

# Valuation Inferno: Dante meets DCF...

*“Abandon every hope, ye who enter here”*

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# DCF Choices: Equity versus Firm

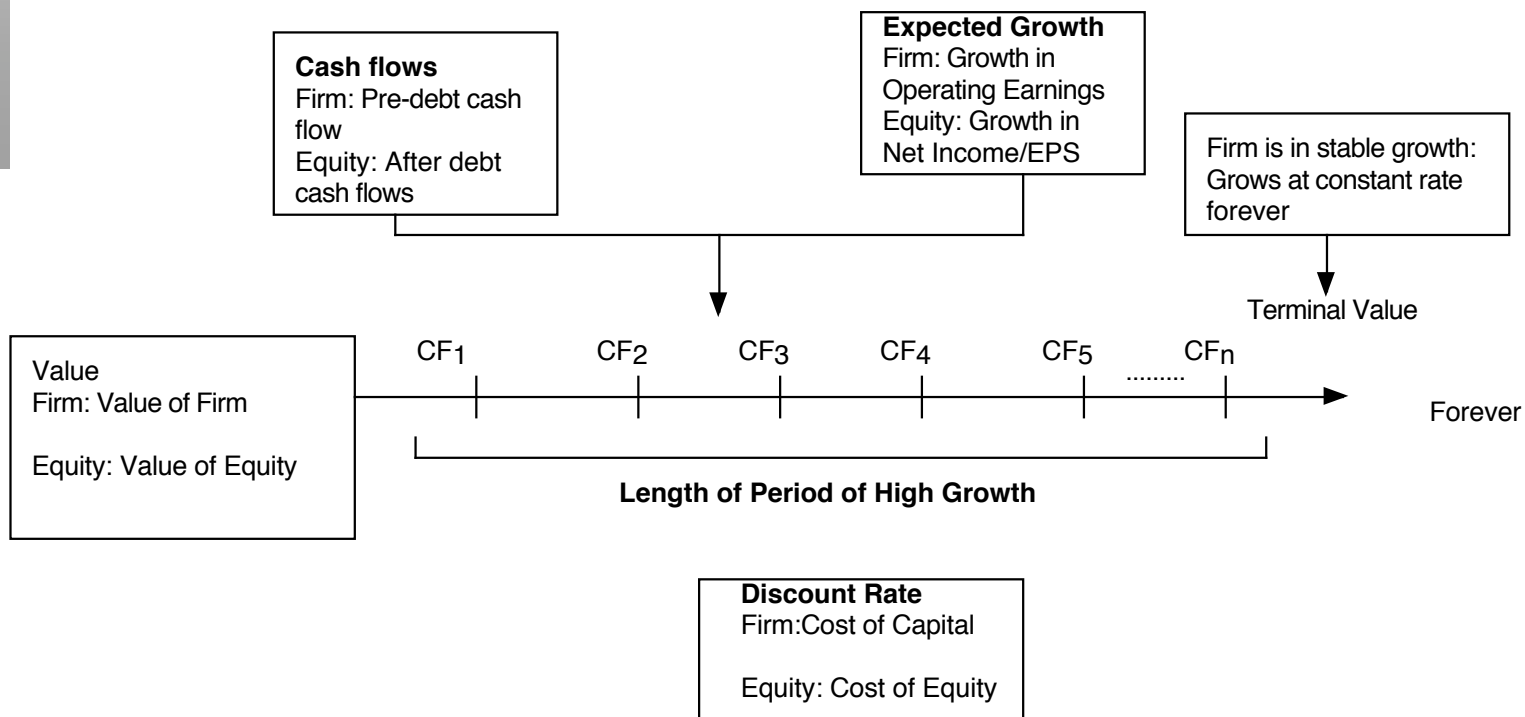
**Firm Valuation:** Value the entire business by discounting cash flow to the firm at cost of capital

Assets		Liabilities	
Existing Investments Generate cashflows today Includes long lived (fixed) and short-lived (working capital) assets	Assets in Place	Debt	Fixed Claim on cash flows Little or No role in management <i>Fixed Maturity</i> <i>Tax Deductible</i>
Expected Value that will be created by future investments	Growth Assets	Equity	Residual Claim on cash flows Significant Role in management <i>Perpetual Lives</i>

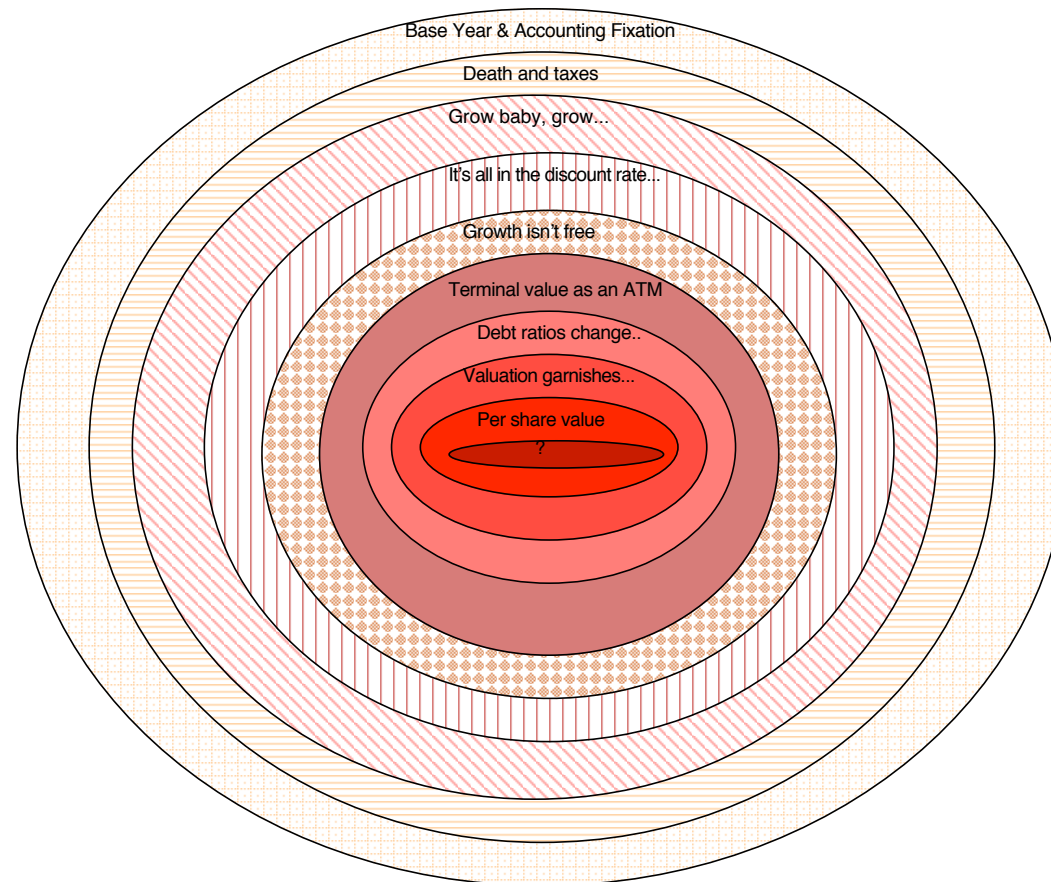
**Equity valuation:** Value just the equity claim in the business by discounting cash flows to equity at the cost of equity

