Two Sides to Value!

Corporate Finance and Valuation

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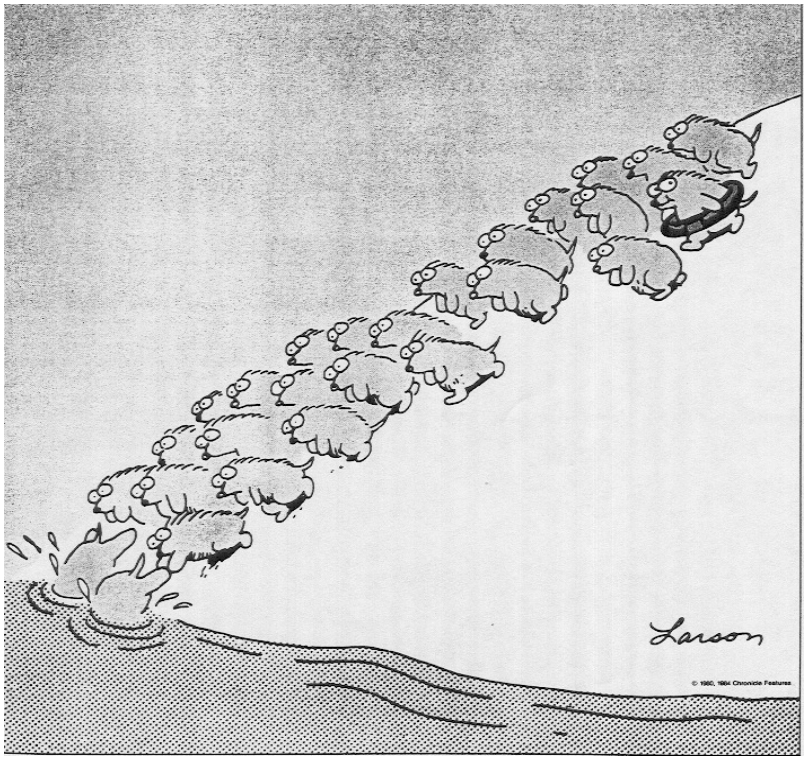
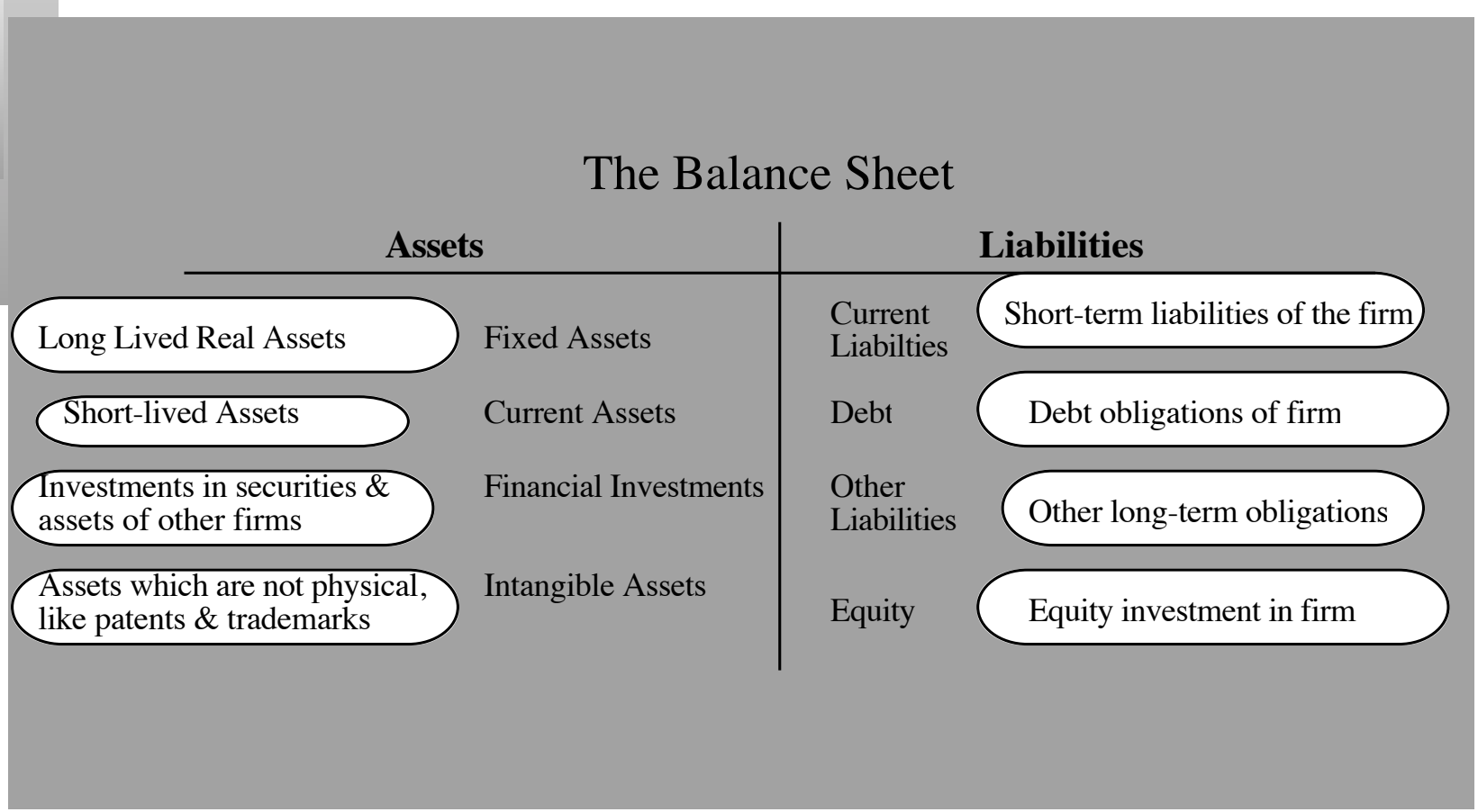
Tata Group, May 2010

A motive for valuation and corporate finance…

" One hundred thousand lemmings cannot be wrong" *Graffiti*



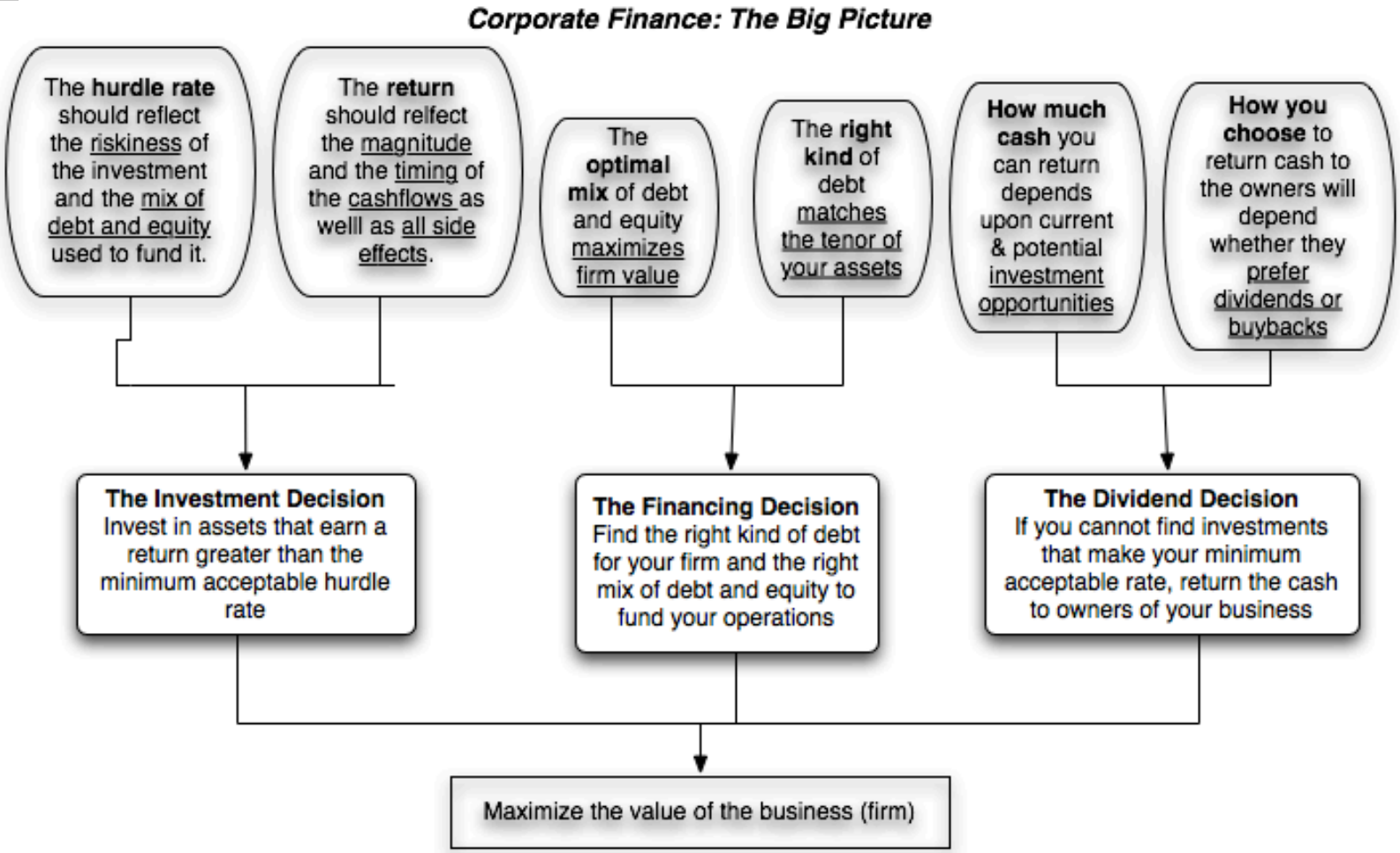
Let's start with an accounting balance sheet…



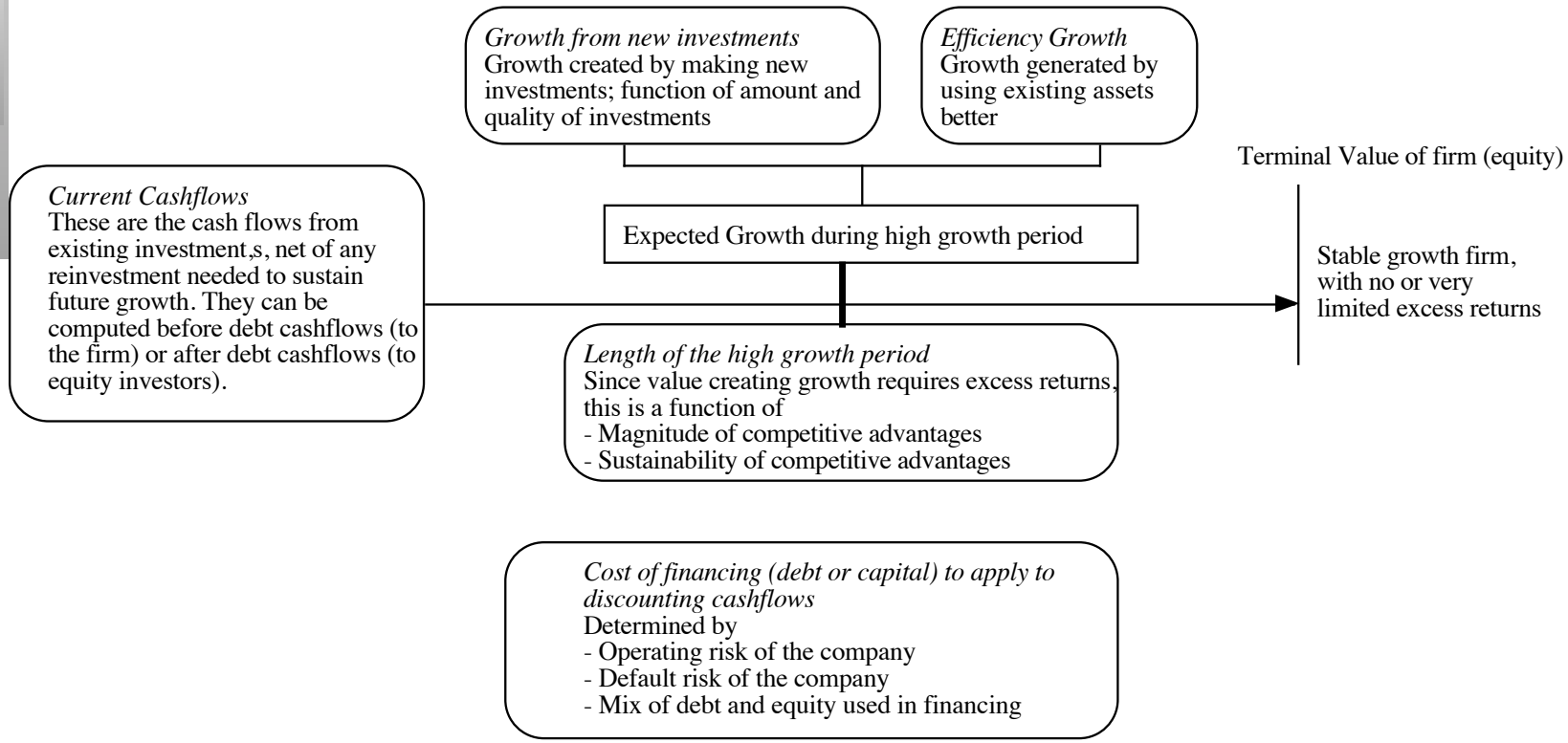
And replace it with a financial balance sheet…

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 *Fixed Maturity* *Tax Deductible*
Expected Value that will be created by future investments	Growth Assets	Equity	Residual Claim on cash flows Significant Role in management *Perpetual Lives*

Corporate Finance: First Principles



Connecting to Valuation…



Misconceptions about Valuation

- Myth 1: A valuation is an objective search for "true" value
  - Truth 1.1: All valuations are biased. The only questions are how much and in which direction.
  - Truth 1.2: The direction and magnitude of the bias in your valuation is directly proportional to who pays you and how much you are paid.
- Myth 2.: A good valuation provides a precise estimate of value
  - Truth 2.1: There are no precise valuations
  - Truth 2.2: The payoff to valuation is greatest when valuation is least precise.
- Myth 3: . The more quantitative a model, the better the valuation
  - Truth 3.1: One's understanding of a valuation model is inversely proportional to the number of inputs required for the model.
  - Truth 3.2: Simpler valuation models do much better than complex ones.

Valuation: The Big Picture

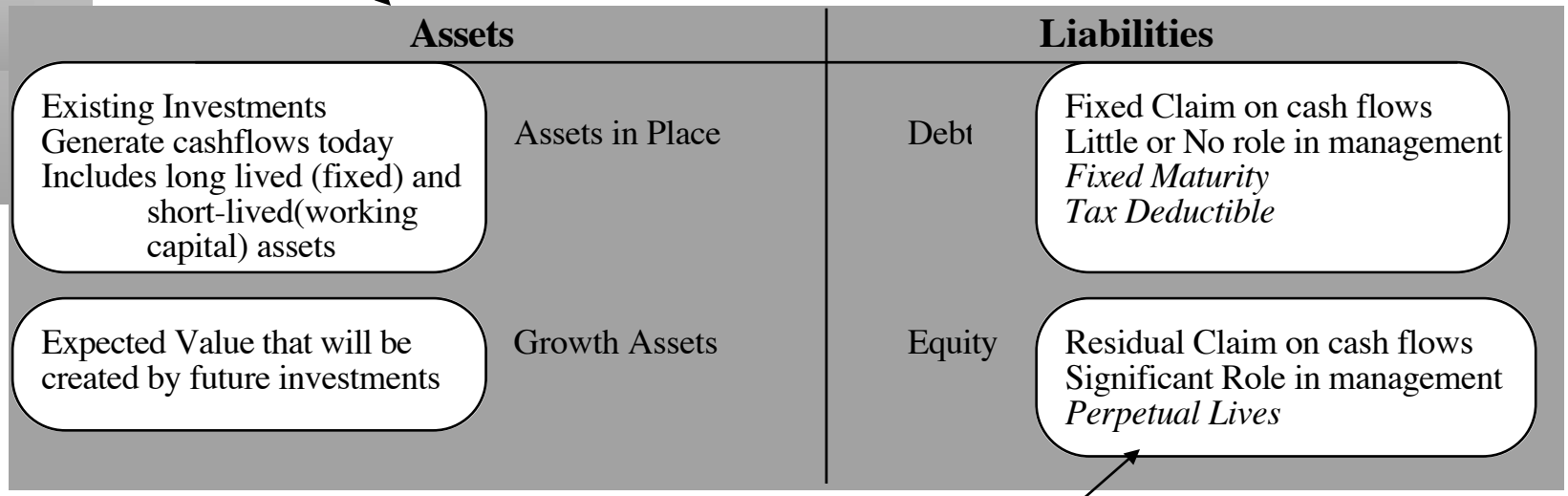
If you get the big picture, the details will follow…

Discounted Cash Flow Valuation

- **What is it**: In discounted cash flow valuation, the value of an asset is the present value of the expected cash flows on the asset.
- **Philosophical Basis**: Every asset has an intrinsic value that can be estimated, based upon its characteristics in terms of cash flows, growth and risk.
- **Information Needed**: To use discounted cash flow valuation, you need
  - to estimate the life of the asset
  - to estimate the cash flows during the life of the asset
  - to estimate the discount rate to apply to these cash flows to get present value
- **Market Inefficiency**: Markets are assumed to make mistakes in pricing assets across time, and are assumed to correct themselves over time, as new information comes out about assets.

