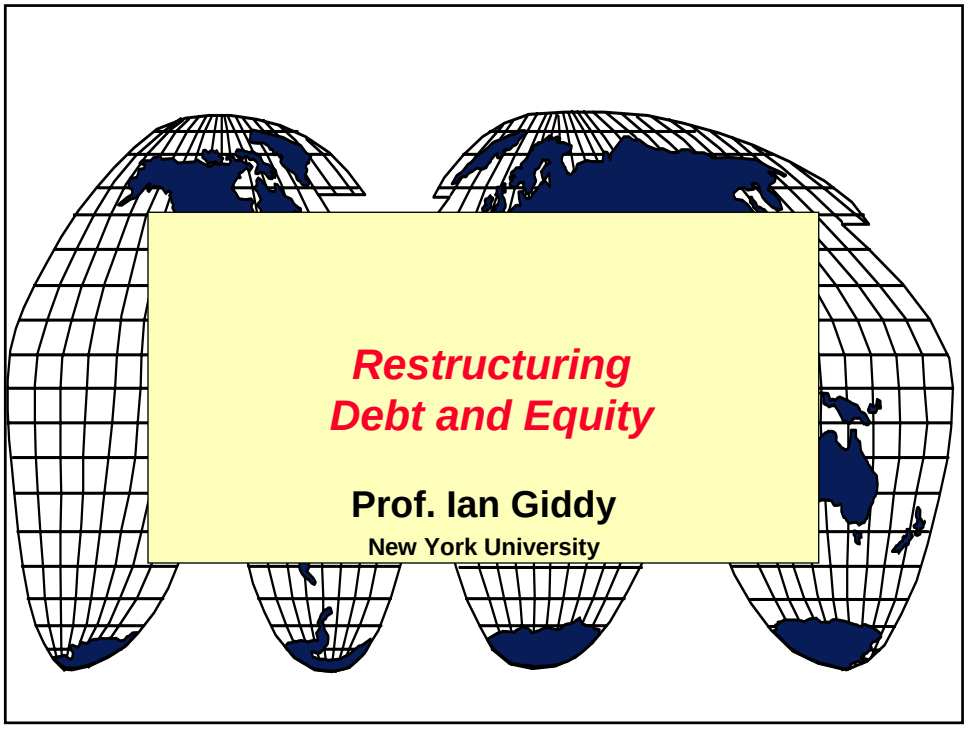
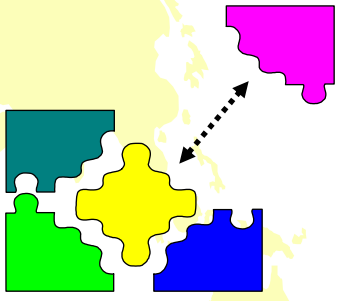


Corporate Financial Restructuring

- Corporate restructuring – business and financial
- Structured financing techniques
- Distress-induced restructuring
- Mergers, divestitures and LBOs



Restructuring Debt and Equity

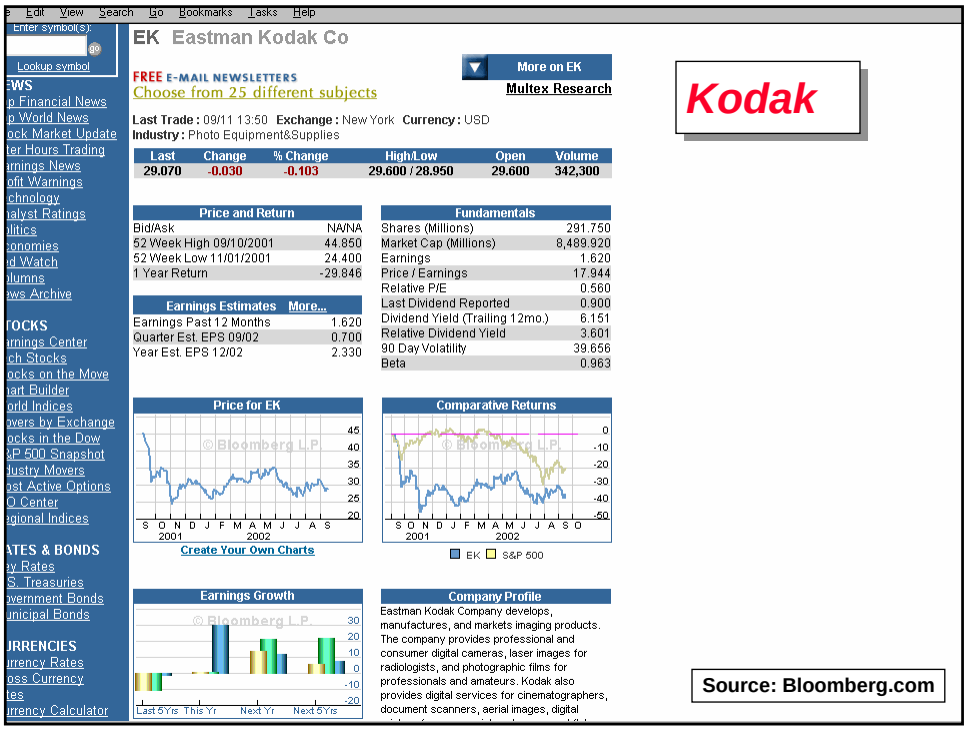
- Corporate financing choices: debt versus equity (illustrations: Kodak, Merck, etc)
- Evaluating financial structure choices:
  - Estimating the cost of debt
  - Estimating the cost of equity
  - Finding optimal level (SAP case)
- Argus case
- TDI case