# The Value of a business rests on..

## DISCOUNTED CASHFLOW VALUATION



# The nine circles of valuation hell.. With a special bonus circle...



## Illustration 1: Base Year Fixation..

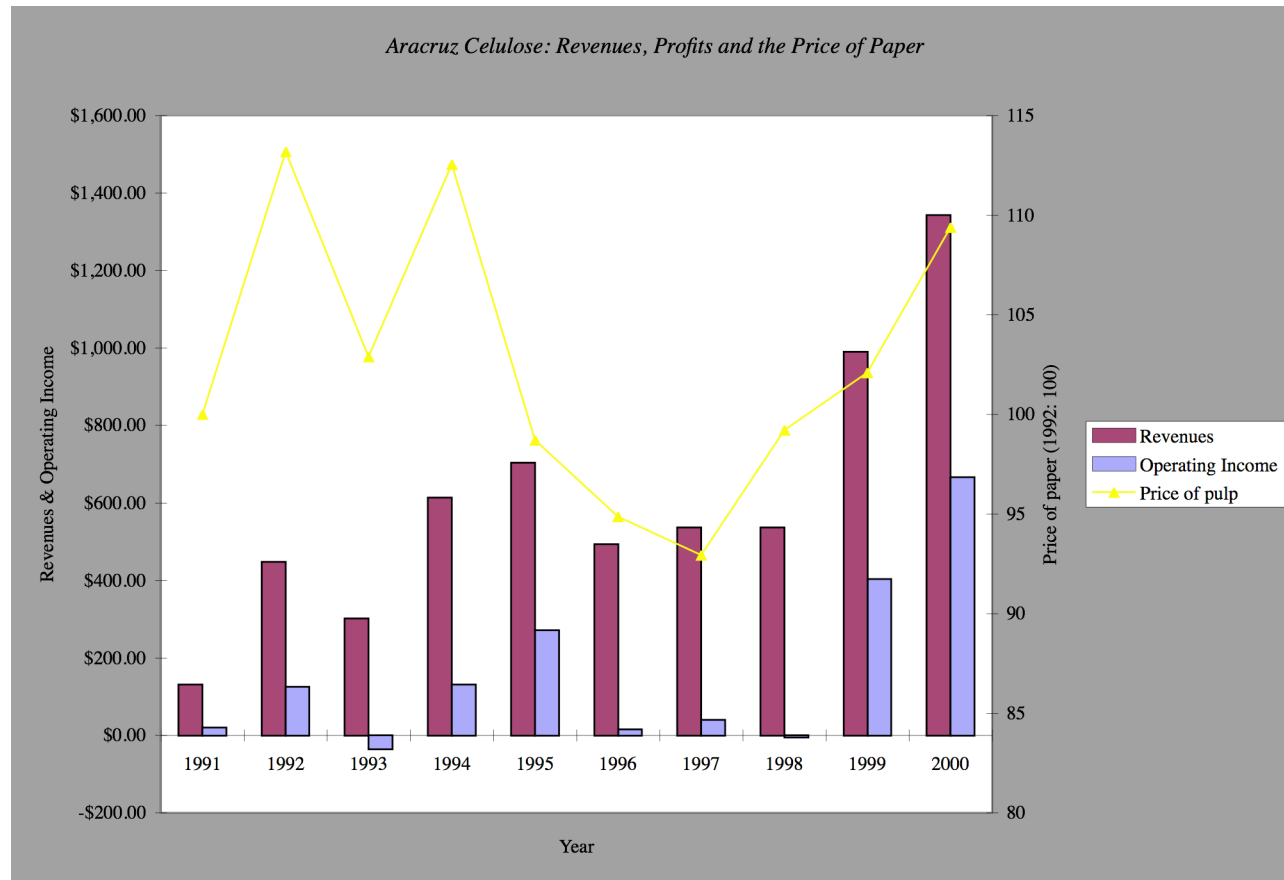
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- You are valuing Exxon Mobil, using the financial statements of the firm from 2005. The following provides the key numbers:

Revenues	\$320 billion
EBIT (1-t)	\$ 40 billion
Net Cap Ex	\$ 3 billion
Chg WC	\$ 1 billion
- The cost of capital for the firm is 8% and you use a very conservative stable growth rate of 2% to value the firm. Even without working through the numbers, which of the following conclusions are you most likely to draw at the end of your valuation?
  - ❑ The value will be greater than the price
  - ❑ The value will be less than the price
  - ❑ Tough to tell without working through the numbers

# Lesson 1.1: Normalizing Earnings

## An Example



## Lesson 1.2: And don't let accounting categorization trap you...

<i>Valuation Input</i>	<i>Accounting Definition</i>	<i>Valuation Definition</i>
Capital Expenditures	Internal investments in tangible assets	Investment in long term assets. Will include <ul style="list-style-type: none"> <li>a. R&amp;D expenses for tech firms</li> <li>b. Acquisitions of other firms (cash as well as stock)</li> <li>c. Increases in operating lease commitments</li> </ul>
Depreciation and Amortization	Follows accounting rules on depreciation and amortization	Tax-deductible depreciation in tax books (not reporting books)
Working Capital	Current assets – Current liabilities	Non-cash Current Assets – Non-debt current liabilities

## Illustration 2: Taxes and Value

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- Assume that you have been asked to value a company and have been provided with the most recent year's financial statements:

EBITDA	140
- DA	40
EBIT	100
- Interest exp	20
Taxable income	80
Taxes	32
Net Income	48

Assume also that cash flows will be constant and that there is no growth in perpetuity. What is the free cash flow to the firm?



## Lesson 2.1: Don't double count the tax benefit

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- Taxes paid: When computing the after-tax operating income, using taxes paid (24) will give you a higher cash flow but will result in double counting the tax benefit - once in the cash flow and again in the cost of capital (when you use the after-tax cost of debt)
- Cap Ex: Though nothing is mentioned about cap ex, the fact that these earnings can be maintained in perpetuity requires us to be consistent in our reinvestment assumptions. If you do not set cap ex = depreciation, the assets of the firm will deplete over time to zero but earnings will continue at current levels.

**Ignoring a relevant variable, because you are not given the facts or feel uncertain about it, is just as much an assumption (and often less defensible and more dangerous) than making an explicit assumption.**

## Lesson 2.2: Effective versus Marginal tax rates

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- In computing the after-tax operating income, which of the following tax rates should you use in the computation?
  - ❑ The effective tax rate
  - ❑ The marginal tax rate of the country in which the company is incorporated
  - ❑ The weighted average marginal tax rate across the countries in which the company operates
  - ❑ None of the above

Why?