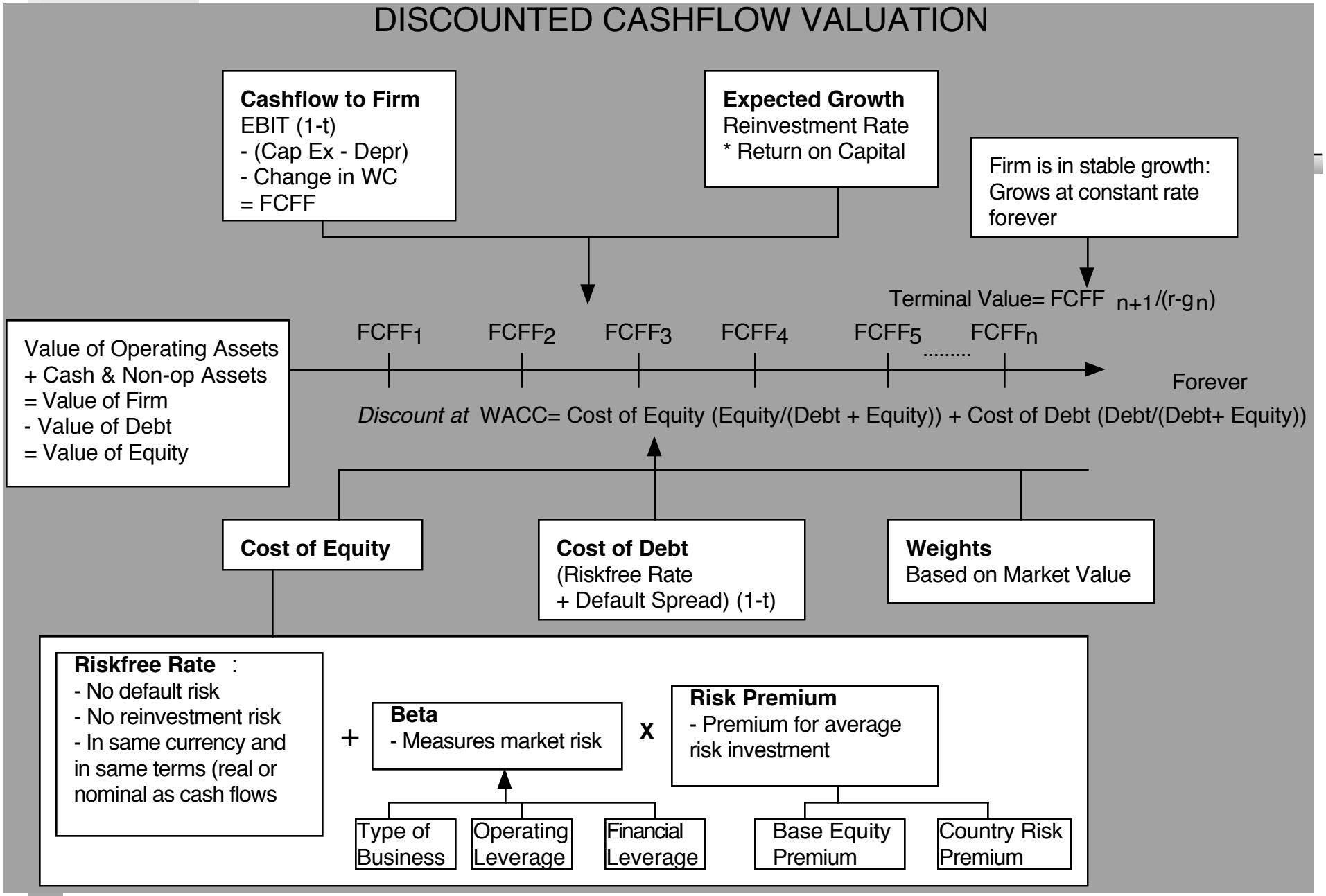
DCF Choices: Equity Valuation versus Firm Valuation

Firm Valuation: Value the entire business

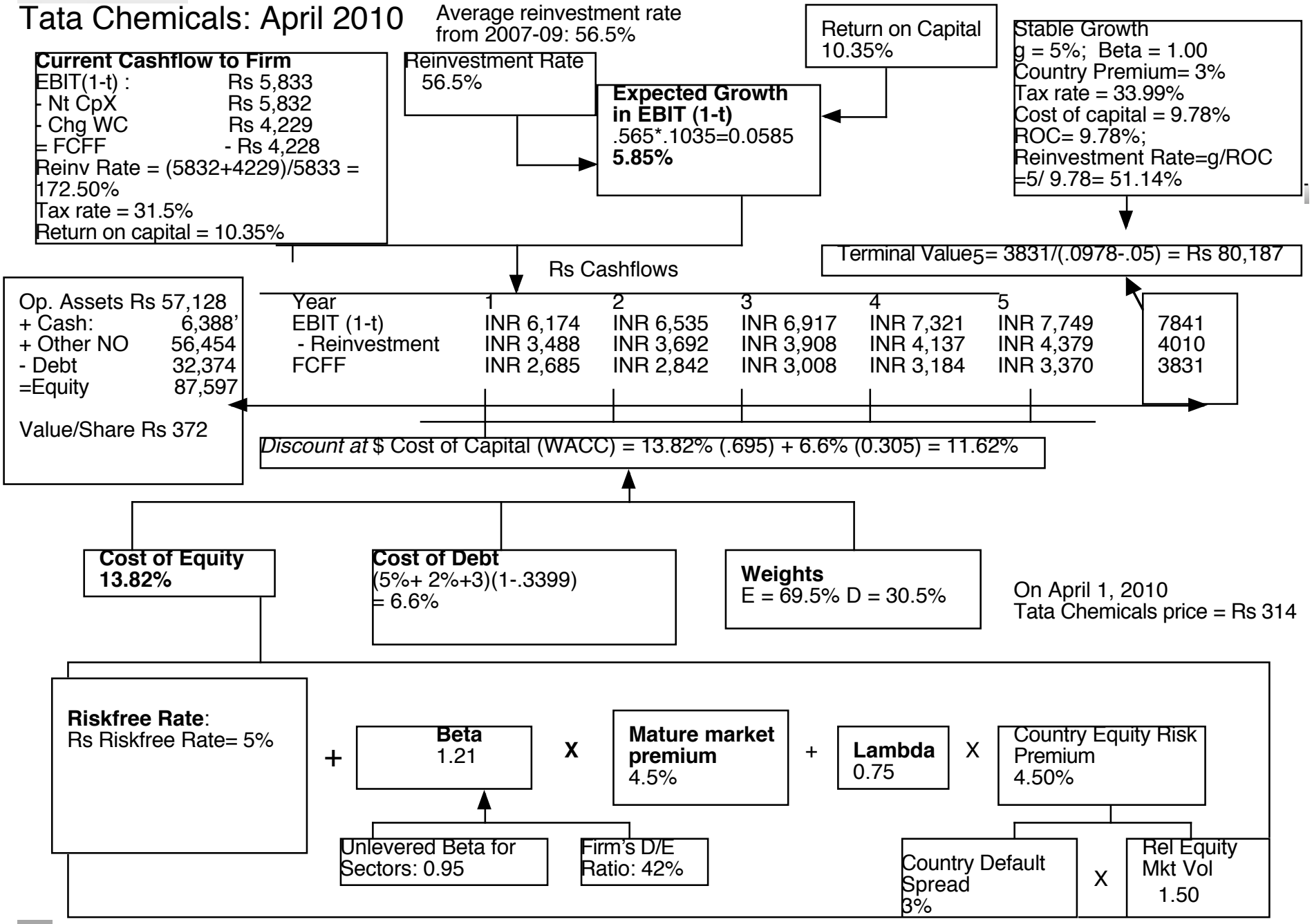


Equity valuation: Value just the equity claim in the business

DISCOUNTED CASHFLOW VALUATION



Tata Chemicals: April 2010



Tata Steel: April 2010

Average reinvestment rate from 2005-09: 38.1%

Current Cashflow to Firm
EBIT(1-t) : Rs 60,213
- Nt CpX Rs 61,620
- Chg WC - Rs 3,658
= FCFF Rs 2251
Reinv Rate = (61620-3658)/60213= 96.26%
Tax rate = 28.90%
Return on capital = 13.42%

Reinvestment Rate 38.1%

Return on Capital 13.42%

Expected Growth in EBIT (1-t)
.381*.1342=0.0511
5.11%

Stable Growth
g = 5%; Beta = 1.20
Country Premium= 3%
Tax rate = 33.99%
Cost of capital = 11.16%
ROC= 11.16%;
Reinvestment Rate=g/ROC =5/ 11.16= 44.8%

Terminal Value$_5$= 41572(.1116-.05) = Rs 701,444

Rs Cashflows

Year	1	2	3	4	5	
EBIT (1-t)	INR 63,292	INR 66,529	INR 69,931	INR 73,507	INR 77,266	75,316
- Reinvestment	INR 24,111	INR 25,344	INR 26,640	INR 28,002	INR 29,434	33,744
FCFF	INR 39,181	INR 41,185	INR 43,291	INR 45,504	INR 47,831	41,572

Op. Assets Rs501,661
+ Cash: 15,906
+ Other NO 467,315
- Debt 235,697
=Equity 749,184

Value/Share Rs 844

Discount at $ Cost of Capital (WACC) = 17.02% (.704) + 6.11% (0.296) = 13.79%

Cost of Equity
17.02%

Cost of Debt
(5%+ 1.25%+3%)1-.3399)
= 6.11%

Weights
E = 70.4% D = 29.6%

On April 1, 2010
Tata Steel price = Rs 632

Riskfree Rate:
Rs Riskfree Rate= 5%

+ **Beta** 1.57 X **Mature market premium** 4.5% + **Lambda** 1.10 X Country Equity Risk Premium 4.50%

Unlevered Beta for Sectors: 1.23

Firm's D/E Ratio: 42%

Country Default Spread 3% X Rel Equity Mkt Vol 1.50

Tata Motors: April 2010

Average reinvestment rate from 2005-09: 179.59%; without acquisitions: 70%

Current Cashflow to Firm
EBIT(1-t) : Rs 20,116
- Nt CpX Rs 31,590
- Chg WC Rs 2,732
= FCFF - Rs 14,205
Reinv Rate = (31590+2732)/20116 = 170.61%; Tax rate = 21.00%
Return on capital = 17.16%

Reinvestment Rate 70%

Expected Growth from new inv. .70*.1716=0.1201

Return on Capital 17.16%

Stable Growth
g = 5%; Beta = 1.00
Country Premium= 3%
Cost of capital = 10.39%
Tax rate = 33.99%
ROC= 12%;
Reinvestment Rate=g/ROC =5/ 12= 41.67%

Terminal Value5= 26412/(.1039-.05) = Rs 489,813

Rs Cashflows

Year	1	2	3	4	5	6	7	8	9	10
EBIT (1-t)	22533	25240	28272	31668	35472	39236	42848	46192	49150	51607
- Reinvestment	15773	17668	19790	22168	24830	25242	25138	24482	23264	21503
FCFF	6760	7572	8482	9500	10642	13994	17711	21710	25886	30104

45278
18866
26412

Op. Assets Rs231,914
+ Cash: 11418
+ Other NO 140576
- Debt 109198
=Equity 274,710

Value/Share Rs 665

Discount at $ Cost of Capital (WACC) = 14.00% (.747) + 8.09% (0.253) = 12.50%

Growth declines to 5% and cost of capital moves to stable period level.

Cost of Equity 14.00%

Cost of Debt (5%+ 4.25%+3)(1-.3399) = 8.09%

Weights E = 74.7% D = 25.3%

On April 1, 2010 Tata Motors price = Rs 781

Riskfree Rate: Rs Riskfree Rate= 5%

+ **Beta** 1.20 X **Mature market premium** 4.5% + **Lambda** 0.80 X Country Equity Risk Premium 4.50%

Unlevered Beta for Sectors: 1.04

Firm's D/E Ratio: 33%

Country Default Spread 3% X Rel Equity Mkt Vol 1.50

TCS: April 2010

Average reinvestment rate from 2005--2009 =56.73%%

Current Cashflow to Firm
EBIT(1-t) : Rs 43,420
- Nt CpX Rs 5,611
- Chg WC Rs 6,130
= FCFF Rs 31,679
Reinv Rate = (56111+6130)/43420= 27.04%; Tax rate = 15.55%
Return on capital = 40.63%

Reinvestment Rate 56.73%

Return on Capital 40.63%

Expected Growth from new inv.
5673*.4063=0.2305

Stable Growth
g = 5%; Beta = 1.00
Country Premium= 3%
Cost of capital = 9.52%
Tax rate = 33.99%
ROC= 15%;
Reinvestment Rate=g/ROC =5/ 15= 33.33%

Terminal Value5= 118655/(.0952-.05) = 2,625,649

Rs Cashflows

Year	1	2	3	4	5	6	7	8	9	10
EBIT (1-t)	53429	65744	80897	99544	122488	146299	169458	190165	206538	216865
- Reinvestment	30308	37294	45890	56468	69483	76145	80271	81183	78509	72288
FCFF	23120	28450	35007	43076	53005	70154	89187	108983	128029	144577

177982
59327
118655

Op. Assets 1,355,361
+ Cash: 3,188
+ Other NO 66,140
- Debt 505
=Equity 1,424,185

Value/Share Rs 728

Discount at $ Cost of Capital (WACC) = 10.63% (.999) + 5.61% (0.001) = 10.62%

Growth declines to 5% and cost of capital moves to stable period level.

Cost of Equity 10.63%

Cost of Debt
(5%+ 0.5%+3)(1-.3399)
= 5.61%

Weights
E = 99.9% D = 0.1%

On April 1, 2010
TCS price = Rs 841

Riskfree Rate:
Rs Riskfree Rate= 5%

+ **Beta** 1.05 X **Mature market premium** 4.5% + **Lambda** 0.20 X Country Equity Risk Premium 4.50%

Unlevered Beta for Sectors: 1.05

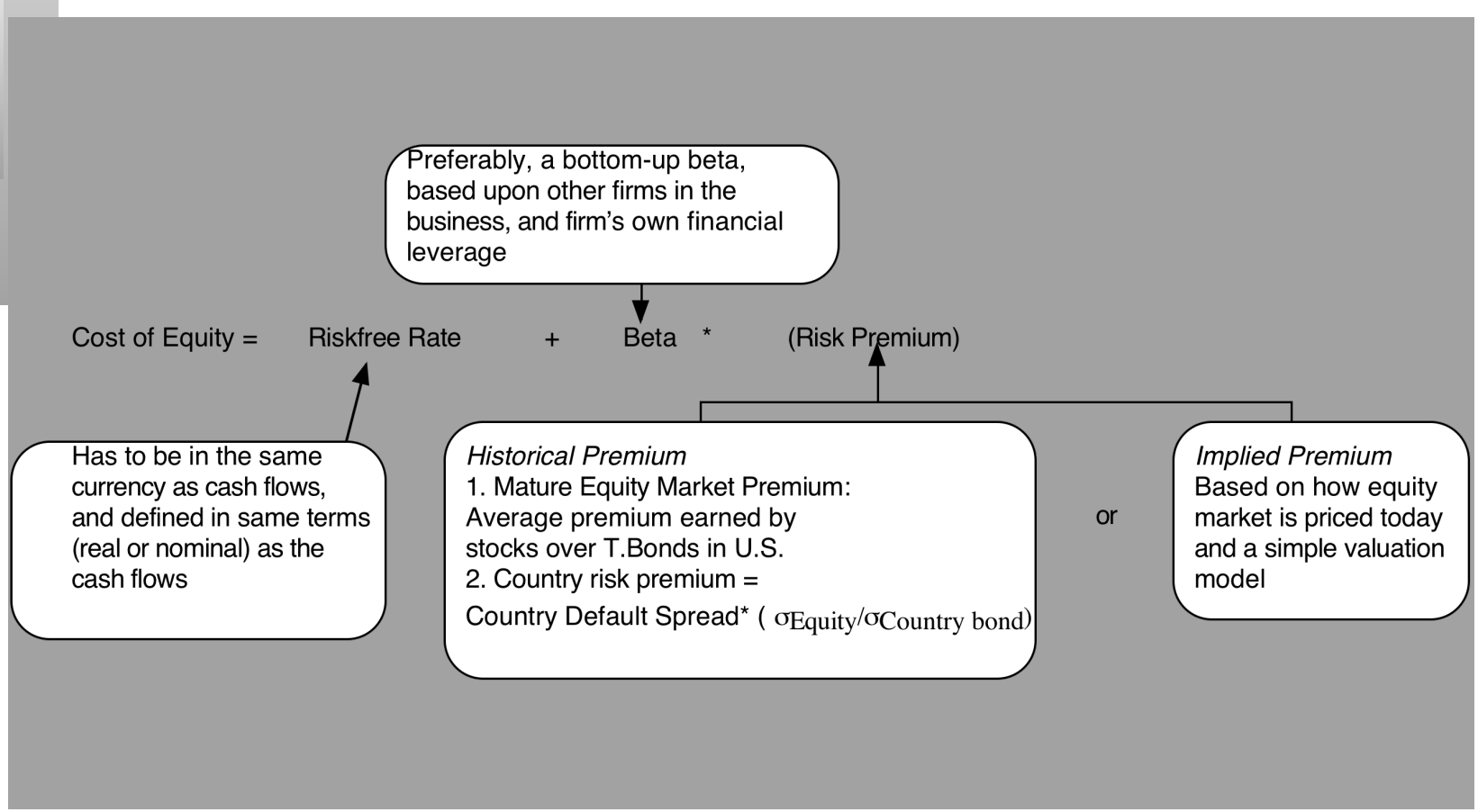
Firm's D/E Ratio: 0.1%

Country Default Spread 3% X Rel Equity Mkt Vol 1.50

Valuation: The Details

I. Estimating Discount Rates

Cost of Equity



A. The Riskfree Rate

- On a riskfree asset, the actual return is equal to the expected return. Therefore, there is no variance around the expected return.
- For an investment to be riskfree, then, it has to have
  - No default risk
  - No reinvestment risk

1. Time horizon matters: Thus, the riskfree rates in valuation will depend upon when the cash flow is expected to occur and will vary across time.
2. Not all government securities are riskfree: Some governments face default risk and the rates on bonds issued by them will not be riskfree.

