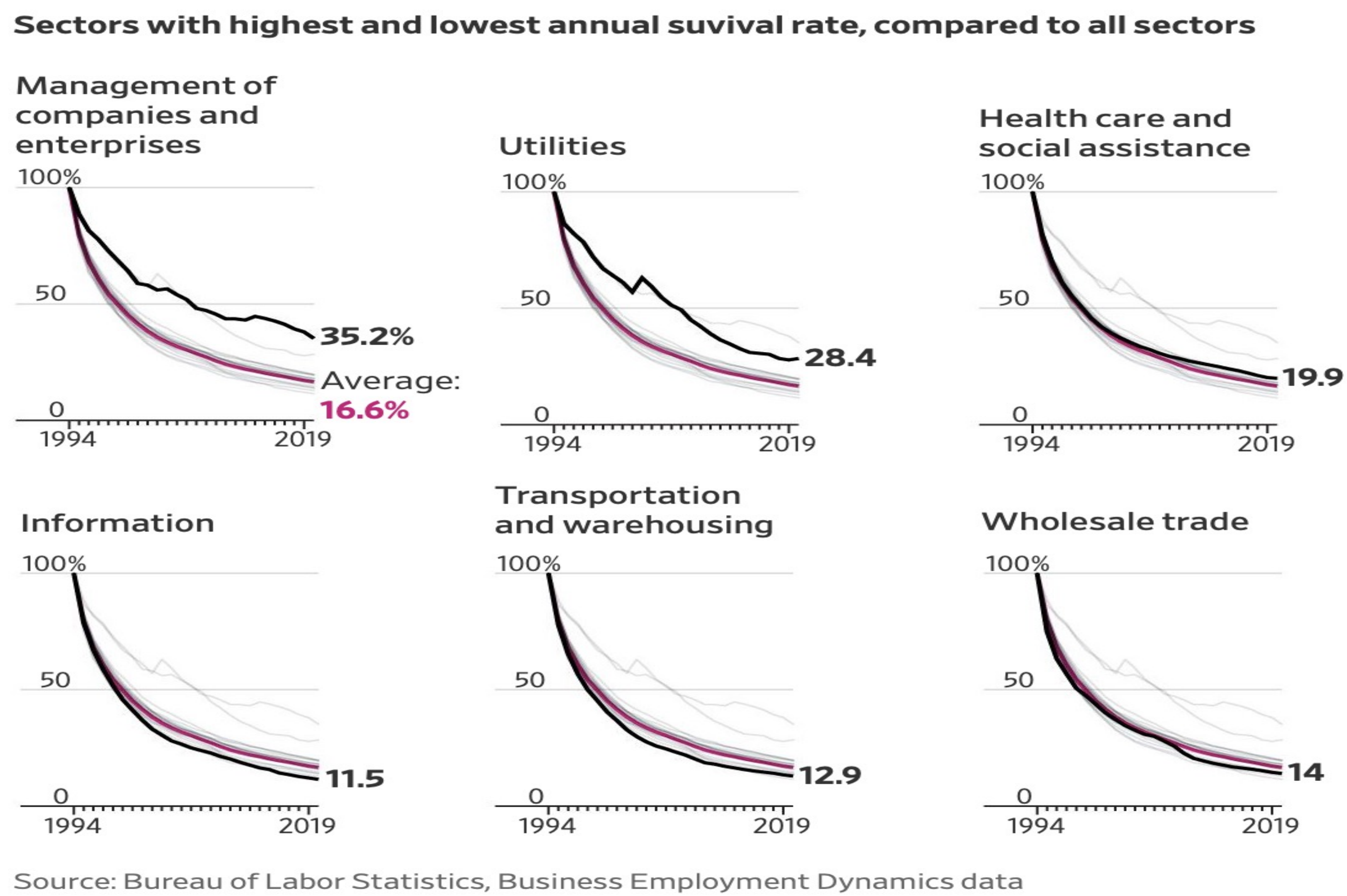
Lesson 5: The dilution is taken care off..