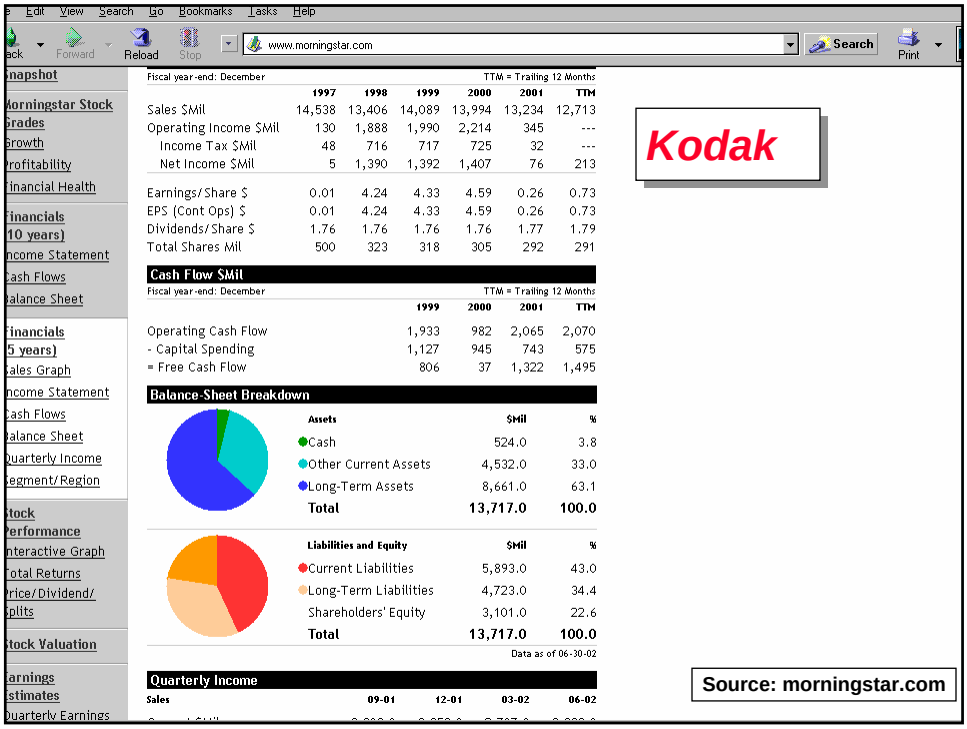
Case Studies

- SAP (optimizing the capital structure)
- Argus (application to a private firm)
- TDI (sequence of financial and operational restructuring efforts)

Restructuring Debt and Equity

- Corporate financing choices: debt versus equity (illustrations: Kodak, Merck, Nokia, ABB, TDI)
- Evaluating financial structure choices
  - ◆Estimating the cost capital
  - ◆Finding the right capital structure





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Segment/Region
Stock Performance
Interactive Graph
Total Returns
Price/Dividend/Splits
Stock Valuation
Earnings Estimates
Quarterly Earnings

Fiscal year-end: December — TTM = Trailing 12 Months

	1997	1998	1999	2000	2001	TTM
Sales $Mil	14,538	13,406	14,089	13,994	13,234	12,713
Operating Income $Mil	130	1,888	1,990	2,214	345	---
Income Tax $Mil	48	716	717	725	32	---
Net Income $Mil	5	1,390	1,392	1,407	76	213
Earnings/Share $	0.01	4.24	4.33	4.59	0.26	0.73
EPS (Cont Ops) $	0.01	4.24	4.33	4.59	0.26	0.73
Dividends/Share $	1.76	1.76	1.76	1.76	1.77	1.79
Total Shares Mil	500	323	318	305	292	291

Cash Flow $Mil

Fiscal year-end: December — TTM = Trailing 12 Months

	1999	2000	2001	TTM
Operating Cash Flow	1,933	982	2,065	2,070
- Capital Spending	1,127	945	743	575
= Free Cash Flow	806	37	1,322	1,495

Balance-Sheet Breakdown

Assets	$Mil	%
Cash	524.0	3.8
Other Current Assets	4,532.0	33.0
Long-Term Assets	8,661.0	63.1
Total	**13,717.0**	**100.0**

Liabilities and Equity	$Mil	%
Current Liabilities	5,893.0	43.0
Long-Term Liabilities	4,723.0	34.4
Shareholders' Equity	3,101.0	22.6
Total	**13,717.0**	**100.0**