For a rate to be riskfree in valuation, it has to be long term, default free and currency matched (to the cash flows)

Estimating the Riskfree Rate in Rupees… and US dollars..

- The Indian government had 10-year Rupee bonds outstanding, with a yield to maturity of about 8% on April 1, 2010. In January 2010, the Indian government had a local currency sovereign rating of Ba2. The typical default spread (over a default free rate) for Ba2 rated country bonds in early 2010 was 3%.
- The riskfree rate in Indian Rupees is

a) The yield to maturity on the 10-year bond (8%)

b) The yield to maturity on the 10-year bond + Default spread (8%+3% =11%)

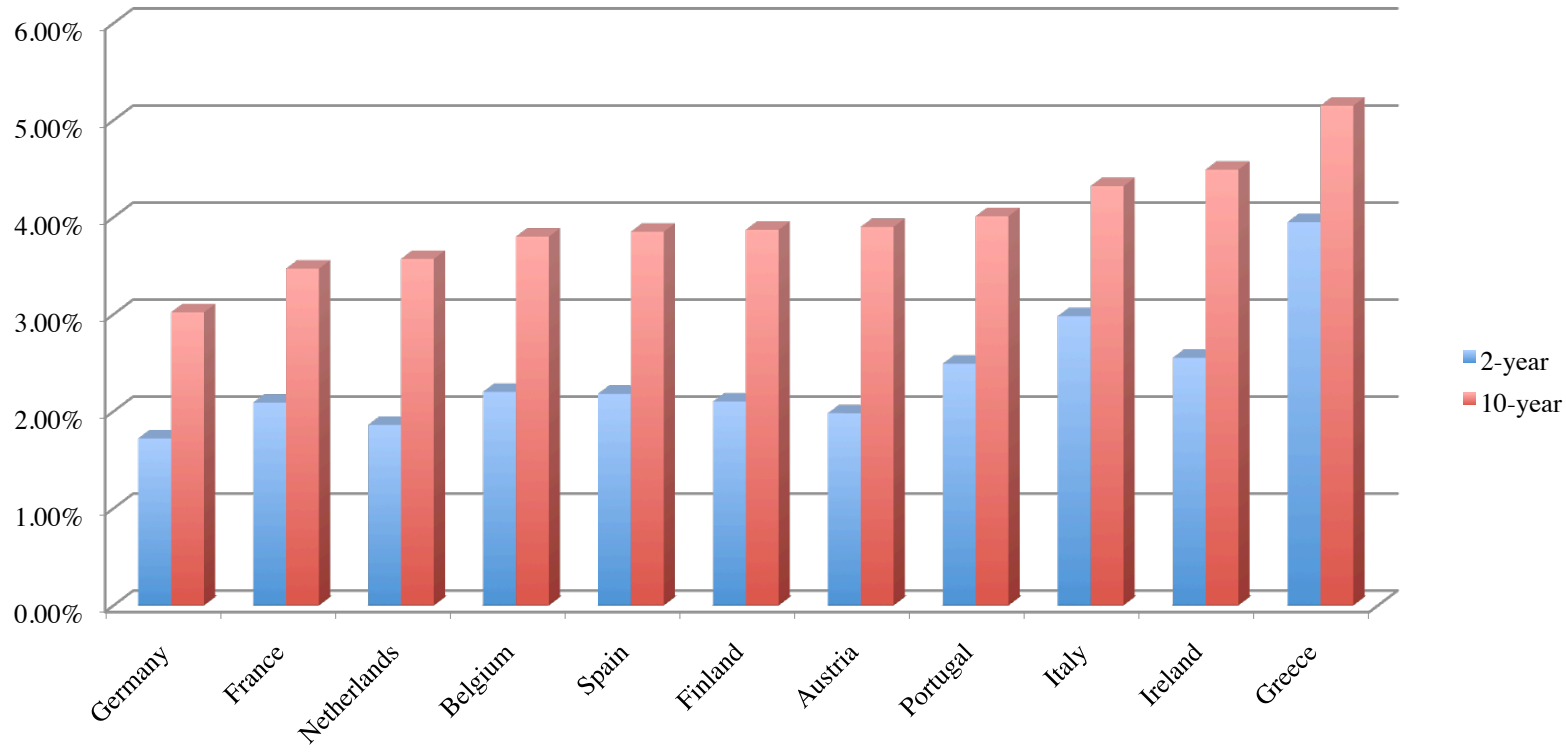
c) The yield to maturity on the 10-year bond – Default spread (8%-3% = 5%)

d) None of the above

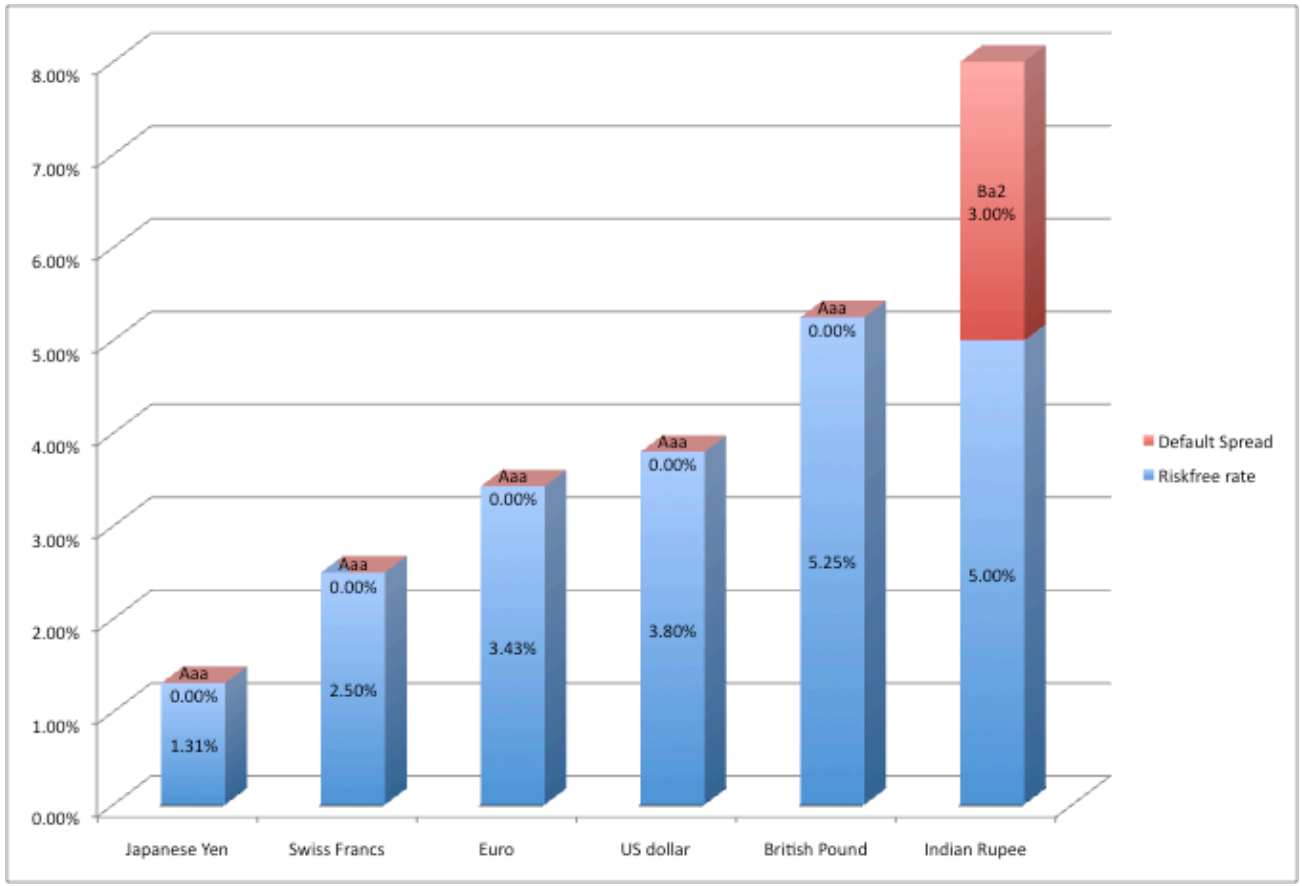
- If you wanted to do you entire valuation in US dollars, what would you use as your riskfree rate?
- How would your answer change if you were doing the analysis in Euros?

A Euro Riskfree Rate

Figure 4: Goverment Bond Rates in Euros



Why do riskfree rates vary?



b. Equity Risk Premiums

- The historical premium is the premium that stocks have historically earned over riskless securities.
- Practitioners never seem to agree on the premium; it is sensitive to
  - How far back you go in history…
  - Whether you use T.bill rates or T.Bond rates
  - Whether you use geometric or arithmetic averages.
- For instance, looking at the US:

	Arithmetic Average		Geometric Average	
	Stocks – T. Bills	Stocks – T. Bonds	Stocks – T. Bills	Stocks – T. Bonds
1928-2009	7.53%	6.03%	5.56%	4.29%
	(2.28%)	(2.40%)		
1960-2009	5.48%	3.78%	4.09%	2.74%
	(2.42%)	(2.71%)		
2000-2009	-1.59%	-5.47%	-3.68%	-7.22%
	(6.73%)	(9.22%)		

The perils of trusting the past…….

- Noisy estimates: Even with long time periods of history, the risk premium that you derive will have substantial standard error. For instance, if you go back to 1928 (about 80 years of history) and you assume a standard deviation of 20% in annual stock returns, you arrive at a standard error of greater than 2%:

  $$\text{Standard Error in Premium} = 20\%/\sqrt{80} = 2.26\%$$

- Survivorship Bias: Using historical data from the U.S. equity markets over the twentieth century does create a sampling bias. After all, the US economy and equity markets were among the most successful of the global economies that you could have invested in early in the century.

These problems get exacerbated in markets like India, where there is far less historical data and survivor bias is worse.

An Alternative: Watch what I pay, not what I say…

- In January 2010, the S&P 500 was trading at 1115.10. You can back out the return that investors can expect to pay from the index and expected cash flows…

In 2010, the actual cash returned to stockholders was 40.38. That was down about 40% from 2008 levels.

Analysts expect earnings to grow 21% in 2010, resulting in a compounded annual growth rate of 7.2% over the next 5 years. We will assume that dividends & buybacks will keep pace.

After year 5, we will assume that earnings on the index will grow at 3.84%, the same rate as the entire economy (= riskfree rate).

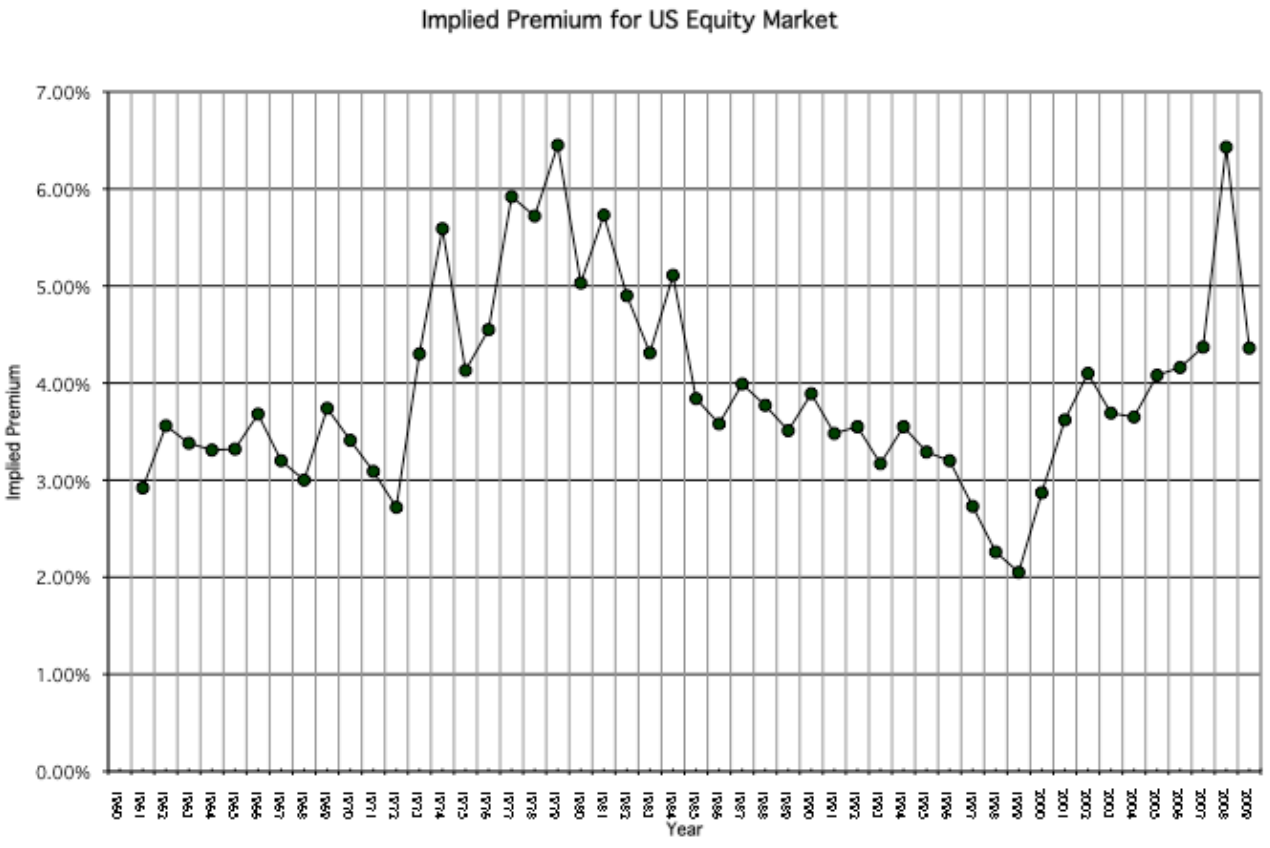
43.29 46.40 49.74 53.32 57.16

$$1115.10 = \frac{43.29}{(1+r)} + \frac{46.40}{(1+r)^2} + \frac{49.74}{(1+r)^3} + \frac{53.32}{(1+r)^4} + \frac{57.16}{(1+r)^5} + \frac{57.16(1.0384)}{(r-.0384)(1+r)^5}$$