- With young growth companies, it is almost a given that the number of shares outstanding will increase over time for two reasons:
  - To grow, the company will have to issue new shares either to raise cash to take projects or to offer to target company stockholders in acquisitions
  - Many young, growth companies also offer options to managers as compensation and these options will get exercised, if the company is successful.
- Both effects are already incorporated into the value per share, even though we use the current number of shares in estimating value per share
  - The need for new equity issues is captured in negative cash flows in the earlier years. The present value of these negative cash flows will drag down the current value of equity and this is the effect of future dilution. In the Amazon valuation, the value of equity is reduced by $3.09 billion (the present value of negative FCFF in the first 6 years), about a 16% reduction. That takes care of new issues in the future.
  - The existing options are valued and netted out against the current value, taking care of the option overhang. The future earnings are after stock based compensation expenses (don't fall for the "its not a cash expense" ploy) to take care of future option grants.

Lesson 6: If you are worried about failure, incorporate into value



A 2019 Update: Sector Comparison



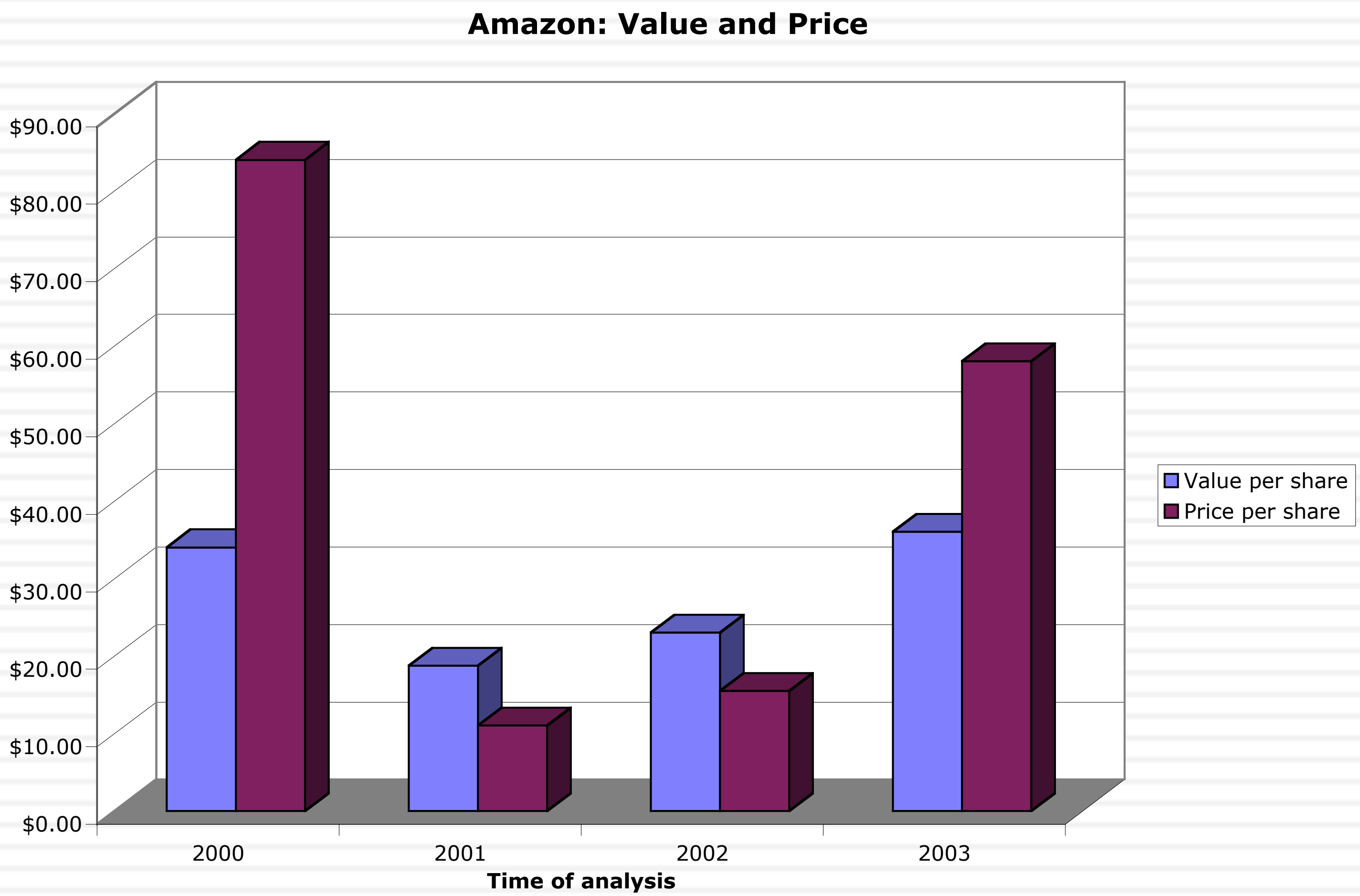
Lesson 7: There are always scenarios where the market price can be justified…