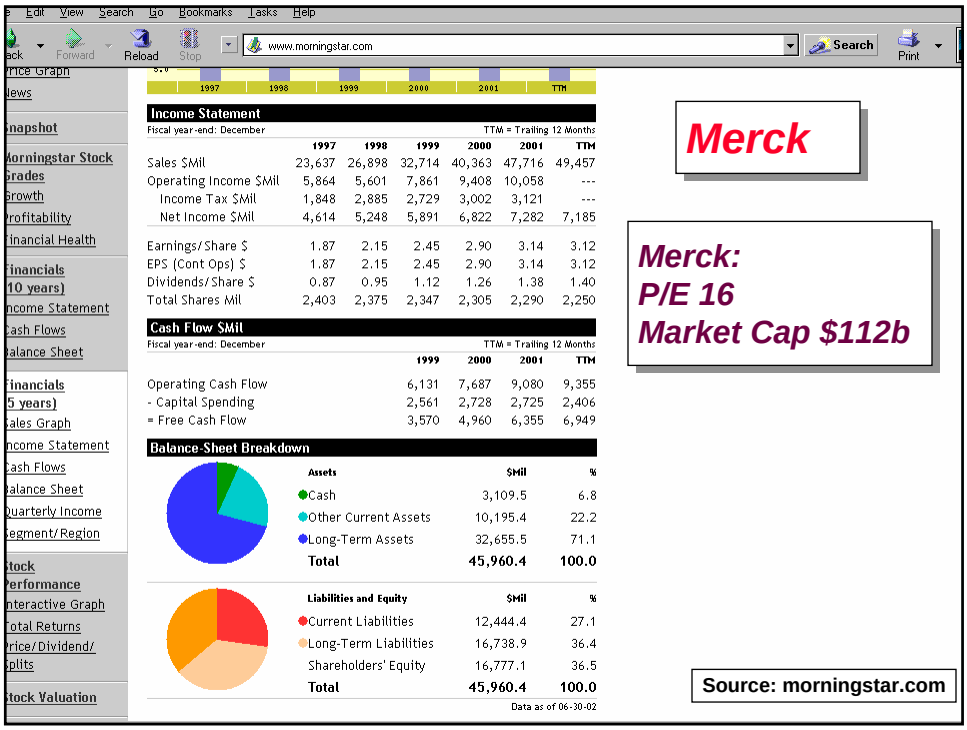
Data as of 06-30-02

Quarterly Income

Sales	09-01	12-01	03-02	06-02

Kodak

Source: morningstar.com



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Growth
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Financial Health
Financials (10 years)
Income Statement
Cash Flows
Balance Sheet
Financials (5 years)
Sales Graph
Income Statement
Cash Flows
Balance Sheet
Quarterly Income
Segment/Region
Stock Performance
Interactive Graph
Total Returns
Price/Dividend/Splits
Stock Valuation

1997 1998 1999 2000 2001 TTM

Income Statement

Fiscal year-end: December — TTM = Trailing 12 Months

	1997	1998	1999	2000	2001	TTM
Sales $Mil	23,637	26,898	32,714	40,363	47,716	49,457
Operating Income $Mil	5,864	5,601	7,861	9,408	10,058	---
Income Tax $Mil	1,848	2,885	2,729	3,002	3,121	---
Net Income $Mil	4,614	5,248	5,891	6,822	7,282	7,185
Earnings/Share $	1.87	2.15	2.45	2.90	3.14	3.12
EPS (Cont Ops) $	1.87	2.15	2.45	2.90	3.14	3.12
Dividends/Share $	0.87	0.95	1.12	1.26	1.38	1.40
Total Shares Mil	2,403	2,375	2,347	2,305	2,290	2,250

Cash Flow $Mil

Fiscal year-end: December — TTM = Trailing 12 Months

	1999	2000	2001	TTM
Operating Cash Flow	6,131	7,687	9,080	9,355
- Capital Spending	2,561	2,728	2,725	2,406
= Free Cash Flow	3,570	4,960	6,355	6,949

Balance-Sheet Breakdown

Assets	$Mil	%
Cash	3,109.5	6.8
Other Current Assets	10,195.4	22.2
Long-Term Assets	32,655.5	71.1
Total	**45,960.4**	**100.0**