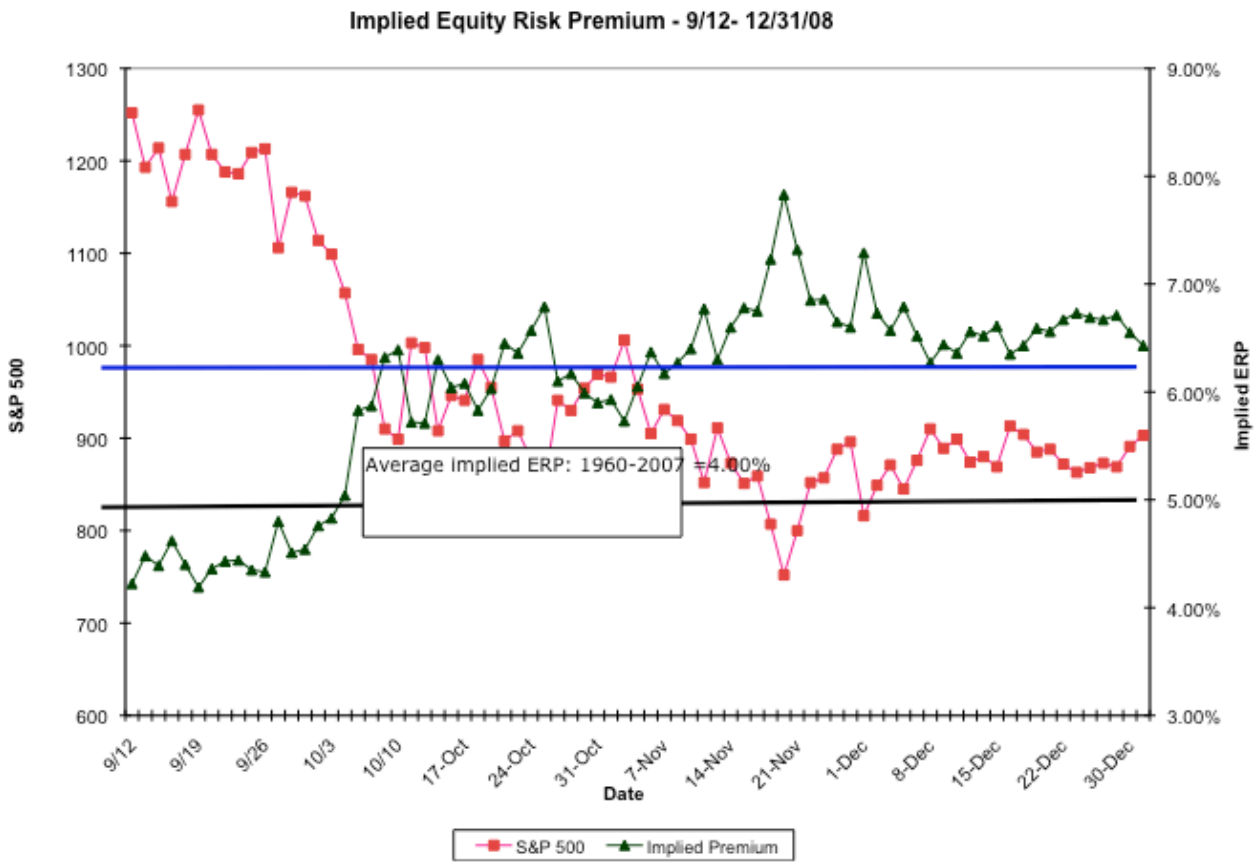
January 1, 2010
S&P 500 is at 1115.10
Adjusted Dividends & Buybacks for 2008 = 40.38

Expected Return on Stocks (1/1/10) = 8.20%
T.Bond rate on 1/1/10 = 3.84 %
Equity Risk Premium = 8.20% - 3.84% = 4.36%

Implied Premiums in the US



The Anatomy of a Crisis: Implied ERP from September 12, 2008 to January 1, 2009



Implied Premium for Sensex: April 2010

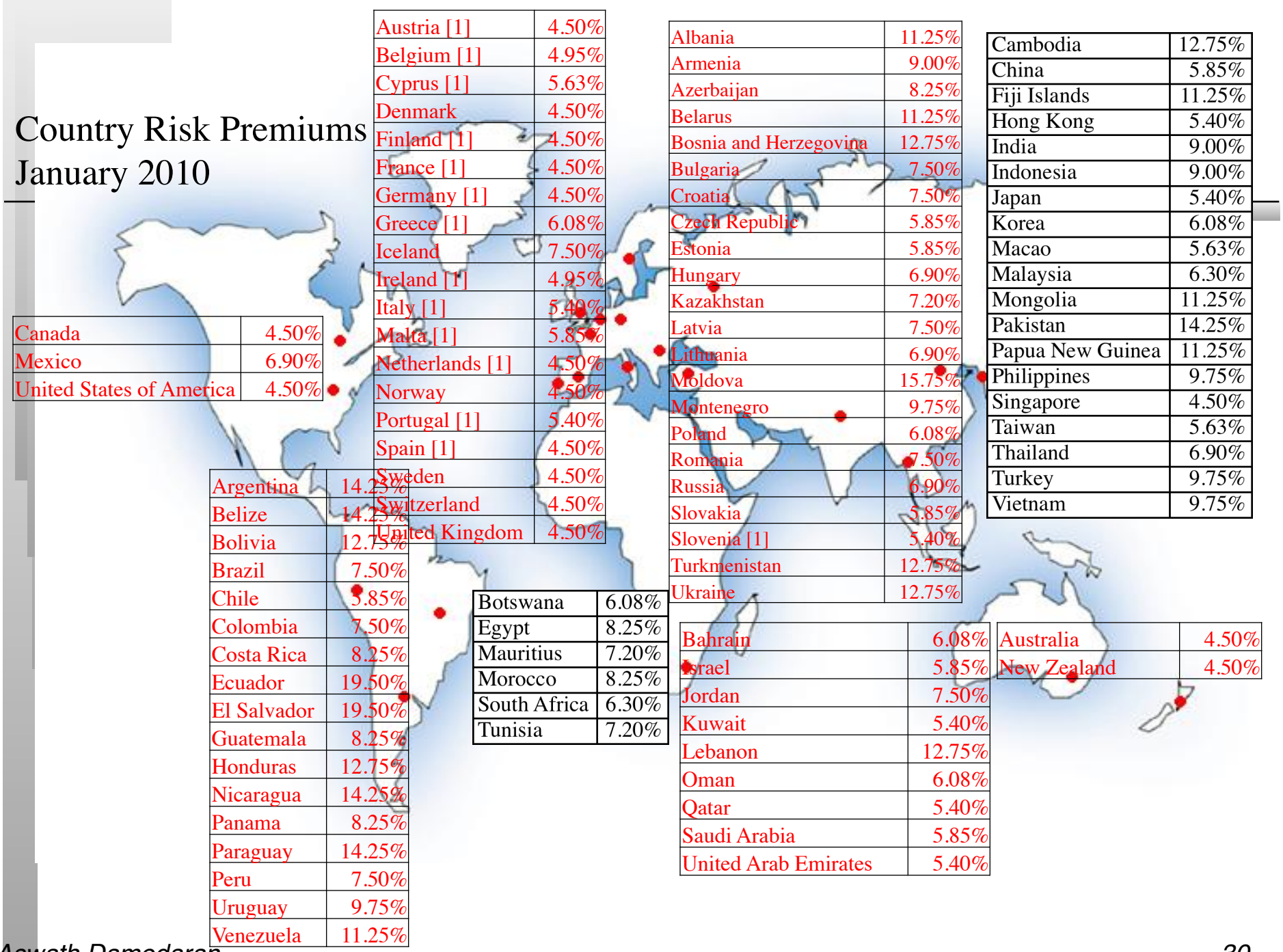
- Level of the Index = 17559
- FCFE on the Index = 3.5% (Estimated FCFE for companies in index as % of market value of equity)
- Other parameters
  - Riskfree Rate = 5% (Rupee)
  - Expected Growth (in Rupee)
    - Next 5 years = 20% (Used expected growth rate in Earnings)
    - After year 5 = 5%
- Solving for the expected return:
  - Expected return on Equity = 11.72%
  - Implied Equity premium for India =11.72% - 5% = 6.72%

A solution: Estimate a mature market premium with an added country risk premium

- Assume that the equity risk premium for the US and other mature equity markets is 4.5%. You could then add on an additional premium for investing in an emerging markets.
- Two ways of estimating the country risk premium:
  - *Default spread on Country Bond*: In this approach, the country equity risk premium is set equal to the default spread of the bond issued by the country.
    - Equity Risk Premium for India = 4.5% + 3% = 7.5%
  - *Adjusted for equity risk*: The country equity risk premium is based upon the volatility of the market in question relative to U.S market.

    Total equity risk premium = Risk Premium$_{US}$* $\sigma_{\text{Country Equity}}$ / $\sigma_{\text{Country Bond}}$
    - Standard Deviation in Sensex = 30%
    - Standard Deviation in Indian government bond= 20%
    - Default spread on Indian Bond= 3%
    - Total equity risk premium for India = 4.5% + 3% (30/20) = 9%

Country Risk Premiums
January 2010



Canada	4.50%
Mexico	6.90%
United States of America	4.50%

Austria [1]	4.50%
Belgium [1]	4.95%
Cyprus [1]	5.63%
Denmark	4.50%
Finland [1]	4.50%
France [1]	4.50%
Germany [1]	4.50%
Greece [1]	6.08%
Iceland	7.50%
Ireland [1]	4.95%
Italy [1]	5.40%
Malta [1]	5.85%
Netherlands [1]	4.50%
Norway	4.50%
Portugal [1]	5.40%
Spain [1]	4.50%
Sweden	4.50%
Switzerland	4.50%
United Kingdom	4.50%

Albania	11.25%
Armenia	9.00%
Azerbaijan	8.25%
Belarus	11.25%
Bosnia and Herzegovina	12.75%
Bulgaria	7.50%
Croatia	7.50%
Czech Republic	5.85%
Estonia	5.85%
Hungary	6.90%
Kazakhstan	7.20%
Latvia	7.50%
Lithuania	6.90%
Moldova	15.75%
Montenegro	9.75%
Poland	6.08%
Romania	7.50%
Russia	6.90%
Slovakia	5.85%
Slovenia [1]	5.40%
Turkmenistan	12.75%
Ukraine	12.75%

Cambodia	12.75%
China	5.85%
Fiji Islands	11.25%
Hong Kong	5.40%
India	9.00%
Indonesia	9.00%
Japan	5.40%
Korea	6.08%
Macao	5.63%
Malaysia	6.30%
Mongolia	11.25%
Pakistan	14.25%
Papua New Guinea	11.25%
Philippines	9.75%
Singapore	4.50%
Taiwan	5.63%
Thailand	6.90%
Turkey	9.75%
Vietnam	9.75%

Argentina	14.25%
Belize	14.25%
Bolivia	12.75%
Brazil	7.50%
Chile	5.85%
Colombia	7.50%
Costa Rica	8.25%
Ecuador	19.50%
El Salvador	19.50%
Guatemala	8.25%
Honduras	12.75%
Nicaragua	14.25%
Panama	8.25%
Paraguay	14.25%
Peru	7.50%
Uruguay	9.75%
Venezuela	11.25%

Botswana	6.08%
Egypt	8.25%
Mauritius	7.20%
Morocco	8.25%
South Africa	6.30%
Tunisia	7.20%

Bahrain	6.08%
Israel	5.85%
Jordan	7.50%
Kuwait	5.40%
Lebanon	12.75%
Oman	6.08%
Qatar	5.40%
Saudi Arabia	5.85%
United Arab Emirates	5.40%

Australia	4.50%
New Zealand	4.50%

From Country Risk Premiums to Corporate Risk premiums

- Approach 1: Assume that every company in the country is equally exposed to country risk. In this case,

  E(Return) = Riskfree Rate + Country ERP + Beta (US premium)

- Approach 2: Assume that a company's exposure to country risk is similar to its exposure to other market risk.

  E(Return) = Riskfree Rate + Beta (US premium + Country ERP)

- Approach 3: Treat country risk as a separate risk factor and allow firms to have different exposures to country risk (perhaps based upon the proportion of their revenues come from non-domestic sales)

  E(Return)=Riskfree Rate+ β (US premium) + λ (Country ERP)

  Country ERP: Additional country equity risk premium

Estimating Company Exposure to Country Risk

- Different companies should be exposed to different degrees to country risk. For instance, a Korean firm that generates the bulk of its revenues in Western Europe and the US should be less exposed to country risk than one that generates all its business within Korea.
- The factor "λ" measures the relative exposure of a firm to country risk. One simplistic solution would be to do the following:

  λ = % of revenues domestically$_{firm}$/ % of revenues domestically$_{avg\ firm}$

  Consider two firms – HyundaI Heavy Industries and Megastudy, both Korean companies. The former gets about 20% of its revenues in Korea and the latter gets 100%. The average Korean firm gets about 80% of its revenues in Korea:

  $\lambda_{Hyundai} = 20\%/80\% = 0.25$

  $\lambda_{Megastudy} = 100\%/80\% = 1.25$
- There are two implications
  - A company's risk exposure is determined by where it does business and not by where it is located
  - Firms might be able to actively manage their country risk exposures

Estimating lambdas: Tata Group

	Tata Chemicals	*Tata Steel*	*Tata Motors*	*TCS*
% of production/ operations in India	High	High	High	Low
% of revenues in India	75%	88.83%	91.37%	7.62%
Lambda	0.75	1.10	0.80	0.20
Other factors	Gets 77% of its raw material from non-domestic sources,		Recently acquired Jaguar/Land Rover, with significant non-domestic sales	While its operations are spread all over, it uses primarily Indian personnel

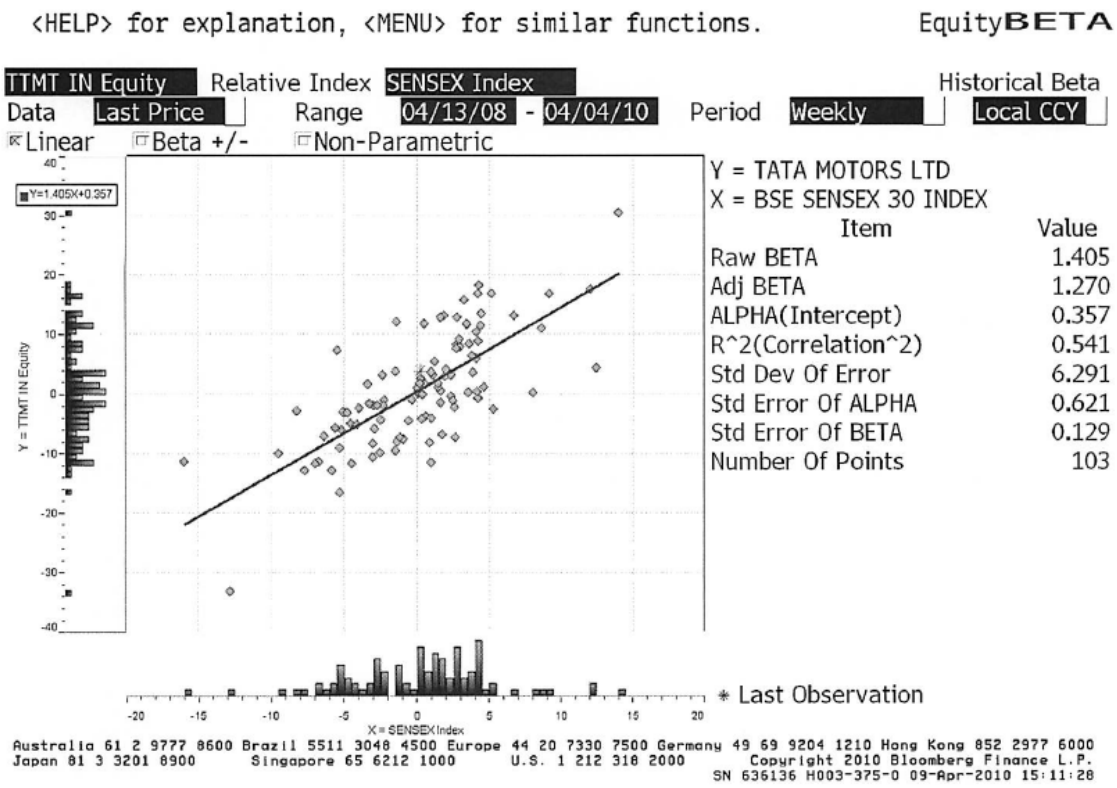
Estimating Beta

- The standard procedure for estimating betas is to regress stock returns (R_j) against market returns (R_m) -