## Illustration 3: High Growth for how long...

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Assume that you are valuing a young, high growth firm with great potential, just after its initial public offering. How long would you set your high growth period?

- < 5 years
- 5 years
- 10 years
- >10 years

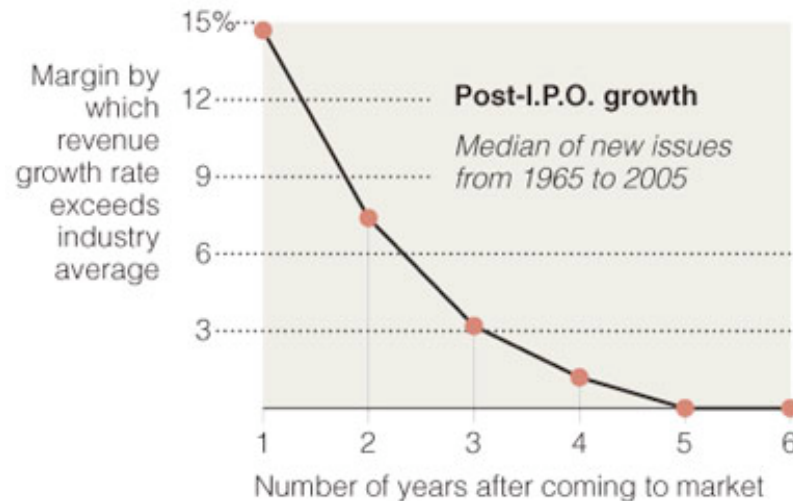
What high growth period would you use for a larger firm with a proven track record of delivering growth in the past?

- 5 years
- 10 years
- 15 years
- Longer

## Lesson 3.1: Maintaining high growth is difficult...

- While analysts routinely assume very long high growth periods (with substantial excess returns during the periods), the evidence suggests that they are much too optimistic. A study of revenue growth at firms that make IPOs in the years after the IPO shows the following:

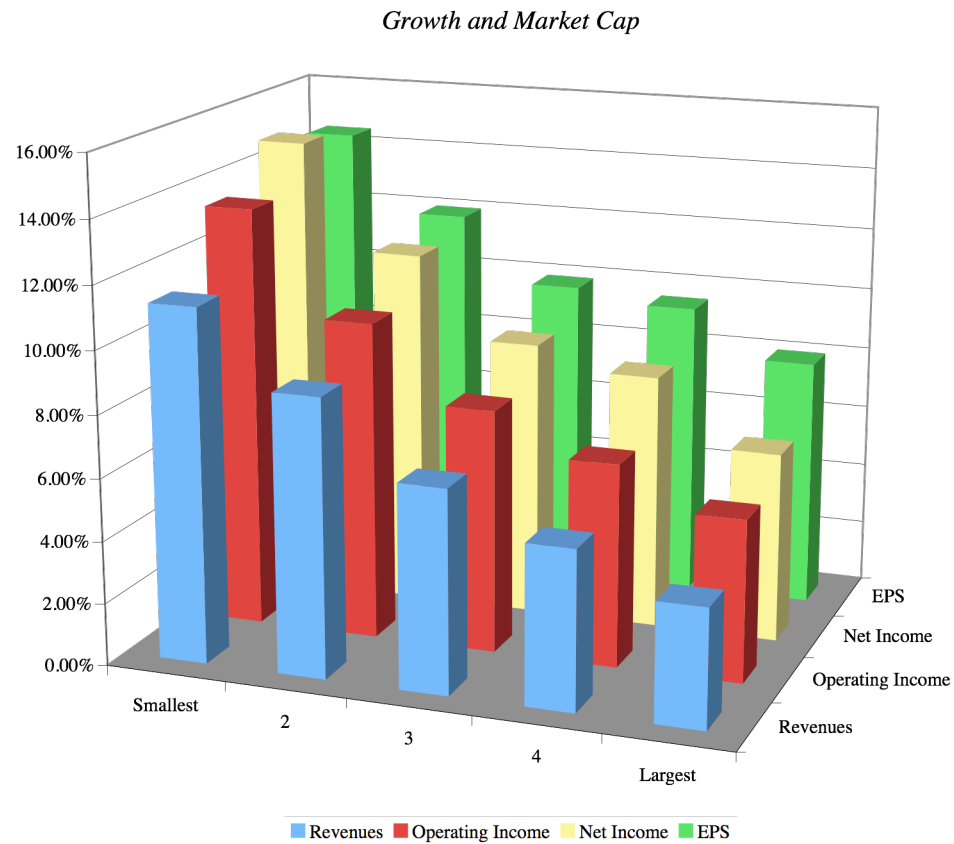
Typically, the revenue growth rate of a newly public company outpaces its industry average for only about five years.



Source: Andrew Metrick

The New York Times

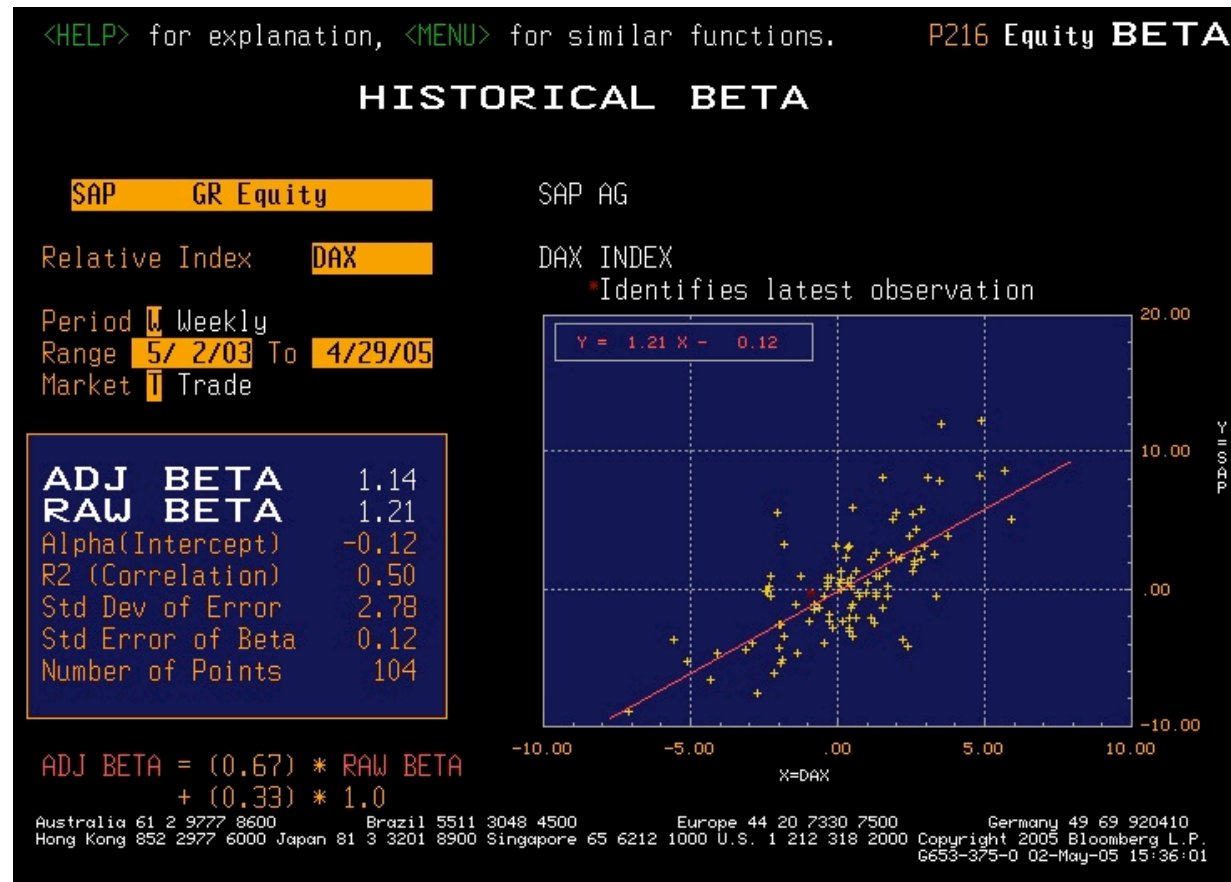
## Lesson 3.2: Scaling up growth is hard to do..