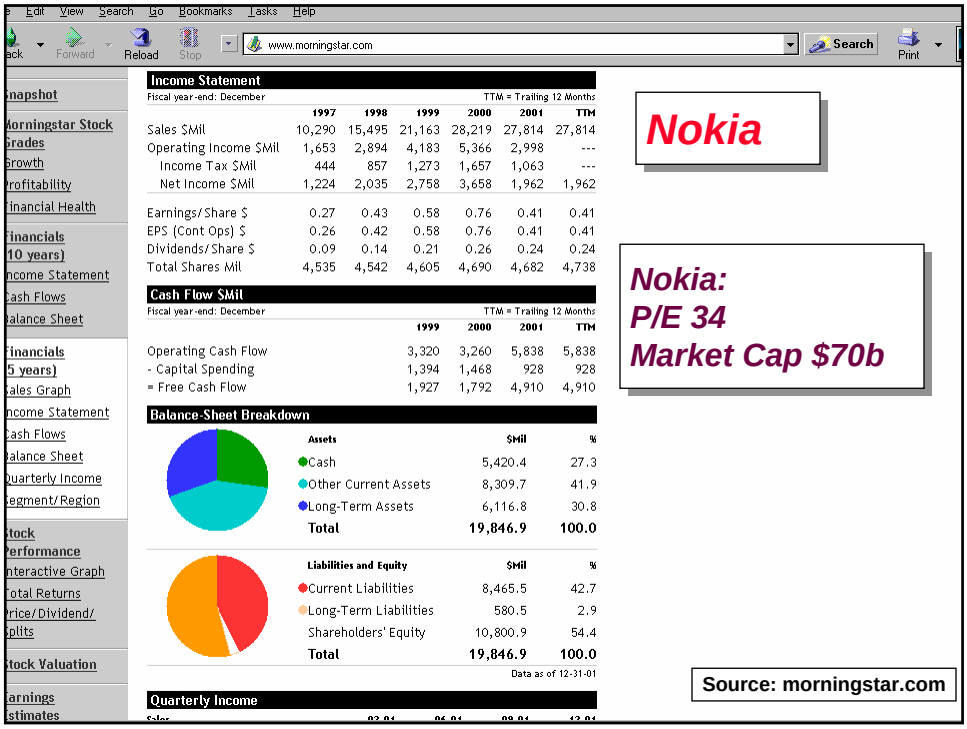
Liabilities and Equity	$Mil	%
Current Liabilities	12,444.4	27.1
Long-Term Liabilities	16,738.9	36.4
Shareholders' Equity	16,777.1	36.5
Total	**45,960.4**	**100.0**

Data as of 06-30-02

Merck

Merck:
P/E 16
Market Cap $112b

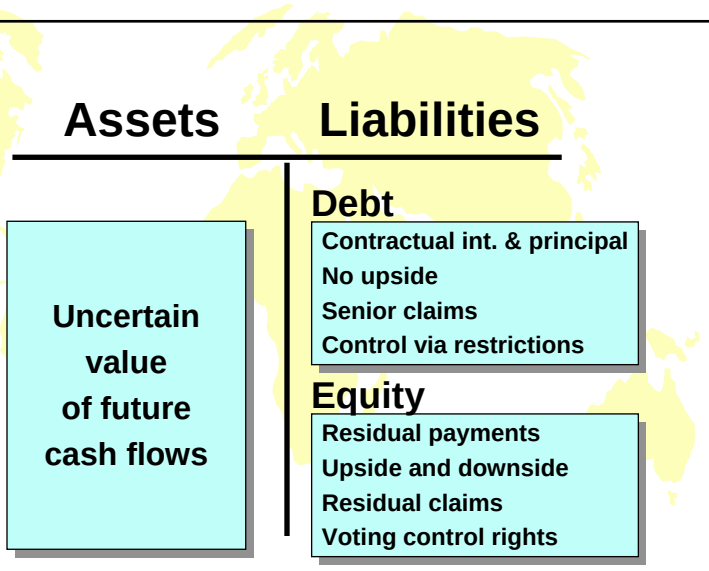
Source: morningstar.com



Measuring the Cost of Capital

- *Cost of funding equal return that investors expect*
- *Expected returns depend on the risks investors face (risk must be taken in context)*
- *Cost of capital*
  - *Cost of equity*
  - *Cost of debt*
  - *Weighted average (WACC)*

Equity versus Bond Risk



Let's Start With the Cost of Debt

- The cost of debt is the market interest rate that the firm has to pay on its borrowing. It will depend upon three components-
  - (a) The general level of interest rates
  - (b) The default premium
  - (c) The firm's tax rate

What the Cost of Debt Is and Is Not…

The cost of debt is

- the rate at which the company can borrow at today
- corrected for the tax benefit it gets for interest payments.

Cost of debt =
k_d = LT Borrowing Rate(1 - Tax rate)

The cost of debt is not

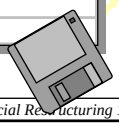
- the interest rate at which the company obtained the debt it has on its books.

Estimating the Cost of Debt

- If the firm has bonds outstanding, and the bonds are traded, the yield to maturity on a long-term, straight (no special features) bond can be used as the interest rate.
- If the firm is rated, use the rating and a typical default spread on bonds with that rating to estimate the cost of debt.
- If the firm is not rated,
  - and it has recently borrowed long term from a bank, use the interest rate on the borrowing or
  - estimate a synthetic rating for the company, and use the synthetic rating to arrive at a default spread and a cost of debt
- The cost of debt has to be estimated in the same currency as the cost of equity and the cash flows in the valuation.