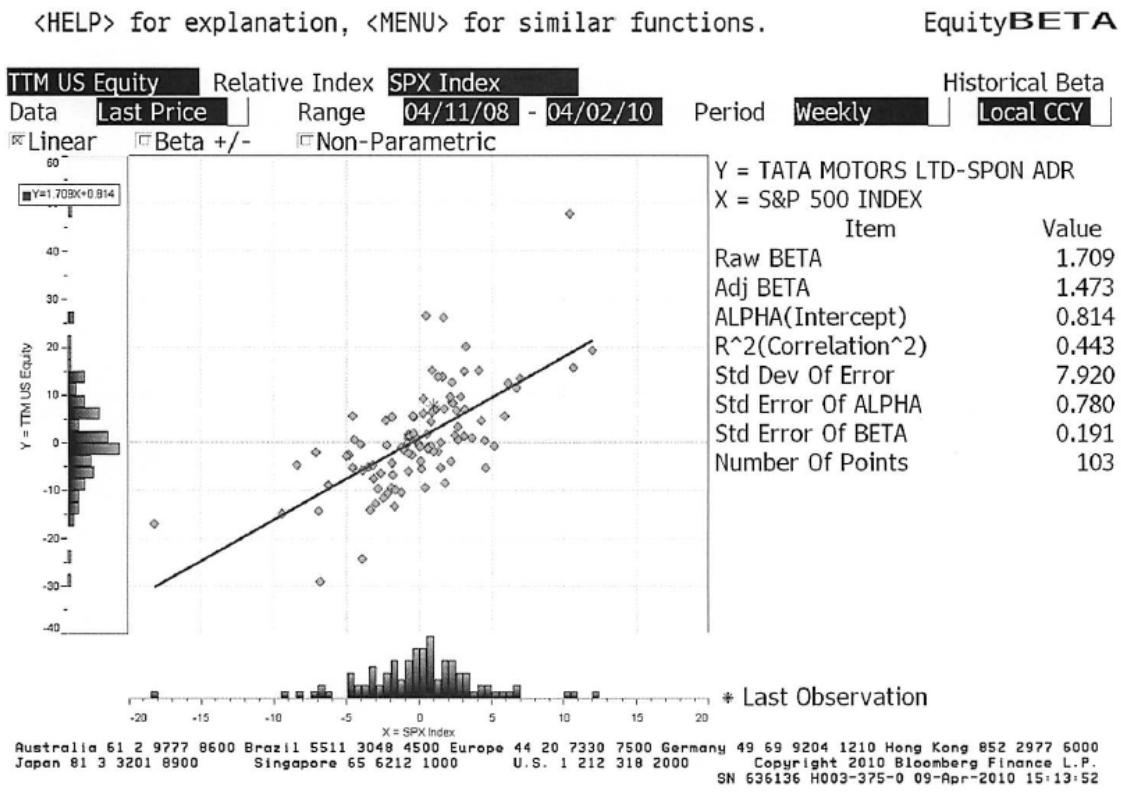
$$R_j = a + b\ R_m$$

  - where a is the intercept and b is the slope of the regression.
- The slope of the regression corresponds to the beta of the stock, and measures the riskiness of the stock.
- This beta has three problems:
  - It has high standard error
  - It reflects the firm's business mix over the period of the regression, not the current mix
  - It reflects the firm's average financial leverage over the period rather than the current leverage.

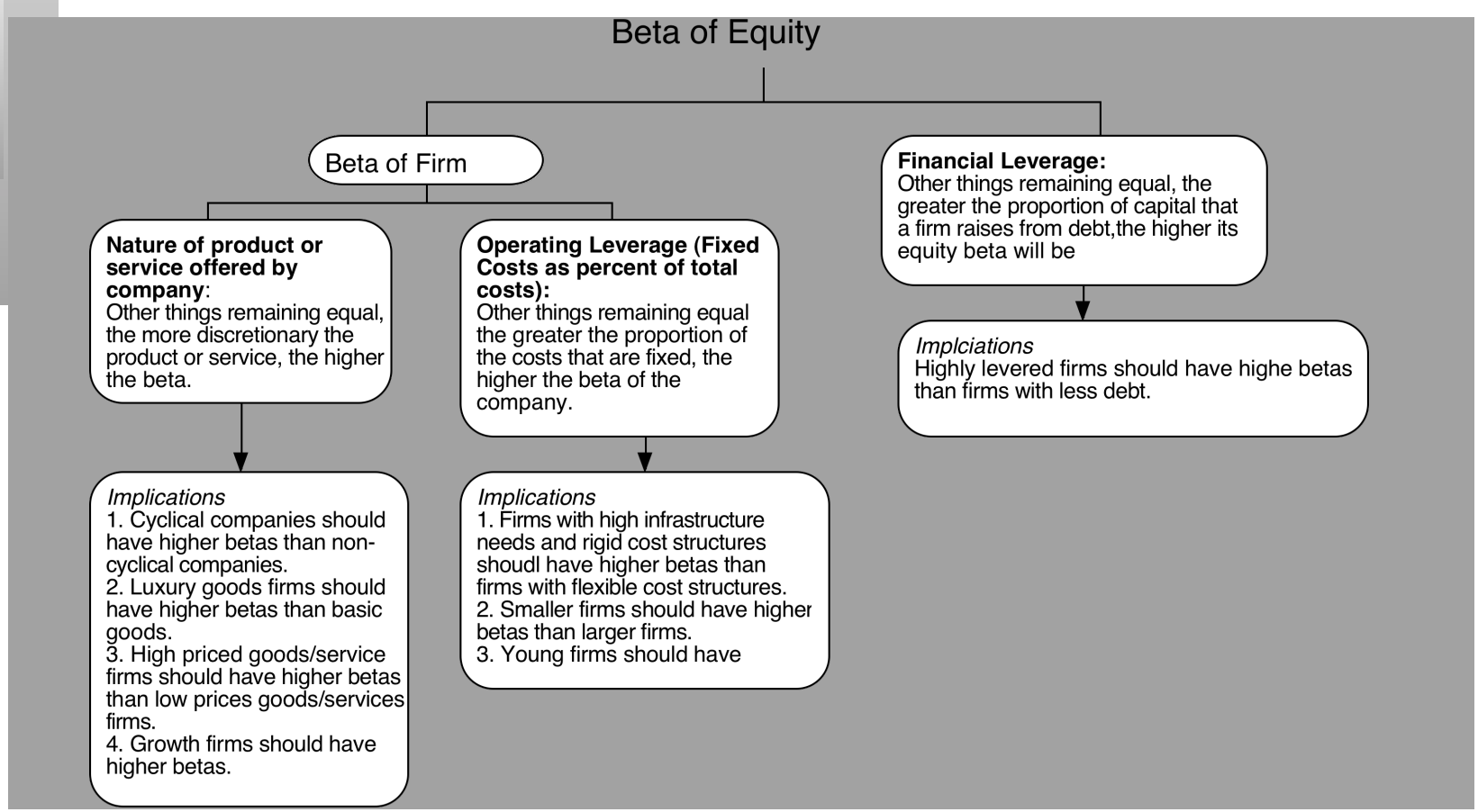
A standard regression.. A beta for Tata Motors



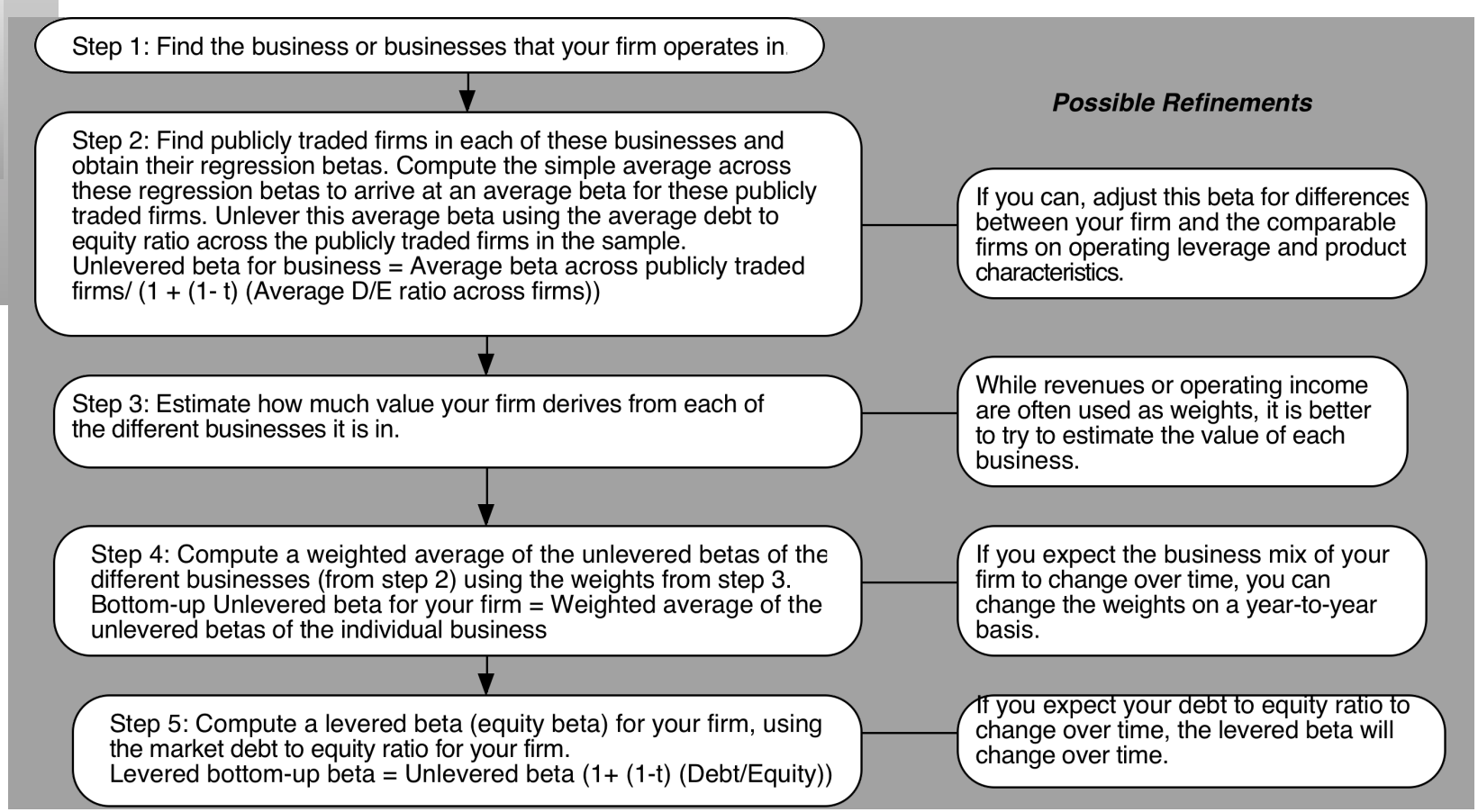
And another one..



Determinants of Betas



Bottom-up Betas



Bottom Up Beta Estimates for Tata Companies

	Tata Chemicals	*Tata Steel*	*Tata Motors*	*TCS*
Business breakdown	Chemicals & Fertilizers	Steel	Automobiles	Software & Information Processing
Unlevered beta	0.94	1.23	0.98	1.05
D/E Ratio	43.85%	42.03%	33.87%	0.03%
Levered Beta	1.21	1.57	1.20	1.05

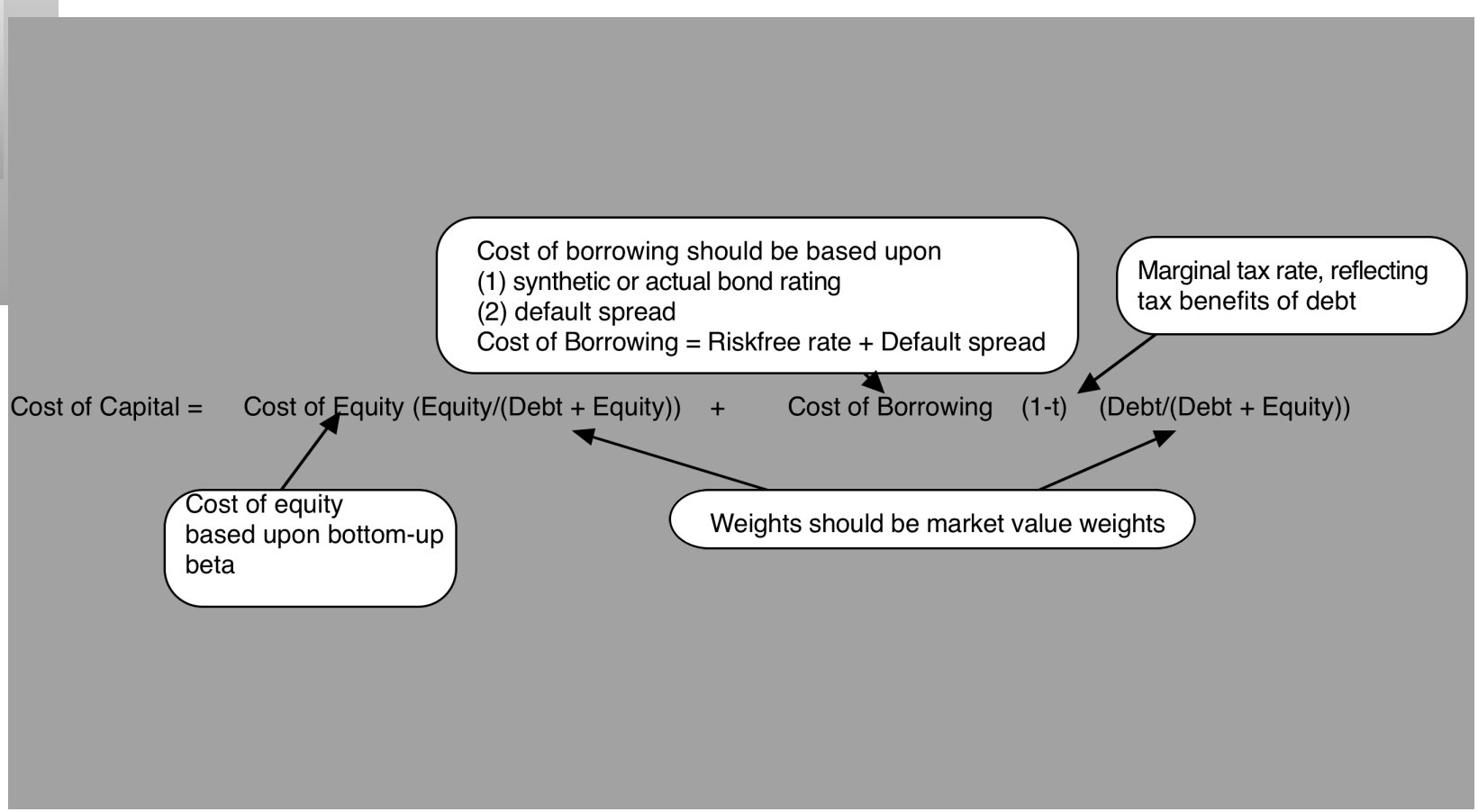
A closer look at Tata Chemicals

	% of revenues	Unlevered Beta
Chemicals	42%	1.05
Fertilizers	58%	0.86
Company		0.94

TCS: Geographical breakdown

	Beta	Equity Risk Premium	Rs Cost of equity
US & Canada	1.05	4.50%	9.73%
UK	1.05	4.50%	9.73%
Europe	1.05	4.50%	9.73%
India	1.05	9%	14.45%
AsiaPacific	1.05	7%	12.35%
Latin America	1.05	10%	15.50%
Middle East & Africa	1.05	12%	17.60%

From Cost of Equity to Cost of Capital



What is debt?

- General Rule: Debt generally has the following characteristics:
  - Commitment to make fixed payments in the future
  - The fixed payments are tax deductible
  - Failure to make the payments can lead to either default or loss of control of the firm to the party to whom payments are due.
- As a consequence, debt should include
  - Any interest-bearing liability, whether short term or long term.
  - Any lease obligation, whether operating or capital.

Debt and Equity at the Tata Group

	Tata Chemicals	Tata Steel	Tata Motors	TCS
BV of Equity	INR 38,593	INR 301,763	INR 122,301	INR 134,463
BV of Debt	INR 73,522	INR 269,461	INR 263,314	INR 404
MV of Equity	INR 73,825	INR 560,805	INR 322,388	INR 1,646,022
MV of Debt	INR 32,374	INR 235,697	INR 109,198	INR 505
Debt/Capital (BV)	65.58%	47.17%	68.28%	0.30%
Debt/Capital (MV)	30.48%	29.59%	25.30%	0.03%

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.

Estimating Synthetic Ratings

- The rating for a firm can be estimated using the financial characteristics of the firm. In its simplest form, the rating can be estimated from the interest coverage ratio

  Interest Coverage Ratio = EBIT / Interest Expenses

- The interest coverage ratio can be linked to a debt rating, which in turn can provide an estimate of default spread and the cost of debt for a company.

  Cost of debt = Riskfree Rate + Default spread for the company

- In emerging markets, where governments themselves have default risk, the cost of debt for a company will include some or all of the default spread for the country.