## Illustration 4: Regression betas and Debt Cost

- The cost of capital for a firm has been computed using the following inputs:
  - The cost of equity was estimated from a Bloomberg “adjusted” beta of 1.2, a “normal” treasury bond rate (estimated by your economists who feel that interest rates will increase over the next year to 5%) and the Ibbotson Equity Risk Premium of 6%  
$$\text{Cost of equity} = \text{Normalized Bond rate} + \text{Beta} * \text{Risk Premium}$$
$$= 5\% + 1.2 (6\%) = 12.2\%$$
  - The cost of debt was computed by dividing the interest expenses by the book value of debt (a book interest rate); the effective tax rate for the firm is 30%.
    - Cost of debt = Interest expenses/ Book Debt = 240/ 6000 = 4%
    - After-tax cost of debt = Cost of debt (1- Effective tax rate) = 4% (1-.3) = 2.8%
  - The cost of capital was computed using the market value of equity(10000) and the book value of all liabilities (10000)  
$$\text{Cost of capital} = 12.2\% (.5) + 2.8\% (.5) = 7.5\%$$
- Do you agree with the computation?

# 4.1: Betas don't come from regressions..



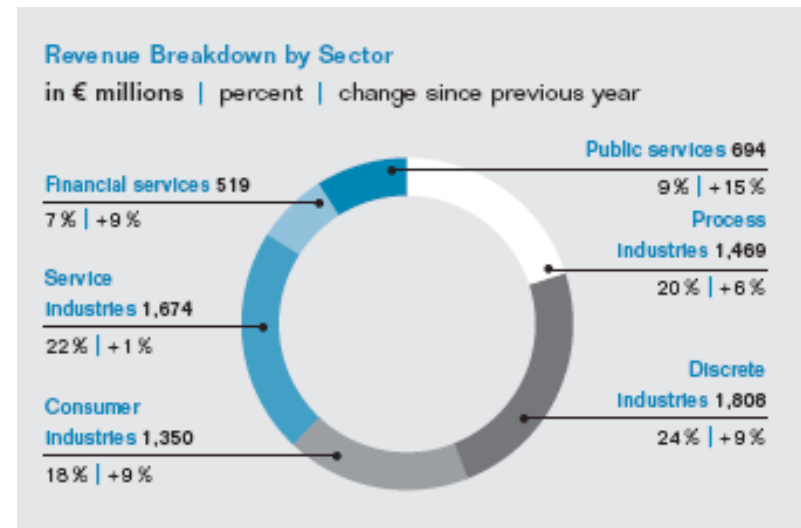
# But from a firm's business mix as well as operating and financing choices...

## ■ Approach 1: Based on business mix

- SAP is in three business: software, consulting and training. We will aggregate the consulting and training businesses

Business	Revenues	EV/Sales	Value	Weights	Beta
Software	€ 5.3	3.25	17.23	80%	1.30
Consulting	€ 2.2	2.00	4.40	20%	1.05
<b>SAP</b>	<b>€ 7.5</b>		<b>21.63</b>		<b>1.25</b>

## ■ Approach 2: Customer Base





## 4.2: Don't let your macro views color your valuation

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- If you believe that interest rates will go up (down), that exchange rates will move adversely (in your favor) and that the economy will weaken (strengthen), should you try to bring them into your individual company valuations?
- Yes
- No
- If you do, and you conclude that a stock is overvalued (undervalued), how should I read this conclusion?

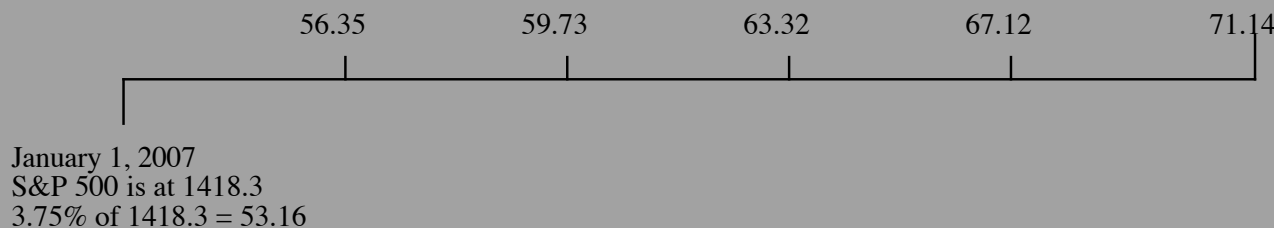
## 4.3: Equity risk premiums matter..

Historical Period	<i>Arithmetic average</i>		<i>Geometric Average</i>		
	Stocks - T.Bills	Stocks - T.Bonds	Stocks - T.Bills	Stocks - T.Bonds	
1928-2006	7.87%	6.57%	6.01%	<b>4.91%</b>	← Historical premium
1966-2006	5.57%	4.13%	4.34%	3.25%	
1996-2006	6.91%	5.14%	5.42%	3.90%	

Between 2001 and 2006, dividends and stock buybacks averaged 3.75% of the index each year.

Analysts expect earnings (53.16) to grow 6% a year for the next 5 years .