Ratings and Spreads

Corporate bond spreads: basis points over Treasury curve							
Rating	1 year	2 year	5 year	10 year	30 year	Typical Int Coverage R	
Aaa/AAA	40	45	60	85	96	>8.50	
Aa1/AA+	45	55	70	95	106	6.50-8.50	
Aa2/AA	55	60	75	105	116	6.50-8.50	
Aa3/AA-	60	65	85	117	136	6.50-8.50	
A1/A+	70	80	105	142	159	5.50-6.50	
A2/A	80	90	120	157	179	4.25-5.50	
A3/A-	90	100	130	176	196	3.00-4.25	
Baa1/BBB	105	115	145	186	208	2.50-3.00	
Baa2/BBB	120	130	160	201	221	2.50-3.00	
Baa3/BBB	140	145	172	210	232	2.50-3.00	
Ba1/BB+	225	250	300	350	440	2.00-2.50	
Ba2/BB	250	275	325	385	540	2.00-2.50	
Ba3/BB-	300	350	425	460	665	2.00-2.50	
B1/B+	375	400	500	610	765	1.75-2.00	
B2/B	450	500	625	710	890	1.50-1.75	
B3/B-	500	550	750	975	1075	1.25-1.50	
Caa/CCC	600	650	900	1150	1300	0.80-1.25	



Other Factors Affecting Ratios
Medians of Key Ratios : 1993-1995

	AAA	*AA*	*A*	*BBB*	*BB*	*B*	*CCC*
Pretax Interest Coverage	13.50	9.67	5.76	3.94	2.14	1.51	0.96
EBITDA Interest Coverage	17.08	12.80	8.18	6.00	3.49	2.45	1.51
Funds from Operations / Total Debt (%)	98.2%	69.1%	45.5%	33.3%	17.7%	11.2%	6.7%
Free Operating Cashflow/ Total Debt (%)	60.0%	26.8%	20.9%	7.2%	1.4%	1.2%	0.96%
Pretax Return on Permanent Capital (%)	29.3%	21.4%	19.1%	13.9%	12.0%	7.6%	5.2%
Operating Income/Sales (%)	22.6%	17.8%	15.7%	13.5%	13.5%	12.5%	12.2%
Long Term Debt/ Capital	13.3%	21.1%	31.6%	42.7%	55.6%	62.2%	69.5%
Total Debt/Capitalization	25.9%	33.6%	39.7%	47.8%	59.4%	67.4%	69.1%

IBM's Cost of Debt

IBM					
Cost of Capital		Cost	Amount	Weight
Debt				
	10-year bond yield	4.95%		
	Tax rate	29%		
	After-tax cost	3.5%	61.9	31%

The Cost of Equity

Equity is not free!

Expected return = Risk-free rate + Risk Premium

$$E(R_{Risky}) = R_{Risk\text{-}free} \text{ -+ Risk Premium}$$

The Cost of Equity

- Standard approach to estimating cost of equity:
  Cost of Equity = R_f + Equity Beta * (E(R_m) - R_f)

where,

R_f = Riskfree rate

E(R_m) = Expected Return on the Market Index (Diversified Portfolio)

- In practice,
  - Long term government bond rates are used as risk free rates
  - Historical risk premiums are used for the risk premium
  - Betas are estimated by regressing stock returns against market returns

•Equity Betas and Leverage

- **The beta of equity alone can be written as a function of the unlevered beta and the debt-equity ratio**

$$\beta_L = \beta_u (1+ ((1-t)D/E)$$

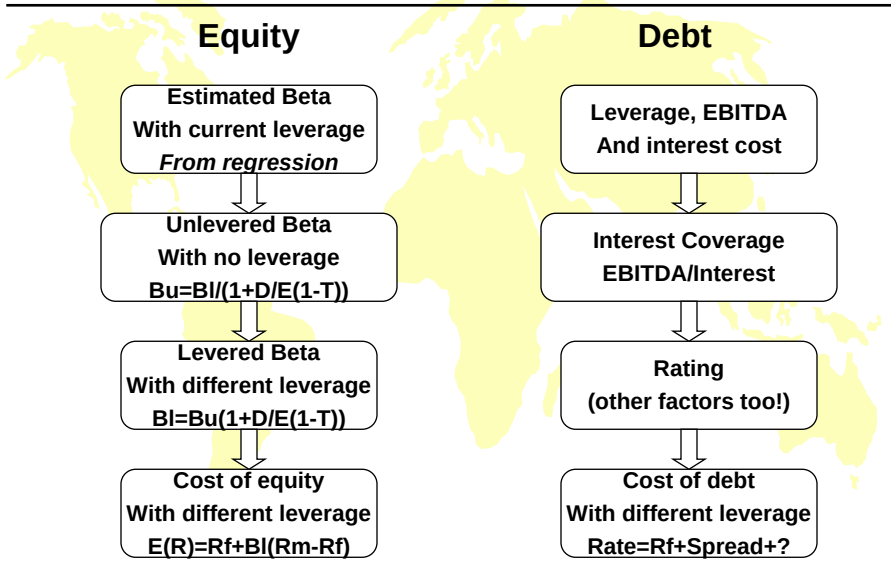
where

β_L = Levered or Equity Beta
β_u = Unlevered Beta
t = Corporate marginal tax rate
D = Market Value of Debt
E = Market Value of Equity

- While this beta is estimated on the assumption that debt carries no market risk (and has a beta of zero), you can have a modified version:

$$\beta_L = \beta_u (1+ ((1-t)D/E) - \beta_{debt} (1-t) D/(D+E)$$

Cost of Capital and Leverage: Method



The Cost of Capital

Choice	***Cost***
1. Equity	Cost of equity
- Retained earnings	- depends upon riskiness of the stock
- New stock issues	- will be affected by level of interest rates
- Warrants	

Cost of equity = riskless rate + beta * risk premium

2. Debt	Cost of debt
- Bank borrowing	- depends upon default risk of the firm
- Bond issues	- will be affected by level of interest rates
	- provides a tax advantage because interest is tax-deductible

Cost of debt = Borrowing rate (1 - tax rate)

Debt + equity = Capital	Cost of capital = Weighted average of cost of equity and cost of debt; weights based upon market value.