  Cost of debt = Riskfree Rate + Default spread for the country + Default spread for the company

Interest Coverage Ratios, Ratings and Default Spreads

If interest coverage ratio is			
greater than	≤ to	Rating is	Spread is
-100000	0.499999	D	15.00%
0.5	0.799999	C	12.00%
0.8	1.249999	CC	10.00%
1.25	1.499999	CCC	8.50%
1.5	1.999999	B-	5.50%
2	2.499999	B	5.25%
2.5	2.999999	B+	4.25%
3	3.499999	BB	4.00%
3.5	3.9999999	BB+	3.50%
4	4.499999	BBB	2.00%
4.5	5.999999	A-	1.50%
6	7.499999	A	1.25%
7.5	9.499999	A+	1.00%
9.5	12.499999	AA	0.75%
12.5	100000	AAA	0.50%

Estimating the cost of debt for Tata companies

	Tata Chemicals	Tata Steel	Tata Motors	TCS
EBIT	INR 8,515	INR 84,683	INR 17,527	INR 51,414
Interest expense	INR 1,912	INR 11,527	INR 6,737	INR 74
Int coverage ratio	4.45	7.35	2.60	694.78
Synthetic rating	BBB	A	B+	AAA
Default spread (for company)	2%	1.25%	4.25%	0.50%
Default spread (for country)	3%	3%	3%	3%
Riskfree Rate	5%	5%	5%	5%
Cost of debt	10.00%	9.25%	12.25%	8.50%
Marginal tax rate	33.99%	33.99%	33.99%	33.99%
After-tax cost of debt	6.60%	6.11%	8.09%	5.61%

Estimating Cost of Capital: Tata Group

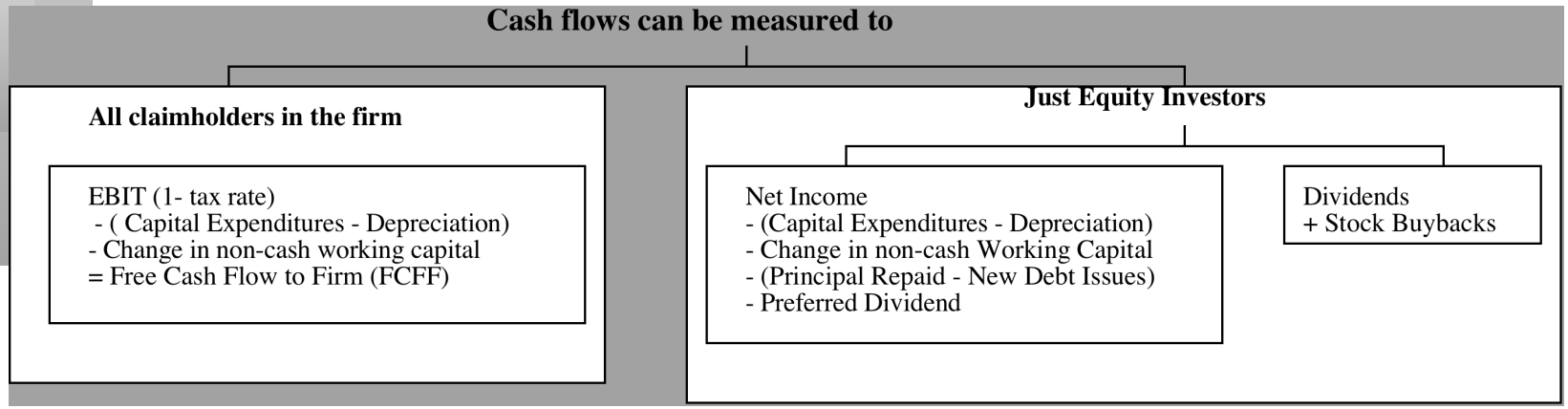
	Tata Chemicals	Tata Steel	Tata Motors	TCS
Beta	1.21	1.57	1.20	1.05
Lambda	0.75	1.10	0.80	0.20
Cost of equity	13.82%	17.02%	14.00%	10.63%
Synthetic rating	BBB	A	B+	AAA
Cost of debt	6.60%	6.11%	8.09%	5.61%
Debt Ratio	30.48%	29.59%	25.30%	0.03%
Cost of Capital	11.62%	13.79%	12.50%	10.62%

Tata Chemicals: Divisional Costs of Capital

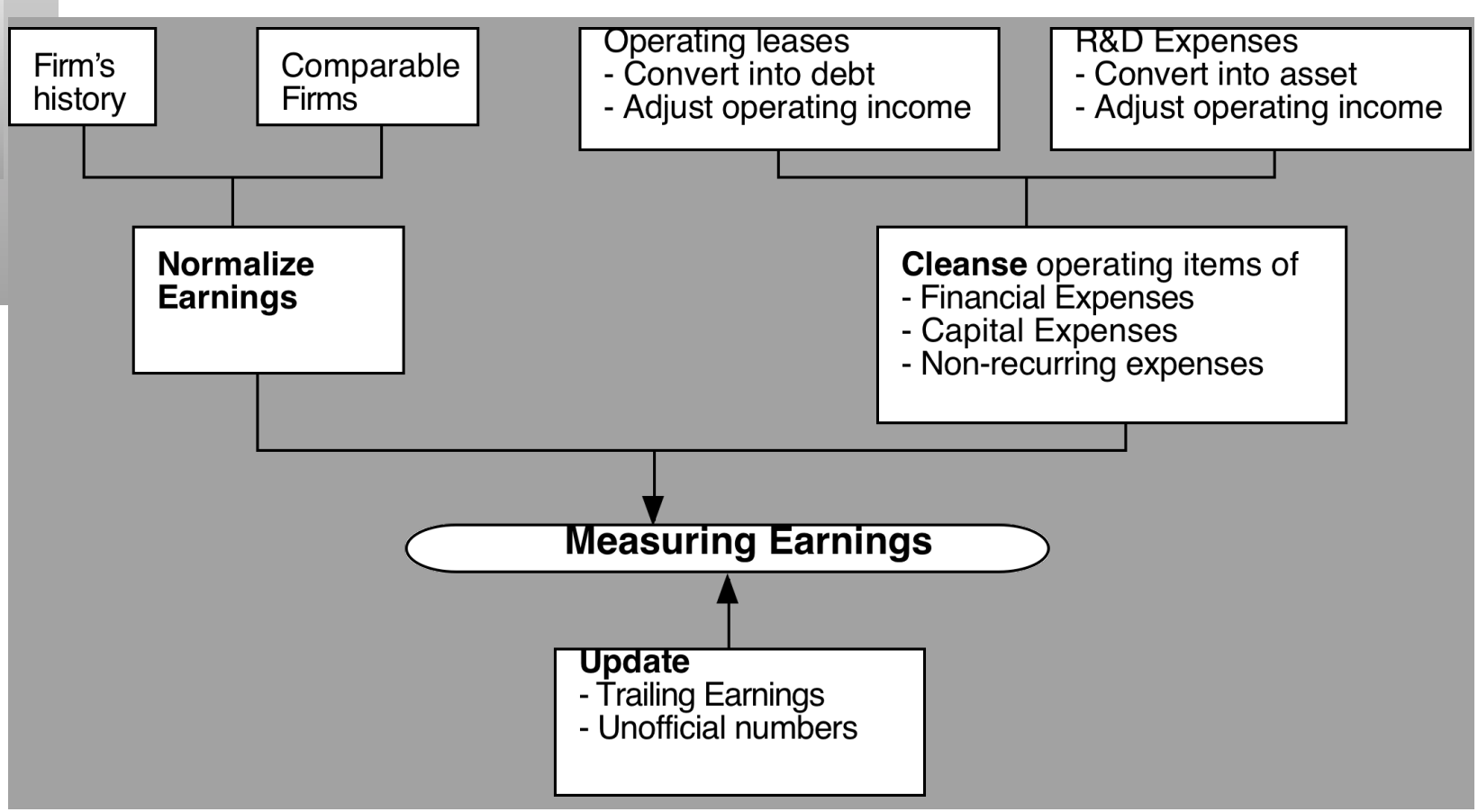
	Beta	Cost of equity	Cost of debt	Debt Ratio	Cost of capital
Chemicals	1.35	14.47%	6.60%	30.48%	12.07%
Fertilizers	1.11	13.37%	6.60%	30.48%	11.30%

II. Estimating Cashflows and Growth

Defining Cashflow



From Reported to Actual Earnings



Dealing with Operating Lease Expenses

- Operating Lease Expenses are treated as operating expenses in computing operating income. In reality, operating lease expenses should be treated as financing expenses, with the following adjustments to earnings and capital:
- Debt Value of Operating Leases = Present value of Operating Lease Commitments at the pre-tax cost of debt
- When you convert operating leases into debt, you also create an asset to counter it of exactly the same value.
- Adjusted Operating Earnings

  Adjusted Operating Earnings = Operating Earnings + Operating Lease Expenses - Depreciation on Leased Asset

  - As an approximation, this works:

  Adjusted Operating Earnings = Operating Earnings + Pre-tax cost of Debt * PV of Operating Leases.

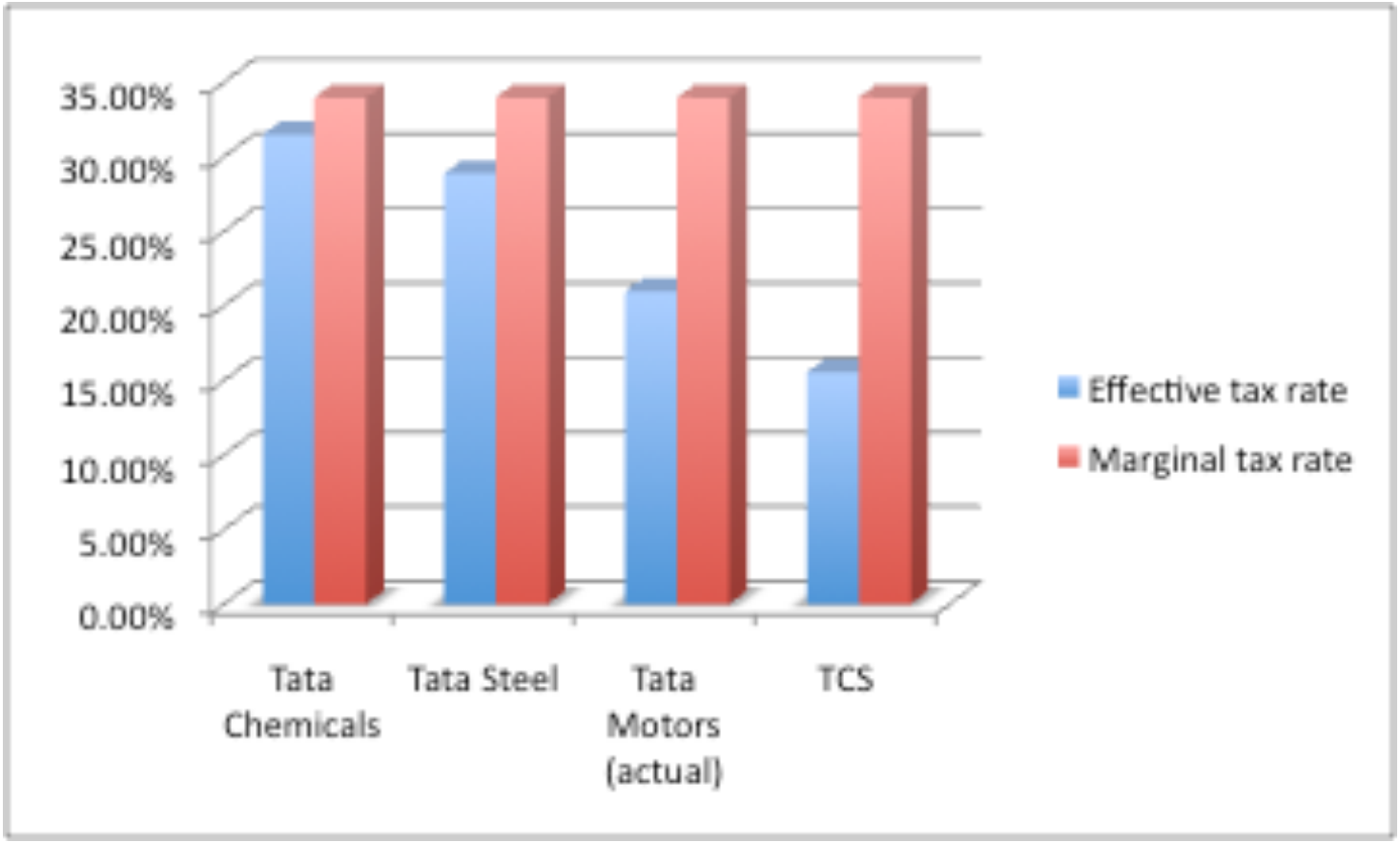
R&D Expenses: Operating or Capital Expenses

- Accounting standards require us to consider R&D as an operating expense even though it is designed to generate future growth. It is more logical to treat it as capital expenditures.
- To capitalize R&D,
  - Specify an amortizable life for R&D (2 - 10 years)
  - Collect past R&D expenses for as long as the amortizable life
  - Sum up the unamortized R&D over the period. (Thus, if the amortizable life is 5 years, the research asset can be obtained by adding up 1/5th of the R&D expense from five years ago, 2/5th of the R&D expense from four years ago...:

What tax rate?

- The tax rate that you should use in computing the after-tax operating income should be
  - The effective tax rate in the financial statements (taxes paid/Taxable income)
  - The tax rate based upon taxes paid and EBIT (taxes paid/EBIT)
  - The marginal tax rate for the country in which the company operates
  - The weighted average marginal tax rate across the countries in which the company operates
  - None of the above
  - Any of the above, as long as you compute your after-tax cost of debt using the same tax rate

Tata Group: Tax Rates



Capital expenditures should include

- Research and development expenses, once they have been re-categorized as capital expenses. The adjusted net cap ex will be

  Adjusted Net Capital Expenditures = Net Capital Expenditures + Current year's R&D expenses - Amortization of Research Asset

- Acquisitions of other firms, since these are like capital expenditures. The adjusted net cap ex will be

  Adjusted Net Cap Ex = Net Capital Expenditures + Acquisitions of other firms - Amortization of such acquisitions

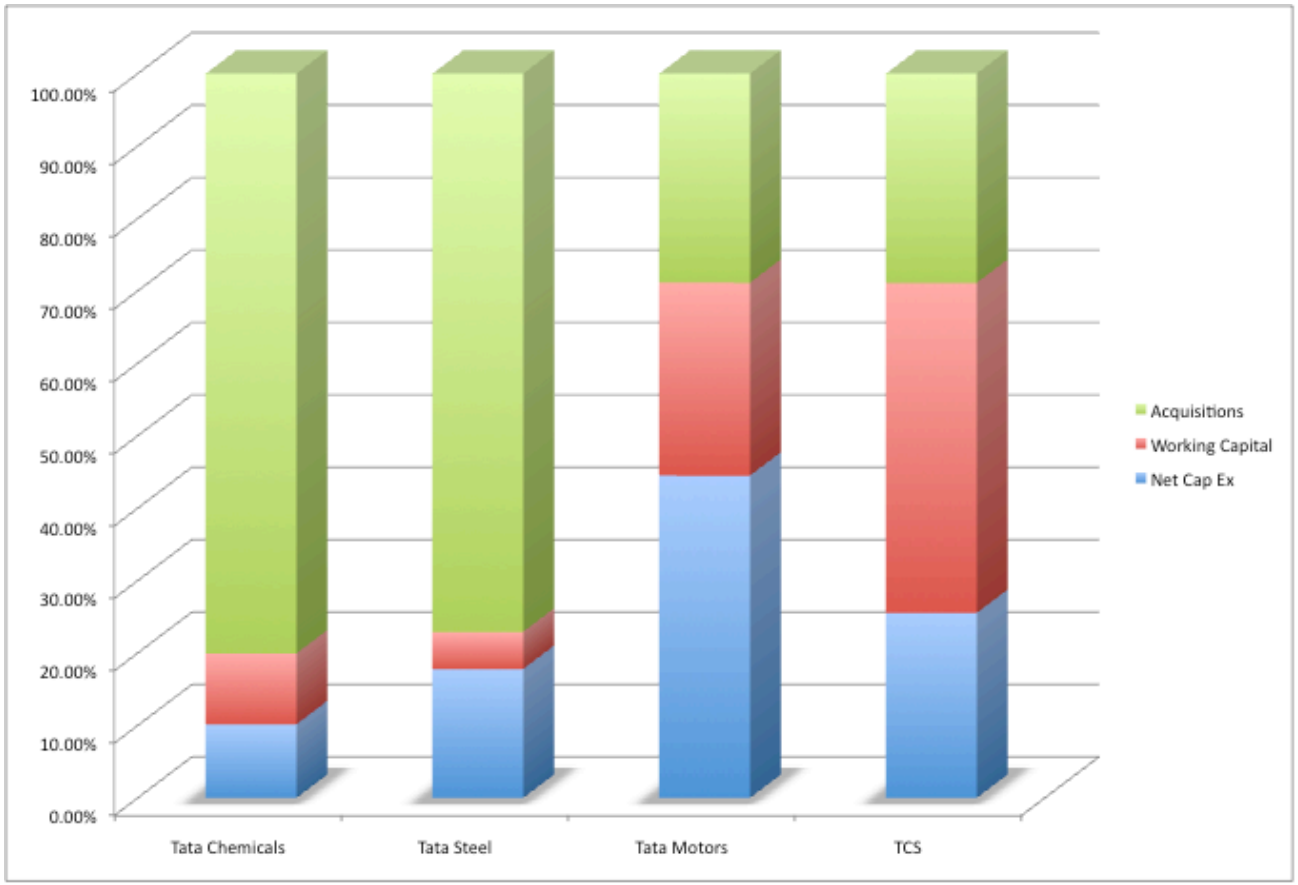
  Two caveats:

  1. Most firms do not do acquisitions every year. Hence, a normalized measure of acquisitions (looking at an average over time) should be used
  2. The best place to find acquisitions is in the statement of cash flows, usually categorized under other investment activities

Working Capital Investments

- In accounting terms, the working capital is the difference between current assets (inventory, cash and accounts receivable) and current liabilities (accounts payables, short term debt and debt due within the next year)
- A cleaner definition of working capital from a cash flow perspective is the difference between non-cash current assets (inventory and accounts receivable) and non-debt current liabilities (accounts payable)
- Any investment in this measure of working capital ties up cash. Therefore, any increases (decreases) in working capital will reduce (increase) cash flows in that period.
- When forecasting future growth, it is important to forecast the effects of such growth on working capital needs, and building these effects into the cash flows.