After year 5, we will assume that earnings on the index will grow at 4.7%, the same rate as the entire economy



Implied Expected Return on Equity = 8.86%

Riskfree Rate = 4.70%

**Implied ERP = 8.86% - 4.70% = 4.16%**

## 4.4: The Cost of Debt

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- The cost of debt is the rate at which a firm can borrow money, long term and today, corrected for the tax benefits of debt.
  - Take all debt, short term as well as long term, and attach one long term cost of debt to it.
  - That long term cost of debt will be based upon the level of riskless rates today and the default risk of the company today (based on either an actual or a synthetic rating).
  - Interest saves you taxes at the margin. Consequently, the marginal tax rate should be used to compute the tax benefit.
- As a general rule, it is dangerous to start breaking debt down into individual pieces (senior, subordinated, unsecured...) and attaching different costs to each one.

## 4.5: Be “currency” and “risk” consistent

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- Assume that the company you are analyzing is a German firm (with primarily German operations) and that you are doing the analysis in U.S. dollars. How would your inputs have been different?
  - Riskfree Rate
  - Beta
  - Risk Premium
- What if your analysis had been in Euros?
  
- What if you were now told that half of the German firm’s operations are in China?

## Illustration 5: The price of growth..

- You are looking at a valuation of a firm and see the following projected cash flows:

Year	Current	1	2	3	4
Growth rate		10%	10%	10%	10%
Revenues	\$100.00	\$110.00	\$121.00	\$133.10	\$146.41
EBIT (1-t)	\$30.00	\$33.00	\$36.30	\$39.93	\$43.92
+ Depreciatio	\$15.00	\$16.50	\$18.15	\$19.97	\$21.96
- Cap Ex	\$18.00	\$19.80	\$21.78	\$23.96	\$26.35
- Chg in WC	\$3.00	\$3.30	\$3.63	\$3.99	\$4.39
FCFF	\$24.00	\$26.40	\$29.04	\$31.94	\$35.14

What questions would you raise about the forecasts?

## 5.1: The Determinants of Growth

	Firm 1	Firm 2	Firm 3	Firm 4	Firm 5
Reinvestment Rate	20.00%	100.00%	200.00%	20.00%	0.00%
ROIC on new investment	50.00%	10.00%	5.00%	10.00%	10.00%
ROIC on existing investments before	10.00%	10.00%	10.00%	10.00%	10.00%
ROIC on existing investments after	10.00%	10.00%	10.00%	10.80%	11.00%
<b>Expected growth rate</b>	<b>10.00%</b>	<b>10.00%</b>	<b>10.00%</b>	<b>10.00%</b>	<b>10.00%</b>

$$\begin{aligned}
 \text{Expected growth} &= \text{Growth from new investments} + \text{Efficiency growth} \\
 &= \text{Reinv Rate} * \text{ROC} + (\text{ROC}_t - \text{ROC}_{t-1}) / \text{ROC}_{t-1}
 \end{aligned}$$

## 5.2: The Revenue/Margin Trap

### Sirius Radio: Revenues and Margins..

Year	Revenue Growth rate	Revenues	Operating Margin	Operating Income
<b>Current</b>		<b>\$187</b>	<b>-419.92%</b>	<b>-\$787</b>
1	200.00%	\$562	-199.96%	-\$1,125
2	100.00%	\$1,125	-89.98%	-\$1,012
3	80.00%	\$2,025	-34.99%	-\$708
4	60.00%	\$3,239	-7.50%	-\$243
5	40.00%	\$4,535	6.25%	\$284
6	25.00%	\$5,669	13.13%	\$744
7	20.00%	\$6,803	16.56%	\$1,127
8	15.00%	\$7,823	18.28%	\$1,430
9	10.00%	\$8,605	19.14%	\$1,647
10	5.00%	\$9,035	19.57%	\$1,768

Target margin based upon  
Clear Channel

# And one way to avoid it..

Year	Revenues	Change in revenue	Sales/Capital Ratio	Reinvestment	Capital Invested	Operating Income (Loss)	Imputed ROC
Current	\$187				\$ 1,657	-\$787	
1	\$562	\$375	1.50	\$250	\$ 1,907	-\$1,125	-67.87%
2	\$1,125	\$562	1.50	\$375	\$ 2,282	-\$1,012	-53.08%
3	\$2,025	\$900	1.50	\$600	\$ 2,882	-\$708	-31.05%
4	\$3,239	\$1,215	1.50	\$810	\$ 3,691	-\$243	-8.43%
5	\$4,535	\$1,296	1.50	\$864	\$ 4,555	\$284	7.68%
6	\$5,669	\$1,134	1.50	\$756	\$ 5,311	\$744	16.33%
7	\$6,803	\$1,134	1.50	\$756	\$ 6,067	\$1,127	21.21%
8	\$7,823	\$1,020	1.50	\$680	\$ 6,747	\$1,430	23.57%
9	\$8,605	\$782	1.50	\$522	\$ 7,269	\$1,647	17.56%
10	\$9,035	\$430	1.50	\$287	\$ 7,556	\$1,768	15.81%

Check revenues against total market potential and largest firms in sector.

Industry average Sales/Cap Ratio

Capital invested in year t+1 = Capital invested in year t + Reinvestment in year t+1

Is ending ROC a reasonable number?



## Illustration 6: The “fixed debt ratio” assumption

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- You have been asked to value a company that currently has the following cost of capital:  
Cost of capital = 10% (.9) + 4% (.1) = 9.4%
- a. You believe that the target debt ratio for this firm should be 30%.  
What will the cost of capital be at the target debt ratio?
  
- b. Which debt ratio (and cost of capital) should you use in valuing this company?

## 6.1: Cost of Capital and Debt Ratios SAP in 2005

Debt Ratio	Beta	Cost of Equity	Bond Rating	Interest rate on debt	Tax Rate	Cost of Debt (after-tax)	WACC	Firm Value (G)
0%	1.25	8.72%	AAA	3.76%	36.54%	2.39%	8.72%	\$39,088
10%	1.34	9.09%	AAA	3.76%	36.54%	2.39%	8.42%	\$41,480
20%	1.45	9.56%	A	4.26%	36.54%	2.70%	8.19%	\$43,567
30%	1.59	10.16%	A-	4.41%	36.54%	2.80%	7.95%	\$45,900
40%	1.78	10.96%	CCC	11.41%	36.54%	7.24%	9.47%	\$34,043
50%	2.22	12.85%	C	15.41%	22.08%	12.01%	12.43%	\$22,444
60%	2.78	15.21%	C	15.41%	18.40%	12.58%	13.63%	\$19,650
70%	3.70	19.15%	C	15.41%	15.77%	12.98%	14.83%	\$17,444
80%	5.55	27.01%	C	15.41%	13.80%	13.28%	16.03%	\$15,658
90%	11.11	50.62%	C	15.41%	12.26%	13.52%	17.23%	\$14,181