Cost of capital = k_d [D/(D+E)] + k_e [E/(D+E)]

IBM's Cost of Debt

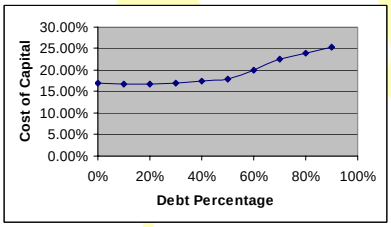
IBM					
	Cost of Capital		Cost	Amount	Weight
	Debt				
		10-year bond yield	4.95%		
		Tax rate	29%		
		After-tax cost	3.5%	61.9	31%
	Equity				
		Risk-free Treasury	4.50%		
		Beta	1.47		
		Market Risk Premium	5.50%		
		From CAPM	12.6%	137.4	69%
	Total		**9.77%**	199.3	
Source: IBMfinancing.xls					

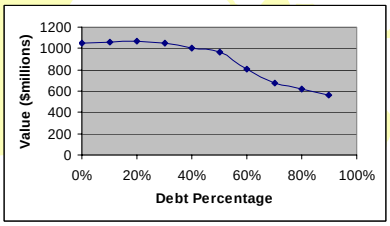
Next, Minimize the Cost of Capital by Changing the Financial Mix

- The first step in reducing the cost of capital is to change the mix of debt and equity used to finance the firm.
- Debt is always cheaper than equity, partly because it lenders bear less risk and partly because of the tax advantage associated with debt.
- But taking on debt increases the risk (and the cost) of both debt (by increasing the probability of bankruptcy) and equity (by making earnings to equity investors more volatile).
- The net effect will determine whether the cost of capital will increase or decrease if the firm takes on more or less debt.

Example: Optimal Debt Ratio

Debt Ratio	Beta	Cost of Equity	Bond Rating	Interest rate on debt	Tax Rate	Cost of Debt (after-tax)	WACC	Firm Value (G)
0%	0.68	16.95%	AAA	11.55%	33.45%	7.69%	16.95%	$1,046
10%	0.73	17.76%	AA	11.95%	33.45%	7.95%	16.78%	$1,064
20%	0.80	18.77%	A-	12.75%	33.45%	8.49%	16.71%	$1,071
30%	0.88	20.07%	B+	14.25%	33.45%	9.48%	16.90%	$1,052
40%	0.99	21.81%	B-	16.25%	33.45%	10.81%	17.41%	$1,001
50%	1.14	24.24%	CCC	17.25%	33.45%	11.48%	17.86%	$961
60%	1.44	29.16%	CC	18.75%	25.67%	13.94%	20.02%	$803
70%	1.95	37.29%	C	20.25%	20.38%	16.12%	22.47%	$674
80%	2.93	52.94%	C	20.25%	17.83%	16.64%	23.90%	$615
90%	5.86	99.87%	C	20.25%	15.85%	17.04%	25.32%	$565

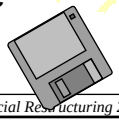




Case Study: SAP

Debt	Rating	Interest rate	Interest expense	Interest coverage ratio	Debt / capitalization	Debt/book equity
0	AAA	5.65%	11	138.76	1%	0.1
2500	AAA	5.65%	153	10.28	7%	0.7
5000	A	6.37%	331	4.73	14%	1.4
7500	A-	6.56%	505	3.10	21%	2.1
10000	B+	10.90%	1,112	1.41	27%	2.7

- Should SAP take on additional debt? If so, how much?
- What is the weighted average cost of capital before and after the additional debt?
- What will be the estimated price per share after the company takes on new debt?



SAP Debt, Dec 2001

€(000)	Term less than 1 year	Term between 1 and 5 years	Term more than 5 years	2001
Bank loans and overdrafts	458,266	79	0	458,345
Advanced payments received	34,213	0	0	34,213
Accounts payable	391,208	0	0	391,208
Taxes	160,288	0	0	160,288
Social security	38,439	0	0	38,439
Other liabilities	107,360	784	19,577	127,721
	1,189,774	**863**	**19,577**	**1,210,214**

Links

- **Useful Links**
  Company information: biz.yahoo.com/ifc
  Industry ratios: www.stern.nyu.edu/~adamodar
  Debt ratings and spreads: bondsonline.com

Application to a Private Firm: "Argus"

1. The company is in the advertising and public relations business. It is privately owned, but the other major competitors are publicly traded.
2. It has grown rapidly but growth is leveling off
3. What percentage of debt financing makes sense to this company?