Breaking down aggregate reinvestment over last 5 years: Tata Group



Estimating FCFF: Tata Group

	Tata Chemicals	Tata Steel	Tata Motors (actual)	Tata Motors (normalized)	TCS
EBIT (1-t)	INR 5,833	INR 60,213	INR 13,846	INR 20,117	INR 43,420
- Net Cap Ex	INR 5,832	INR 61,620	INR 31,590	INR 31,590	INR 5,611
- Chg in WC	INR 4,229	-INR 3,658	INR 2,732	INR 2,732	INR 6,130
FCFF	-INR 4,229	INR 2,252	-INR 20,476	-INR 14,205	INR 31,679

Tax rate =21%

Normalized EBIT = Normalized EBT + Interest Expense in 2009
= Rs 18,727 + Rs 6,737 m= Rs 25,464 m

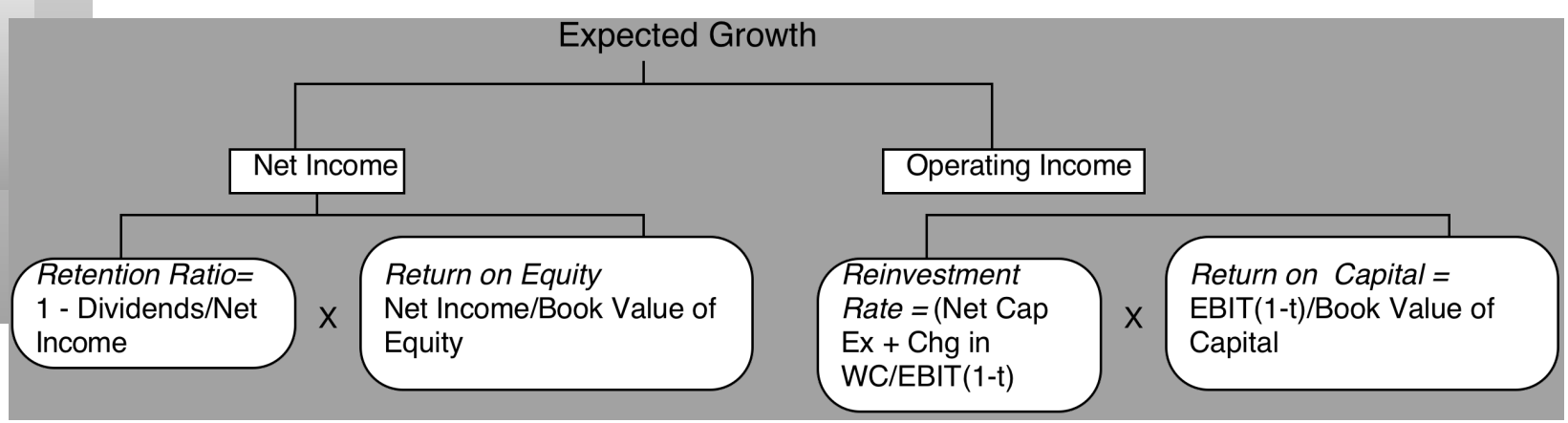
Normalized EBT = Revenues in 2009 * Average Margin
= Rs 265,868 m* 7.04% = Rs 18,727 m

	2004	2005	2006	2007	2008	Total
Revenues	INR 206,487	INR 242,905	INR 320,648	INR 335,771	INR 295,252	INR 1,401,063
EBT	INR 16,519	INR 20,534	INR 25,732	INR 25,765	INR 10,138	INR 98,688
EBT Margin	8.00%	8.45%	8.02%	7.67%	3.43%	7.04%

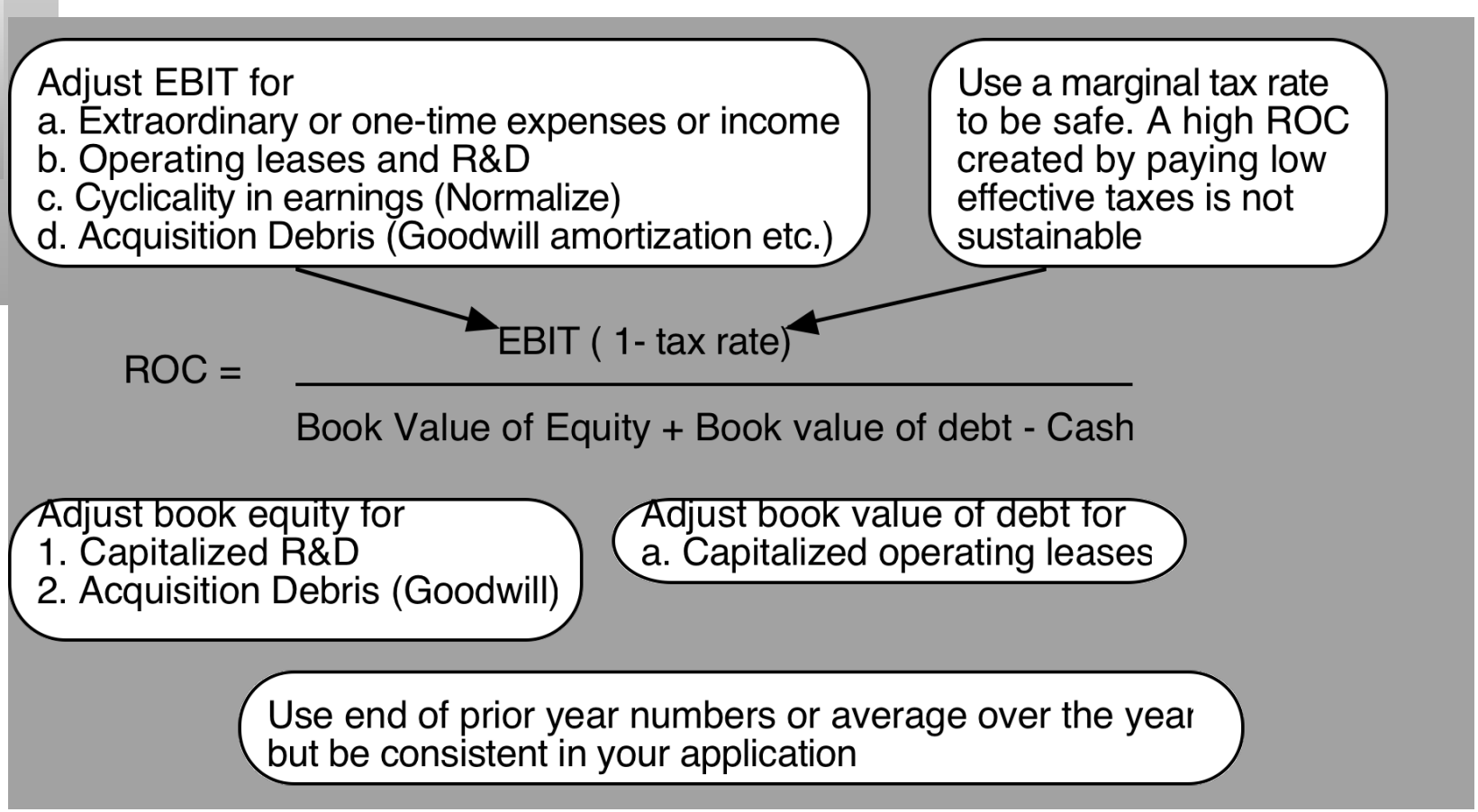
Growth in Earnings

- Look at the past
  - The historical growth in earnings per share is usually a good starting point for growth estimation
- Look at what others are estimating
  - Analysts estimate growth in earnings per share for many firms. It is useful to know what their estimates are.
- Look at fundamentals
  - Ultimately, all growth in earnings can be traced to two fundamentals - how much the firm is investing in new projects, and what returns these projects are making for the firm.

The Determinants of Growth



Measuring Return on Capital (Equity)



Measuring Return on Capital at Tata Group

	Tata Chemicals	Tata Steel	Tata Motors (actual)	Tata Motors (normalized)	TCS
EBIT	INR 8,515	INR 84,683	INR 17,527	INR 25,464	INR 51,414
Tax rate	31.50%	28.90%	21.00%	21.00%	15.55%
EBIT (1-t)	INR 5,833	INR 60,213	INR 13,846	INR 20,117	INR 43,420
BV of Debt	INR 23,438	INR 180,217	INR 62,805	INR 62,805	INR 183
BV of Equity	INR 35,717	INR 273,007	INR 78,395	INR 78,395	INR 110,048
Cash	INR 2,776	INR 4,650	INR 23,973	INR 23,973	INR 3,370
Invested Capital	INR 56,379	INR 448,574	INR 117,227	INR 117,227	INR 106,861
ROC	10.35%	13.42%	11.81%	17.16%	40.63%

Measuring Reinvestment Rate and Expected Growth at Tata Group

	Tata Chemicals	Tata Steel	Tata Motors	TCS
ROC	10.35%	13.42%	17.16%	40.63%
Reinvestment Rate (last year)	172.50%	96.26%	170.61%	27.04%
Reinvestment Rate (last 5 years)	283.28%	166.10%	190.74%	56.73%
Reinvestment Rate (last 5 years - w/ o acquisitions)	56.50%	38.09%	179.59%	30.87%
ROC used	10.35%	13.42%	17.16%	40.63%
Reinvestment rate	56.50%	38.09%	70%	56.73%
Sustainable growth	5.85%	5.11%	12.01%	23.05%

III. The Tail that wags the dog… Terminal Value

Getting Closure in Valuation

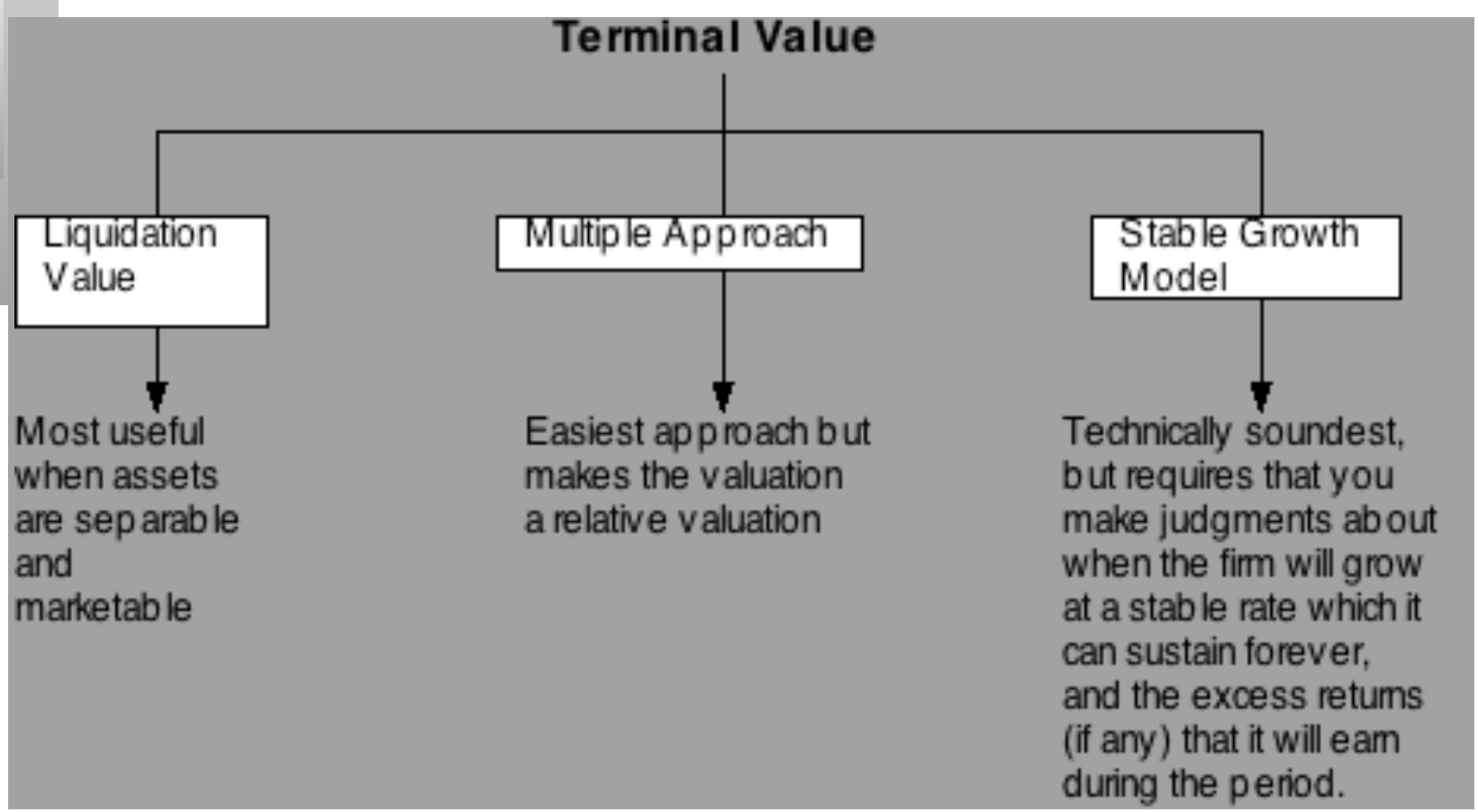
- A publicly traded firm potentially has an infinite life. The value is therefore the present value of cash flows forever.

$$\text{Value} = \sum_{t=1}^{t=\infty} \frac{CF_t}{(1+r)^t}$$

- Since we cannot estimate cash flows forever, we estimate cash flows for a "growth period" and then estimate a terminal value, to capture the value at the end of the period:

$$\text{Value} = \sum_{t=1}^{t=N} \frac{CF_t}{(1+r)^t} + \frac{\text{Terminal Value}}{(1+r)^N}$$

Ways of Estimating Terminal Value



Stable Growth and Terminal Value

- When a firm's cash flows grow at a "constant" rate forever, the present value of those cash flows can be written as:

  Value = Expected Cash Flow Next Period / (r - g)

  where,

  r = Discount rate (Cost of Equity or Cost of Capital)

  g = Expected growth rate

- While companies can maintain high growth rates for extended periods, they will all approach "stable growth" at some point in time. When they will do so will depend upon:
  - How large they are relative to the market in which they operate
  - Their competitive advantages

Four Rules for Terminal value

- Respect the cap: The stable growth rate cannot exceed the growth rate of the economy but it can be set lower. One simple proxy for the nominal growth rate of the economy is the riskfree rate.
  - Riskfree rate = Expected inflation + Expected Real Interest Rate
  - Nominal growth rate in economy = Expected Inflation + Expected Real Growth
- Stable period excess returns: Firms that generate returns on capital that vastly exceed their costs of capital should see these excess returns shrink in stable growth as competition enters and size works against them.
- Reinvest to grow: Growth is never free and this is especially true in stable growth. To grow at a perpetual rate, firms have to reinvest and how much they reinvest will be a function of the return on capital:

  Reinvestment Rate = Stable growth rate/ Stable ROC
- Adjust risk and cost of capital: The cost of equity and capital in stable growth should be reflective of a mature firm in stable growth. In particular,
  - Betas should move towards one
  - Debt ratios should converge on long-term sustainable averages

1. How high can the stable growth rate be?

- The stable growth rate cannot exceed the growth rate of the economy but it can be set lower.
  - If you assume that the economy is composed of high growth and stable growth firms, the growth rate of the latter will probably be lower than the growth rate of the economy.
  - The stable growth rate can be negative. The terminal value will be lower and you are assuming that your firm will disappear over time.
  - If you use nominal cashflows and discount rates, the growth rate should be nominal in the currency in which the valuation is denominated.
- One simple proxy for the nominal growth rate of the economy is the riskfree rate.
  - Riskfree rate = Expected inflation + Expected Real Interest Rate
  - Nominal growth rate in economy = Expected Inflation + Expected Real Growth

2. When will the firm reach stable growth?

- Size of the firm
  - Success usually makes a firm larger. As firms become larger, it becomes much more difficult for them to maintain high growth rates
- Current growth rate
  - While past growth is not always a reliable indicator of future growth, there is a correlation between current growth and future growth. Thus, a firm growing at 30% currently probably has higher growth and a longer expected growth period than one growing 10% a year now.
- Barriers to entry and differential advantages
  - Ultimately, high growth comes from high project returns, which, in turn, comes from barriers to entry and differential advantages.
  - The question of how long growth will last and how high it will be can therefore be framed as a question about what the barriers to entry are, how long they will stay up and how strong they will remain.