## 6.2: Changing Debt Ratios and Costs of Capital over time - Sirius

Year	Beta	Cost of Equity	Cost of Debt	Tax Rate	After-tax cost of debt	Debt Ratio	Cost of Capital
Current	1.80	11.70%	7.50%	0.00%	7.50%	6.23%	11.44%
1	1.80	11.70%	7.50%	0.00%	7.50%	6.23%	11.44%
2	1.80	11.70%	7.50%	0.00%	7.50%	6.23%	11.44%
3	1.80	11.70%	7.50%	0.00%	7.50%	6.23%	11.44%
4	1.80	11.70%	7.50%	0.00%	7.50%	6.23%	11.44%
5	1.80	11.70%	7.50%	0.00%	7.50%	6.23%	11.44%
6	1.64	11.06%	7.00%	0.00%	7.00%	9.99%	10.65%
7	1.48	10.42%	6.88%	0.00%	6.88%	13.74%	9.93%
8	1.32	9.78%	6.67%	0.00%	6.67%	17.49%	9.24%
9	1.16	9.14%	6.25%	28.05%	4.50%	21.25%	8.15%
10	1.00	8.50%	5.00%	35.00%	3.25%	25.00%	7.19%

## Illustration 7: The Terminal Value

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- The best way to compute terminal value is to
  - Use a stable growth model and assume cash flows grow at a fixed rate forever
  - Use a multiple of EBITDA or revenues in the terminal year
  - Use the estimated liquidation value of the assets

You have been asked to value a business. The business expects to \$ 120 million in after-tax earnings (and cash flow) next year and to continue generating these earnings in perpetuity. The firm is all equity funded and the cost of equity is 10%; the riskfree rate is 4% and the ERP is 5%. What is the value of the business?

## 7.1: Limits to stable growth..

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- Assume now that you were told that the firm can grow earnings at 2% a year forever. Estimate the value of the business.
- Now what if you were told that the firm can grow its earnings at 4% a year forever?
- What if the growth rate were 6% a year forever?

## 7.2: And reinvestment to go with growth...

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- To grow, a company has to reinvest. How much it will have to reinvest depends in large part on how fast it wants to grow and what type of return it expects to earn on the reinvestment.
  - $\text{Reinvestment rate} = \text{Growth Rate} / \text{Return on Capital}$
- Assume in the previous example that you were told that the return on capital was 10%. Estimate the reinvestment rate and the value of the business (with a 2% growth rate).
  
- What about with a 4% growth rate?

## 7.3: Terminal Value and “involuntary” reinvestment assumptions

- An analyst has estimated three years of free cash flows to the firm (with earnings growing 10% a year) and a terminal value at the end of three years (using a cost of capital):

Year	Current	1	2	3
Growth rate		10%	10%	10%
Revenues	\$100.00	\$110.00	\$121.00	\$133.10
EBIT (1-t)	\$30.00	\$33.00	\$36.30	\$39.93
- Net Cap Ex	\$12.00	\$13.20	\$14.52	\$15.97
- Chg in WC	\$3.00	\$3.30	\$3.63	\$3.99
FCFF	\$15.00	\$16.50	\$18.15	\$19.97

Terminal value at end of year 3 =  $19.97 / (.10 - .03) = \$ 285$

Value today =  $16.5 / 1.1 + 18.15 / 1.1^2 + (19.97 + 285) / 1.1^3 = \$ 259$

- He is puzzled about why the value that he is getting for the company is so low (since he feels he is being realistic about his cash flow estimates, and is confident about his growth rate and cost of capital calculations)

## 8. From firm value to equity value: The Garnishing Effect...

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- For a firm with consolidated financial statements, you have discounted free cashflows to the firm at the cost of capital to arrive at a firm value of \$ 100 million. The firm has
  - A cash balance of \$ 15 million
  - Debt outstanding of \$ 20 million
  - A 5% holding in another company: the book value of this holding is \$ 5 million. (Market value of equity in this company is \$ 200 million)
  - Minority interests of \$ 10 million on the balance sheet
- What is the value of equity in this firm?
  
- How would your answer change if you knew that the firm was the target of a lawsuit it is likely to win but where the potential payout could be \$ 100 million if it loses?