	6%	8%	10%	12%	14%
30%	$ (1.94)	$ 2.95	$ 7.84	$ 12.71	$ 17.57
35%	$ 1.41	$ 8.37	$ 15.33	$ 22.27	$ 29.21
40%	$ 6.10	$ 15.93	$ 25.74	$ 35.54	$ 45.34
45%	$ 12.59	$ 26.34	$ 40.05	$ 53.77	$ 67.48
50%	$ 21.47	$ 40.50	$ 59.52	$ 78.53	$ 97.54
55%	$ 33.47	$ 59.60	$ 85.72	$ 111.84	$ 137.95
60%	$ 49.53	$ 85.10	$ 120.66	$ 156.22	$ 191.77

Lesson 8: You will be wrong 100% of the time and it really is not your fault…

- No matter how careful you are in getting your inputs and how well structured your model is, your estimate of value will change both as new information comes out about the company, the business and the economy.
- As information comes out, you will have to adjust and adapt your model to reflect the information. Rather than be defensive about the resulting changes in value, recognize that this is the essence of risk.
- A test: If your valuations are unbiased, you should find yourself increasing estimated values as often as you are decreasing values. In other words, there should be equal doses of good and bad news affecting valuations (at least over time).

And the market is often "more wrong"….



Assessing my 2000 forecasts, in 2014

	Revenues		Operating Income		Operating Margin	
Year	*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 businessses
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, willling 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%	Maintined at Amazon's current level
Return on capital	12.91%	Marginal ROIC =		25.94%	12.00%	Stronge 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..

- 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…

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?

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

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

Equity claims can vary in voting rights and dividends.

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

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

What is the value of equity in the 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 * Reinvestment Rate
Expected growth rae (status quo) = 14.34% * 19.14% = 2.75%
Expected growth rate (optimal) = 14.00% * 40% = 5.60%
ROC drops, reinvestment rises and growth goes up.