Analyzing a Private Firm

- The approach remains the same with important caveats
  - ◆It is more difficult estimating firm value, since the equity and the debt of private firms do not trade; we use comparables
  - ◆Most private firms are not rated; we have to estimate a rating
  - ◆If the cost of equity is based upon the market beta, it is possible that we might be underestimating the cost of equity, since private firm owners often consider <u>all</u> risk.

Estimating the Optimal Debt Ratio for Argus

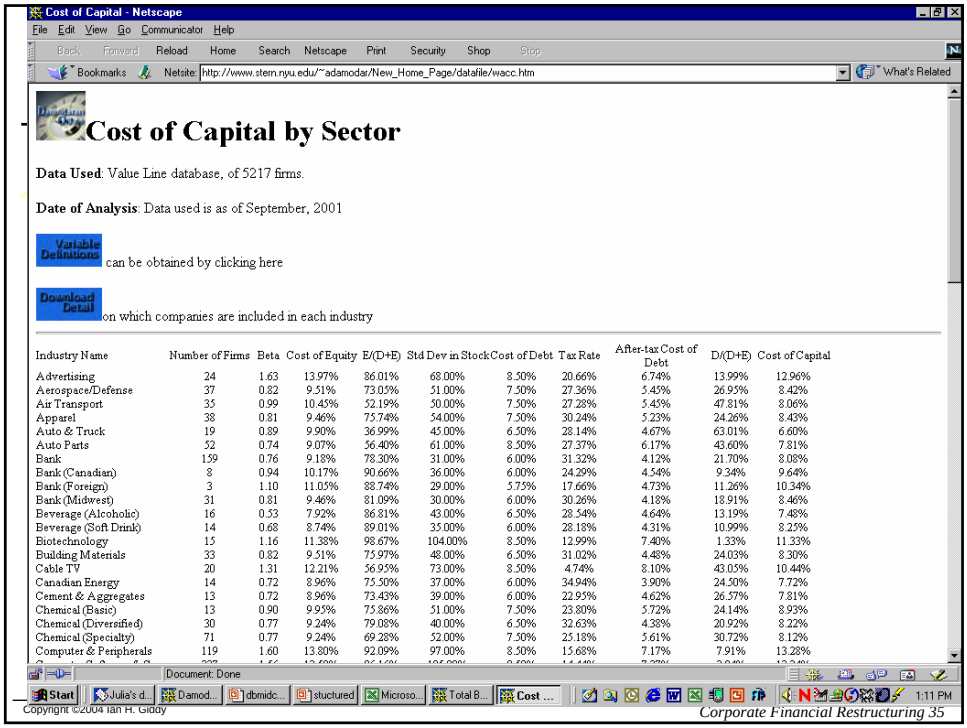
- Adjusted EBIT = EBIT + Operating Lease Expenses
  = EUR 2,000,000 + EUR 500,000 = EUR 2,500,000
- While Argus has no debt outstanding, the present value of the operating lease expenses of EUR 3.36 million is considered as debt.
- To estimate the market value of equity, we use a multiple of 22.41 times of net income. This multiple is the average multiple at which comparable firms which are publicly traded are valued.

Estimated Market Value of Equity = Net Income * Average PE
= 1,160,000* 22.41 = 26,000,000

- The interest rates at different levels of debt will be estimated based upon a "synthetic" bond rating. This rating will be assessed using interest coverage ratios for small firms which are rated by S&P.

Interest Coverage Ratios, Spreads and Ratings: Small Firms

Int. Coverage Ratio	*Rating*	*Spread over T Bond Rate*
> 12.5	AAA	0.20%
9.50-12.50	AA	0.50%
7.5 - 9.5	A+	0.80%
6.0 - 7.5	A	1.00%
4.5 - 6.0	A-	1.25%
3.5 - 4.5	BBB	1.50%
3.0 - 3.5	BB	2.00%
2.5 - 3.0	B+	2.50%
2.0 - 2.5	B	3.25%
1.5 - 2.0	B-	4.25%
1.25 - 1.5	CCC	5.00%
0.8 - 1.25	CC	6.00%
0.5 - 0.8	C	7.50%
< 0.5	D	10.00%



Valuing a Firm from Different Risk Perspectives

Firm is assumed to have a cash flow of 100 each year forever.

Investor Type		***Cares about***	*Risk Measure*	*Cost of Equity*	***Firm Value***
Private Business: Owner has all his wealth invested in the business	Project Risk Competitive Risk Sector Risk Int'nl Risk Market Risk	Total Risk	Standard Deviation	40%	100/.4=250
Venture Capitalist: Has wealth invested in a number of companies in one sector	Sector Risk Int'nl Risk Market Risk	Risk added to sector portfolio	Beta relative to sector	25%	100/.25=400
Publicly traded company with investors who are diversified domestically or IPO to investors who are domestically diversified	Int'nl Risk Market Risk	Risk added to domestic portfolio	Beta relative to local index	15%	100/.15=667
Publicly traded company with investors who are diverisified globally or IPO to global investors	Market Risk	Risk added to global portfolio	Beta relative to global index	10%	100/.10=1000