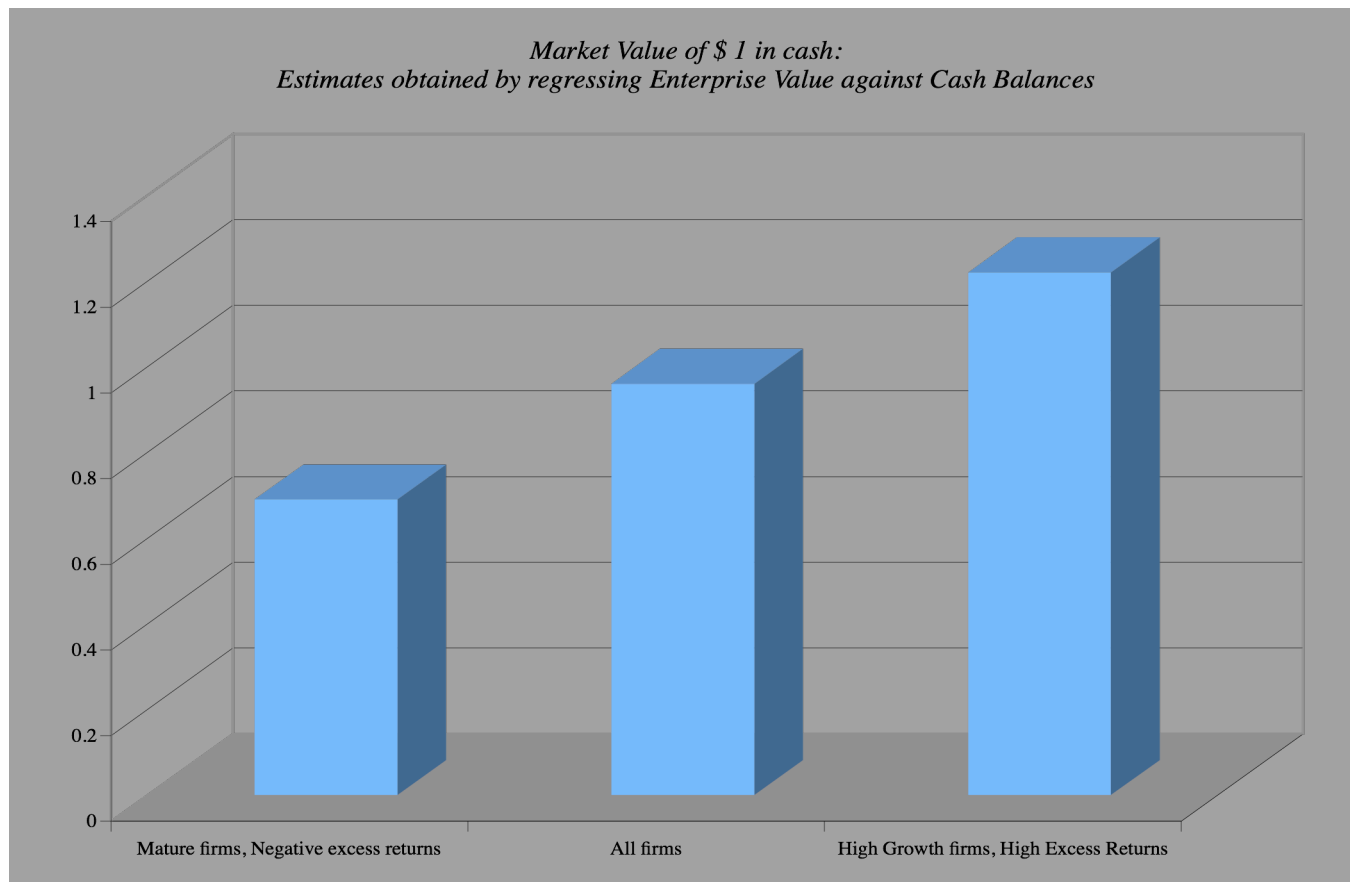


## 8.1: A discount for cash...

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- The cash is invested in treasury bills, earning 3% a year. The cost of capital for the firm is 8% and its return on capital is 10%. An argument has been made that cash is a sub-optimal investment for the firm and should be discounted. Do you agree?
- Yes
- No
- If yes, what are the logical implications of firms paying dividends or buying back stock?
- If no, are there circumstances under which you would discount cash? How about attaching a premium?

# Cash: Differences across companies



## 8.2: Valuing Cross Holdings

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- In a perfect world, we would strip the parent company from its subsidiaries and value each one separately. The value of the combined firm will be
  - Value of parent company + Proportion of value of each subsidiary
- To do this right, you will need to be provided detailed information on each subsidiary to estimated cash flows and discount rates.
- With limited on unreliable information, you can try one of these approximations:
  - The market value solution: When the subsidiaries are publicly traded, you could use their traded market capitalizations to estimate the values of the cross holdings. You do risk carrying into your valuation any mistakes that the market may be making in valuation.
  - The relative value solution: When there are too many cross holdings to value separately or when there is insufficient information provided on cross holdings, you can convert the book values of holdings that you have on the balance sheet (for both minority holdings and minority interests in majority holdings) by using the average price to book value ratio of the sector in which the subsidiaries operate.

## 8.3: Be expansive in your definition of debt

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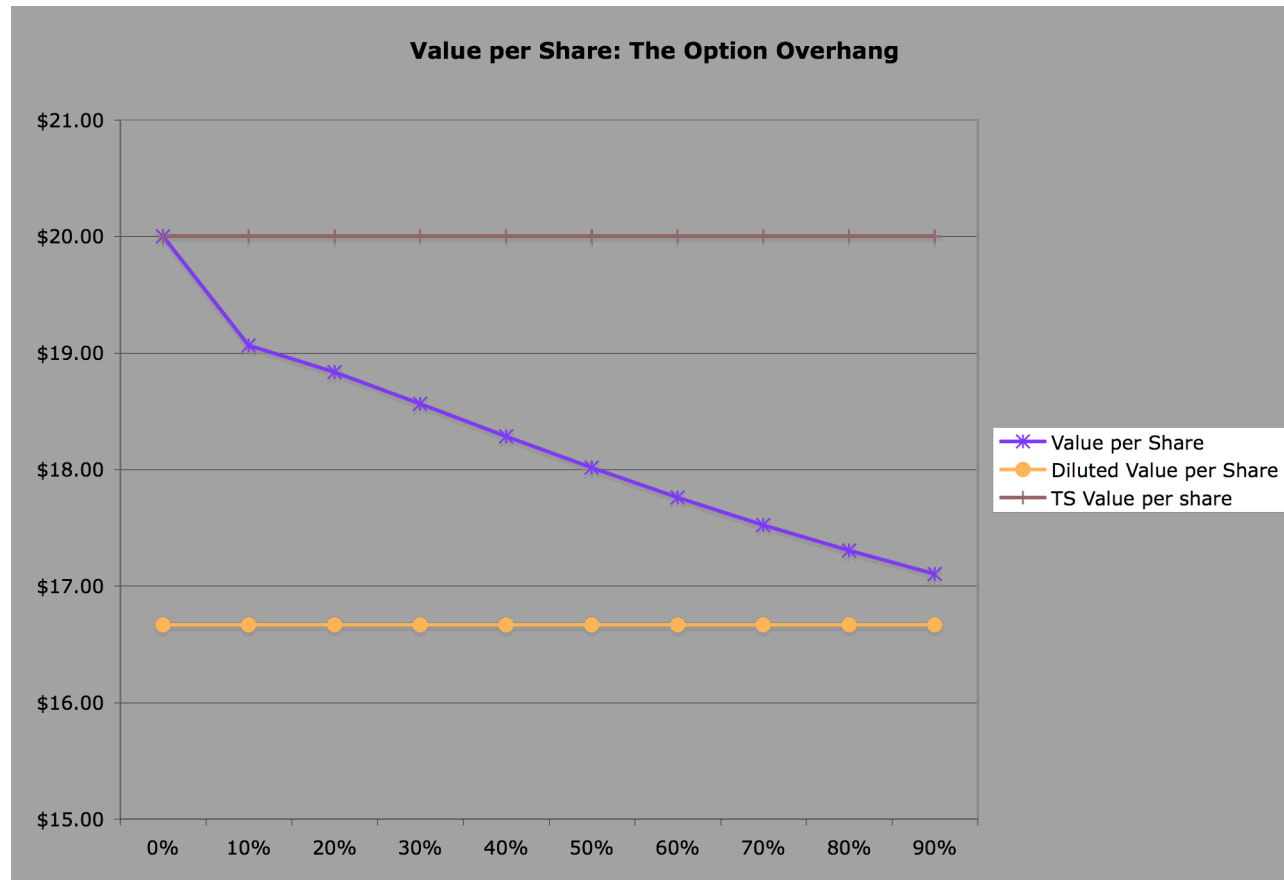
- In addition to counting all of the debt that you consider in computing cost of capital, you should consider the following:
  - If you have under funded pension fund or health care plans, you should consider the under funding at this stage in getting to the value of equity.
    - If you do so, you should not double count by also including a cash flow line item reflecting cash you would need to set aside to meet the unfunded obligation.
    - You should not be counting these items as debt in your cost of capital calculations....
  - If you have contingent liabilities - for example, a potential liability from a lawsuit that has not been decided - you should consider the expected value of these contingent liabilities
    - Value of contingent liability = Probability that the liability will occur \*  
Expected value of liability

## 9. From equity value to equity value per share

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- You have valued the equity in a firm at \$ 200 million. Estimate the value of equity per share if there are 10 million shares outstanding..
- How would your answer change if you were told that there are 2 million employee options outstanding, with a strike price of \$ 20 a share and 5 years left to expiration?