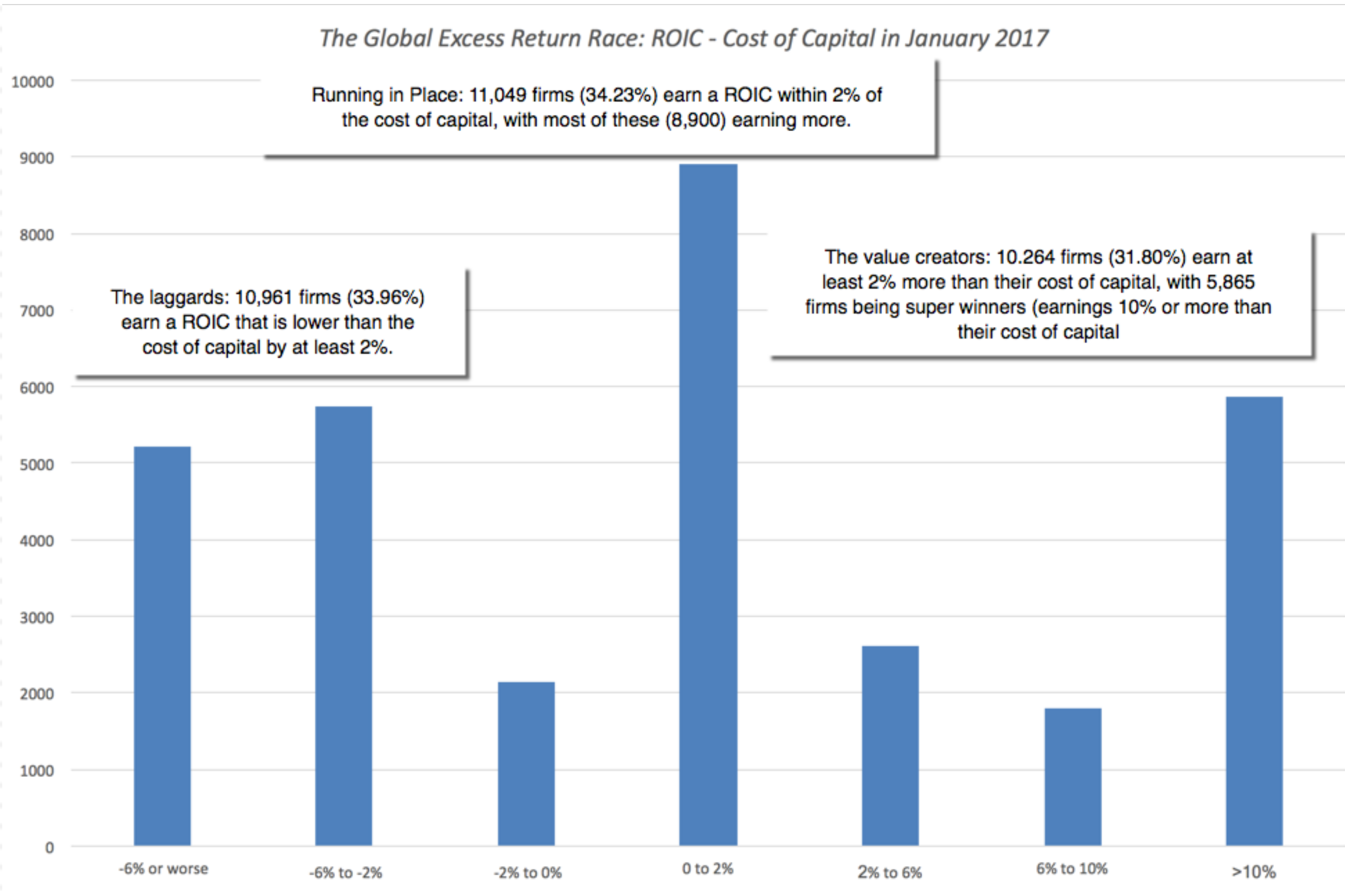
Financial restructuring 2
Cost of capital = Cost of equity (1-Debt ratio) + Cost of debt (Debt ratio)
Status quo = 7.33% (1-.104) + 3.60% (1-.40) (.104) = 6.79%
Optimal = 7.75% (1-.20) + 3.60% (1-.40) (.20) = 6.63%
Cost of equity rises but cost of capital drops.

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

Probability of management change = 10% 3
Expected value =$31.91 (.90) + $37.80 (.10) = $32.50 4

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

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



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

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

As debt ratio increases, equity becomes riskier.(higher beta) and cost of equity goes up. 1

As firm borrows more money, its ratings drop and cost of debt rises 2

Current Cost of Capital

Debt Ratio	Beta	Cost of Equity	Bond Rating	Interest rate on debt	Tax Rate	Cost of Debt (after-tax)	WACC	Firm Value (G)
0%	0.78	7.00%	AAA	3.60%	40.00%	2.16%	7.00%	$4,523
10%	0.83	7.31%	AAA	3.60%	40.00%	2.16%	6.80%	$4,665
10.39%	**0.83**	**7.33%**	**AAA**	**3.60%**	**40.00%**	**2.16%**	**6.79%**	**$4,680**
20%	0.89	7.70%	AAA	3.60%	40.00%	2.16%	6.59%	$4,815
30%	0.97	8.20%	A+	4.60%	40.00%	2.76%	6.57%	$4,834
40%	1.09	8.86%	A-	5.35%	40.00%	3.21%	6.60%	$4,808
50%	1.24	9.79%	B+	8.35%	40.00%	5.01%	7.40%	$4,271
60%	1.47	11.19%	B-	10.85%	40.00%	6.51%	8.38%	$3,757
70%	1.86	13.52%	CCC	12.35%	40.00%	7.41%	9.24%	$3,398
80%	2.70	18.53%	CC	14.35%	38.07%	8.89%	10.81%	$2,892
90%	5.39	34.70%	CC	14.35%	33.84%	9.49%	12.01%	$2,597

Optimal: Cost of capital lowest between 20 and 30%.