Cost of Capital for a Private Company: Example

Cost of capital for a private firm - spreadsheet						
	Comparable Companies					
		Firm 1	Firm 2	Firm 3	Average	
DATA	Market value of equity	200	200	300		*Input cells are in yello*
	Market (or book) value of debt	100	200	200		
	Tax rate	40%	35%	38%		
	Equity beta	1.45	1.90	1.70		
RESULT	1+ (1-T)D/E	1.30	1.65	1.41		
	Unlevered equity beta	1.12	1.15	1.20	1.16	
	Private Company					
DATA	% Debt	20%				
	% Equity	80%	Estimate value of equity from P/E of comparables			
	Tax rate	40%				
RESULT	1+ (1-T)D/E	1.15				
	Multiply unlevered project beta	1.16	= average of unlevered equity betas of comparable firr			
	Company equity beta	1.33				
DATA	Risk-free rate	6.00%	= yield on long-term Treasury bonds			
	Market risk premium	7.50%	= historical average excess return of S&P 500 over Treasury bonds from 1927-1998.			
RESULT	Company equity beta	1.33				
	Multiply by market risk premium	7.50%				
	Equity risk premium	9.98%				
	Plus risk-free rate	6.00%				
	Cost of equity	15.98%				
Note: The estimate of the market risk premium is the arithmetic average from 1927-1998, based on the Ibbotson Associates "Stocks, Bonds, Bills and Inflation" data.						
DATA	Cost of debt	13.0%	from estimated rating from ebitda			
RESULT				Weighted		
			Weights	Cost		
	After-tax cost of debt	7.8%	20.0%	1.6%		
	Cost of equity	16.0%	80.0%	12.8%		
	Weighted average cost of capital			14.3%		

Optimal Debt Ratio for a Private Company: Example

Debt Ratio	Beta	Cost of Equity	Bond Rating	Interest Rate	AT Cost of Debt	Cost of Capital	Firm Value
0%	1.03	12.65%	AA	7.50%	4.35%	12.65%	$26,781
10%	1.09	13.01%	AA	7.50%	4.35%	12.15%	$29,112
20%	1.18	13.47%	BBB	8.50%	4.93%	11.76%	$31,182
30%	1.28	14.05%	B+	9.50%	5.51%	11.49%	$32,803
40%	1.42	14.83%	B-	11.25%	6.53%	11.51%	$32,679
50%	1.62	15.93%	CC	13.00%	7.54%	11.73%	$31,341
60%	1.97	17.84%	CC	13.00%	7.96%	11.91%	$30,333
70%	2.71	21.91%	C	14.50%	10.18%	13.70%	$22,891
80%	4.07	29.36%	C	14.50%	10.72%	14.45%	$20,703
90%	8.13	51.72%	C	14.50%	11.14%	15.20%	$18,872

Determinants of Optimal Debt Ratios

- Firm Specific Factors
  - 1. Tax Rate
  - Higher tax rates - - > Higher Optimal Debt Ratio
  - Lower tax rates - - > Lower Optimal Debt Ratio
  - 2. Pre-Tax Returns on Firm = (Operating Income) / MV of Firm
  - Higher Pre-tax Return- - > Higher Optimal Debt Ratio
  - Lower Pre-tax Returns- - > Lower Optimal Debt Ratio
  - 3. Variance in Earnings [Shows up when you do 'what if' analysis]
  - Higher Variance - - > Lower Optimal Debt Ratio
  - Lower Variance - - > Higher Optimal Debt Ratio
- Macro-Economic Factors
  - Default Spreads

    Higher - - > Lower Optimal Debt Ratio

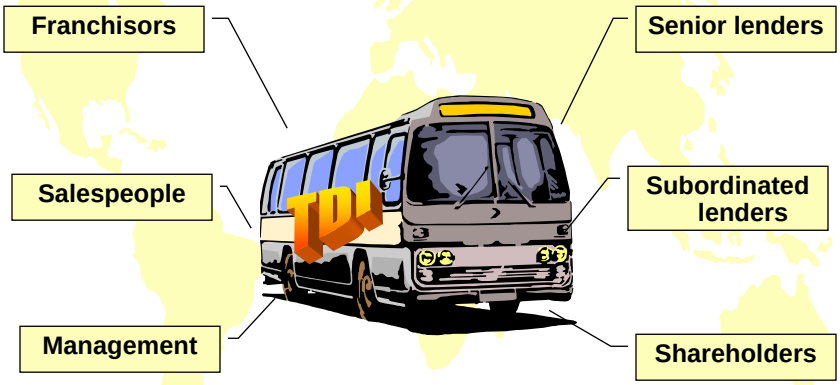
    Lower - - > Higher Optimal Debt Ratio

Restructuring Debt and Equity at TDI

Evaluate the financial restructuring taking place at TDI:

- Effect of the LBO on capital structure?
- How did LBO lenders protect their interests?
- Alternative restructuring plans?
- Post Dec 89 operational, portfolio and financial restructuring proposals?
- 1992-93 restructuring, before-and-after comparison

"Nexus of Contracts"



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