# Value per share... as a function of stock price volatility and option maturity



# 10. The final circle of hell...

**Exhibit 8**  
KENNECOTT COPPER CORPORATION  
PROJECTED CARBORUNDUM COMPANY FINANCIAL DATA ADJUSTED TO REFLECT THE ACQUISITION OF CARBORUNDUM BY KENNECOTT  
AT A PRICE OF \$66 PER SHARE, 1977-1987  
(\$ millions except for per share and ratio data)

	1977	1977		1978	1979	1980	1981	1982	1983	1984	1985	1986	1987
	Unadjusted	Adjustments	Adjusted										
<b>Income statement</b>													
Sales	\$717.6		\$790.1	\$885.9	\$1,005.2	\$1,120.9	\$1,265.5	\$1,392.1	\$1,531.3	\$1,684.4	\$1,852.8	\$2,038.1	
Net income (before adjustments)	38.4		43.1	50.7	60.1	70.6	84.7	93.2	102.5	112.7	124.0	136.4	
Interest adjustments	0		6.5	7.8	8.5	9.2	9.8	10.7	11.7	12.8	14.0	15.4	
Goodwill adjustments	0		2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	
Plant write-up adjustments	0		2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	
Net income (after adjustments)	\$38.4		\$51.8	\$58.1	\$66.8	\$76.6	\$87.1	\$97.7	\$108.0	\$118.5	\$129.0	\$139.6	
<b>Balance sheet</b>													
Working capital	\$198.8	+ 37.0 + 100.0 - 140.0	\$195.8	\$202.9	\$223.0	\$248.1	\$274.2	\$302.8	\$329.3	\$358.6	\$390.7	\$426.1	\$465.0
Property, plant, and equipment	181.8	+ 124.0	305.8	334.2	367.4	384.6	400.1	411.6	437.5	466.6	499.1	535.6	576.1
Goodwill	0	+ 80.0	80.0	78.0	76.0	74.0	72.0	70.0	68.0	66.0	64.0	62.0	60.0
Total assets	584.3	+ 201.0	785.3	824.0	889.9	948.4	1,007.0	1,065.8	1,135.5	1,213.1	1,299.0	1,394.6	1,500.3
Long-term debt	86.2	+ 100.0	186.2	220.9	238.8	252.9	266.8	280.1	297.7	317.5	339.4	363.9	391.0
Shareholders' equity	309.0	+ 101.0	410.0	410.1	443.5	469.7	495.4	520.2	553.0	589.6	630.3	675.7	726.0
Total capital	395.2	+ 201.0	596.2	651.0	682.3	722.6	762.2	800.3	850.7	907.1	969.7	1,039.6	1,117.0
<b>Capital sources</b>													
Profit retentions	\$ 0.1	\$33.4	\$26.2	\$25.7	\$24.8	\$23.8	\$22.8	\$21.8	\$20.8	\$19.8	\$18.8	\$17.8	\$16.8
Capital contributed by Kennecott	—	—	—	—	—	—	—	—	—	—	—	—	—
Debt financing (net)	34.7	17.9	14.1	13.9	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3	13.3
Total capital added	\$34.8	\$51.3	\$40.3	\$39.6	\$38.1	\$37.1	\$36.1	\$35.1	\$34.1	\$33.1	\$32.1	\$31.1	\$30.1
<b>Key financial ratios</b>													
Growth rate in sales (%)	16.9		10.1	12.1	13.5	12.4	12.0	10.0	10.0	10.0	10.0	10.0	10.0
Sales/assets	1.23		0.96	1.00	1.06	1.12	1.19	1.23	1.26	1.30	1.35	1.36	
Profit/sales	0.054		0.040	0.043	0.047	0.050	0.055	0.056	0.056	0.056	0.056	0.057	0.057
Assets/net worth	1.89		2.01	2.01	2.02	2.05	2.05	2.05	2.06	2.06	2.06	2.07	2.07
Profit/net worth	0.124		0.078	0.086	0.100	0.114	0.135	0.141	0.146	0.151	0.156	0.160	
<b>Cash flow to Kennecott</b>													
Acquisition of Carborundum			\$(550.0)										
Dividends to Kennecott			140.0	\$31.7	\$ 4.7	\$20.6	\$30.9	\$45.3	\$44.9	\$49.4	\$54.4	\$59.8	\$ 65.9
Utilization of Kennecott tax loss carryforwards			—	20.0	20.0	—	—	—	—	—	—	—	—
Tax shelter from plant write-up adj.			—	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8	2.8
Terminal value at 10 times earnings			—	—	—	—	—	—	—	—	—	—	—
Net cash flow			\$(410.0)	\$54.5	\$27.5	\$23.4	\$33.7	\$48.1	\$47.7	\$52.2	\$57.2	\$62.6	\$113.6
<b>Assumptions:</b>													
* Kennecott would pay \$550 million to acquire Carborundum's equity which had a book value of \$309 million. The \$241 million in excess of purchase price over book value of assets acquired would be allocated as follows: (a) \$17.0 million would be added to inventory to reflect the replacement cost of inventories; (b) \$11.0 million would be added to land to reflect the market value of land; (c) \$113 million would be added to net plant and equipment to reflect the depreciated replacement cost of plant and equipment; and (d) \$90 million would be added to goodwill. Immediately following the acquisition of Carborundum, Carborundum borrows \$100 million and then pays a \$140 million dividend to Kennecott. This dividend is financed with the \$100 million plus \$40 million of Carborundum's excess cash.													
† Interest at the rate of 10% (5% after taxes) is paid on the difference between the amount of Carborundum debt outstanding in Exhibit 8 and the amount of debt assumed to be outstanding in Exhibit 5. In Exhibit 8, it is assumed that Carborundum's debt is amortized over 40 years. This expense is not tax-deductible.													
‡ The \$80 million of goodwill created as a result of the acquisition is amortized over a 20-year life, providing a reduction in profit after taxes and an increase in cash flow equal to $(\$113/20) \times .5$ . It is assumed that this added cash flow is paid to Kennecott as dividends.													
§ Dividends to Kennecott equal the difference between Carborundum's net profit (after adjustments) and the profit retention requirements needed to support Carborundum's growth.													
The utilization of \$40 million of tax loss carry-forwards and investment tax credit carryforwards available to Kennecott are assumed to be utilized as a result of the Carborundum acquisition and that these would expire unutilized without the acquisition.													
¶ Carborundum is assumed to be sold at the end of ten years at a price equal to ten times earnings. The proceeds from this sale, \$1,162 million, are reduced by \$117.1 million as a result of taxes on the capital gain of \$1,162-\$736. Carborundum's net worth at 12/31/87 is assumed to be \$726 million.													
Sources: Exhibit 5 and casewriter projections.													

	Cost of Equity	Cost of Capital
Kennecott Corp (Acquirer)	13.0%	10.5%
Carborandum (Target)	16.5%	12.5%

## Some closing thoughts on valuation...

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- View “paradigm shifts” with skepticism.
- Focus on the big picture; don’t let the details trip you up.
- Keep your perspective; it is only a valuation.
- If you have to choose between valuation skills and luck....