Debt ratio is percent of overall market value of firm that comes from debt financing.

At debt ratios > 80%, firm does not have enough operating income to cover interest expenses. Tax rate goes down to reflect lost tax benefits. 3

As cost of capital drops, firm value rises (as operating cash flows remain unchanged)

III. Dealing with decline and distress...

Historial 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?

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

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

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

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

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.

What is the value of equity in the firm?

a. Dealing with Decline

- 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 fo next 5 years

	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%										
Proceeds if firm fails =	$2,421										
Value of operating assets =	$4,357										

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

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.

b. Dealing with the “downside” of Distress

- 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.
- Value of Equity= DCF value of equity (1 - Probability of distress) + Distress sale value of equity (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).

Current Revenue $ 4,390

Current Margin: 4.76%

EBIT $ 209m

Reinvestment:
Capital expenditures include cost of new casinos and working capital

Extended reinvestment break, due ot investment in past

Industry average

Expected Margin: -> 17%

Stable Growth

Stable Revenue Growth: 3%

Stable Operating Margin: 17%

Stable ROC=10% Reinvest 30% of EBIT(1-t)

Terminal Value= 758(.0743-.03) =$ 17,129

	1	2	3	4	5	6	7	8	9	10	Term. Year
Revenues	$4,434	$4,523	$5,427	$6,513	$7,815	$8,206	$8,616	$9,047	$9,499	$9,974	$10,273
Oper margin	5.81%	6.86%	7.90%	8.95%	10%	11.40%	12.80%	14.20%	15.60%	17%	17%
EBIT	$258	$310	$429	$583	$782	$935	$1,103	$1,285	$1,482	$1,696	$ 1,746
Tax rate	26.0%	26.0%	26.0%	26.0%	26.0%	28.4%	30.8%	33.2%	35.6%	38.00%	38%
EBIT * (1 - t)	$191	$229	$317	$431	$578	$670	$763	$858	$954	$1,051	$1,083
- Reinvestment	-$19	-$11	$0	$22	$58	$67	$153	$215	$286	$350	$ 325
FCFF	$210	$241	$317	$410	$520	$603	$611	$644	$668	$701	$758
Beta	3.14	3.14	3.14	3.14	3.14	2.75	2.36	1.97	1.59	1.20	
Cost of equity	21.82%	21.82%	21.82%	21.82%	21.82%	19.50%	17.17%	14.85%	12.52%	10.20%	
Cost of debt	9%	9%	9%	9%	9%	8.70%	8.40%	8.10%	7.80%	7.50%	
Debtl ratio	73.50%	73.50%	73.50%	73.50%	73.50%	68.80%	64.10%	59.40%	54.70%	50.00%	
Cost of capital	9.88%	9.88%	9.88%	9.88%	9.88%	9.79%	9.50%	9.01%	8.32%	7.43%	

Forever

Value of Op Assets	$ 9,793
+ Cash & Non-op	$ 3,040
= Value of Firm	$12,833
- Value of Debt	$ 7,565
= Value of Equity	$ 5,268
Value per share	$ 8.12

Cost of Equity
21.82%

Cost of Debt
3%+6%= 9%
9% (1-.38)=5.58%

Weights
Debt= 73.5% ->50%

Riskfree Rate:
T. Bond rate = 3%

\+

Beta
3.14-> 1.20

X

Risk Premium
6%

Casino 1.15

Current D/E: 277%

Base Equity Premium

Country Risk Premium

Las Vegas Sands
Feburary 2009
Trading @ $4.25

Adjusting the value of LVS for distress..

- 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:

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

- Solving for the probability of bankruptcy, we get:
  - $\pi_{istress}$ = 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

Boeing	Mar-20

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