3. What else should change in stable growth?

- In stable growth, firms should have the characteristics of other stable growth firms. In particular,
  - The risk of the firm, as measured by beta and ratings, should reflect that of a stable growth firm.
    - Beta should move towards one
    - The cost of debt should reflect the safety of stable firms (BBB or higher)
  - The debt ratio of the firm might increase to reflect the larger and more stable earnings of these firms.
    - The debt ratio of the firm might moved to the optimal or an industry average
    - If the managers of the firm are deeply averse to debt, this may never happen
  - The return on capital generated on investments should move to sustainable levels, relative to both the sector and the company's own cost of capital.

4. What excess returns will you generate in stable growth and why does it matter?

- Strange though this may seem, the terminal value is not as much a function of stable growth as it is a function of what you assume about excess returns in stable growth.
- The key connecting link is the reinvestment rate that you have in stable growth, which is a function of your return on capital:

  Reinvestment Rate = Stable growth rate/ Stable ROC

  The terminal value can be written in terms of ROC as follows:

  Terminal Value = $EBIT_{n+1}$ (1-t) (1 – g/ ROC)/ (Cost of capital – g)
- In the scenario where you assume that a firm earns a return on capital equal to its cost of capital in stable growth, the terminal value will not change as the growth rate changes.
- If you assume that your firm will earn positive (negative) excess returns in perpetuity, the terminal value will increase (decrease) as the stable growth rate increases.

Stable Growth Assumptions: Tata Group

		Tata Chemicals	Tata Steel	Tata Motors	TCS
Beta	High Growth	1.21	1.57	1.20	1.05
	Stable Growth	1.00	1.20	1.00	1.00
Lambda	High Growth	0.75	1.10	0.80	0.20
	Stable Growth	0.75	1.10	0.80	0.20
Country Risk Premium	High Growth	4.50%	4.50%	4.50%	4.50%
	Stable Growth	3.00%	3.00%	3.00%	3.00%
Cost of equity	High Growth	13.82%	17.02%	14.00%	10.63%
	Stable Growth	11.75%	13.70%	11.90%	10.10%
Debt Ratio	High Growth	30.48%	29.59%	25.30%	0.03%
	Stable Growth	30.48%	29.59%	25.30%	10%
Cost of debt	High Growth	10.00%	9.25%	12.25%	8.50%
	Stable Growth	8.00%	7.75%	9.00%	6.50%
Cost of capital	High Growth	11.62%	13.79%	12.50%	10.62%
	Stable Growth	9.78%	11.16%	10.39%	9.52%
Reurn on capital	High Growth	13.42%	11.81%	17.16%	40.63%
	Stable Growth	9.78%	11.16%	12.00%	15%
Reinvestment Rate	High Growth	56.50%	38.09%	70.00%	56.73%
	Stable Growth	51.14%	44.80%	41.67%	33.33%
Expected growth rate	High Growth	5.85%	5.11%	12.01%	23.05%
	Stable Growth	5%	5%	5%	5%

Terminal Value and Growth: Contrasts

Stable growth rate	Tata Chemicals	Tata Steel	Tata Motors	TCS
0%	INR 80,187	INR 674,891	INR 435,686	INR 1,869,744
1%	INR 80,187	INR 674,891	INR 441,901	INR 1,949,941
2%	INR 80,187	INR 674,891	INR 449,598	INR 2,051,468
3%	INR 80,187	INR 674,891	INR 459,376	INR 2,184,144
4%	INR 80,187	INR 674,891	INR 472,214	INR 2,364,898
5%	INR 80,187	INR 674,891	INR 489,813	INR 2,625,649
Return on capital	9.78%	11.16%	12.00%	15.00%
Cost of capital	9.78%	11.16%	10.39%	9.52%

V. Tying up Loose Ends

For firm value to equity value per share

1. Value cash and other non-operating assets

- When you discount operating cash flows at the cost of capital, you have valued only the operating assets (that contribute to the operating income) of the firm. Any assets whose earnings are not counted as part of operating income have not been valued yet. In particular, these would include:
  - Cash and marketable securities: The income from these are not part of operating income. Hence, the current value of these assets has to be added to the value of the operating assets.
  - Non-operating assets: If the firm own other assets that have value but do not contribute to operations, the value of these assets should also be included in the firm value.
- The key, though, is to not double count an asset. Thus, an asset (say your office headquarters building) that has value but is used for operations should not be added on to the value of operating assets.

2. Dealing with Holdings in Other firms

- Cross holdings in other firms can create problems because the accounting for these holdings can vary widely across countries, across companies and even within the same company, across different holdings. In particular, we care about
  - How the income from these holdings is accounted for in the income statement
    - What is counted as income? (Operating income, Net income or just dividends)
    - Where is it shown? (Above or below the operating income line)
    - How much of the income is shown? (The share of the holding, 100%?)
  - How is the value of the asset recorded on the balance sheet?
    - Is it recorded at original cost, updated book value or market value?
    - Is just the net value of the holding shown or are all of the assets and liabilities recorded?

How to value holdings in other firms.. In a perfect world..

- 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.
  - To have a manageable number of subsidiaries

Three compromise solutions…

- 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.
- The "take what I can get" solution: Estimate the market value of those holdings that are publicly traded, the relative value of those holdings where there are publicly traded investments to obtain multiples from and book value for the rest.

3. Subtract out "debt"

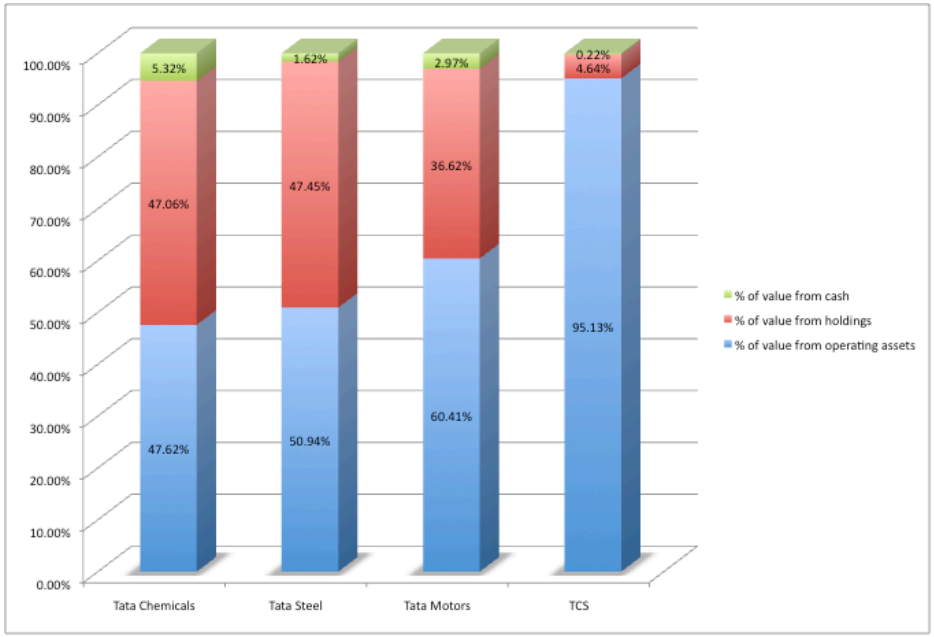
- If you have under funded pension fund or health care plans, you should consider the under funding at this stage in getting to the value of equity.
  - If you do so, you should not double count by also including a cash flow line item reflecting cash you would need to set aside to meet the unfunded obligation.
  - 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

4. Value other claims on equity

- In recent years, firms have turned to giving employees (and especially top managers) equity option packages as part of compensation. These options are usually
  - Long term
  - At-the-money when issued
  - On volatile stocks
- Options outstanding
  - Step 1: List all options outstanding, with maturity, exercise price and vesting status.
  - Step 2: Value the options, taking into accoutning dilution, vesting and early exercise considerations
  - Step 3: Subtract from the value of equity and divide by the actual number of shares outstanding (not diluted or partially diluted).

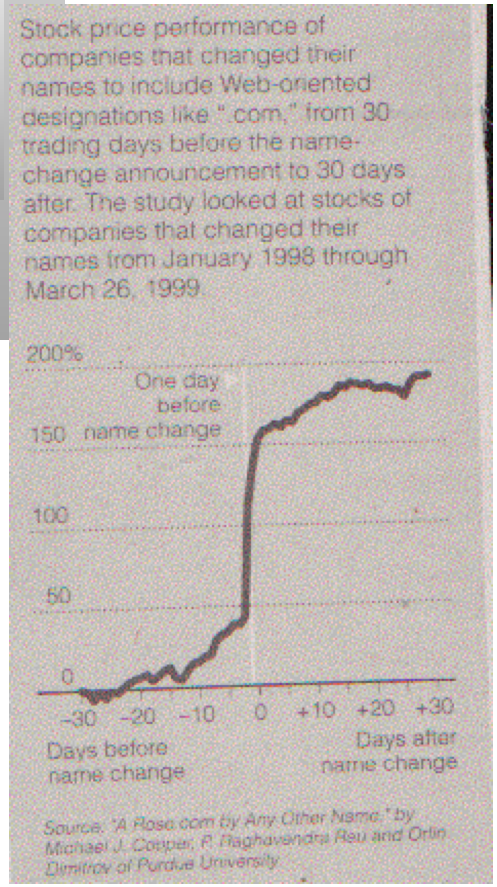
Getting to per share value: Tata Companies

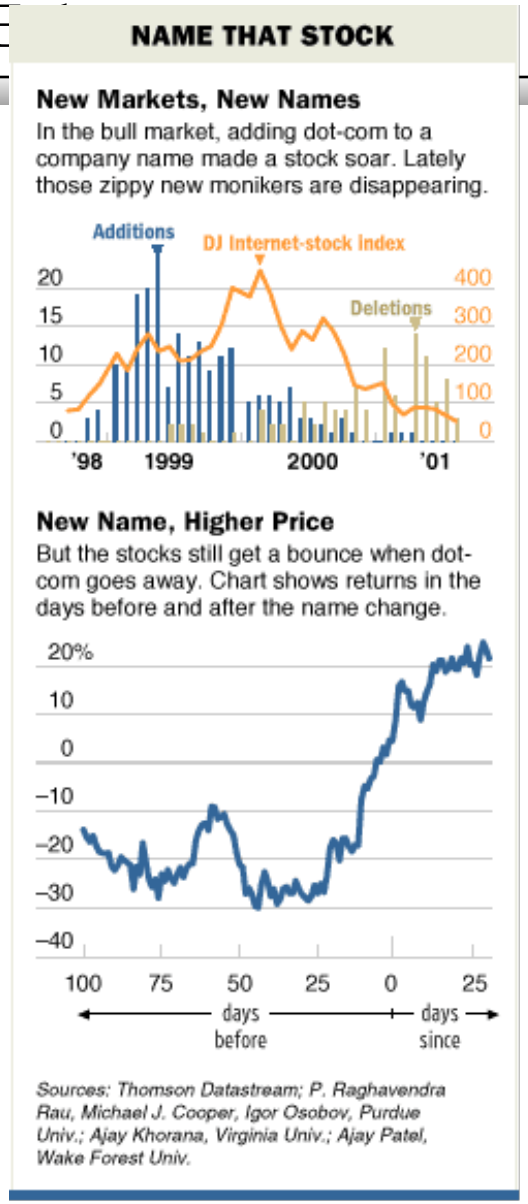
	Tata Chemicals	Tata Steel	Tata Motors	TCS
Value of Operating Assets	INR 57,129	INR 501,661	INR 231,914	INR 1,355,361
+ Cash	INR 6,388	INR 15,906	INR 11,418	INR 3,188
+ Value of Holdings	INR 56,454	INR 467,315	INR 140,576	INR 66,141
Value of Firm	INR 119,971	INR 984,882	INR 383,908	INR 1,424,690
- Debt	INR 32,374	INR 235,697	INR 109,198	INR 505
- Options	INR 0	INR 0	INR 0	INR 0
Value of Equity	INR 87,597	INR 749,185	INR 274,710	INR 1,424,184
Value per share	INR 372.34	INR 844.43	INR 665.07	INR 727.66



Corporate Finance meets Value: The secret to value enhancement

Price Enhancement versus Value E

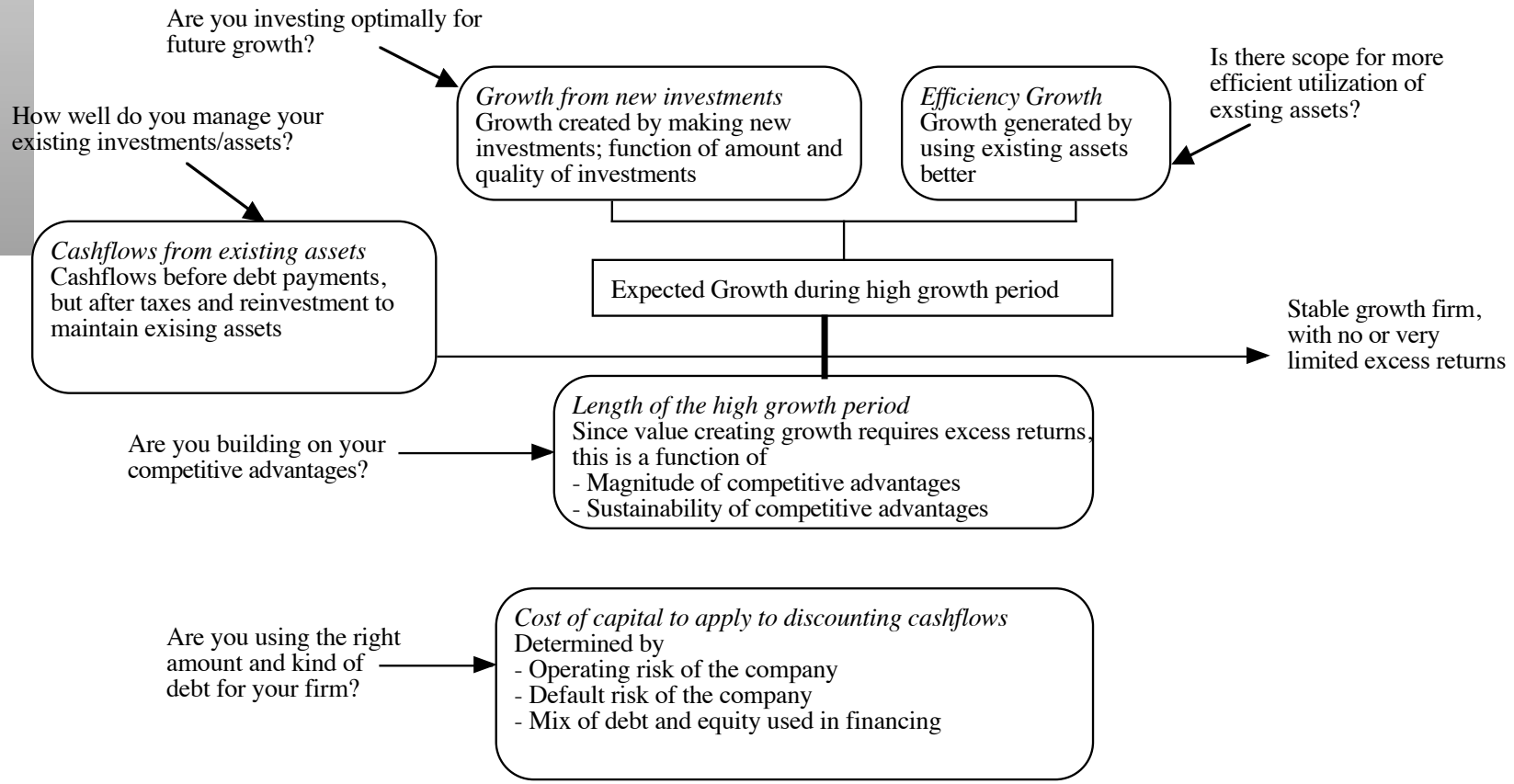




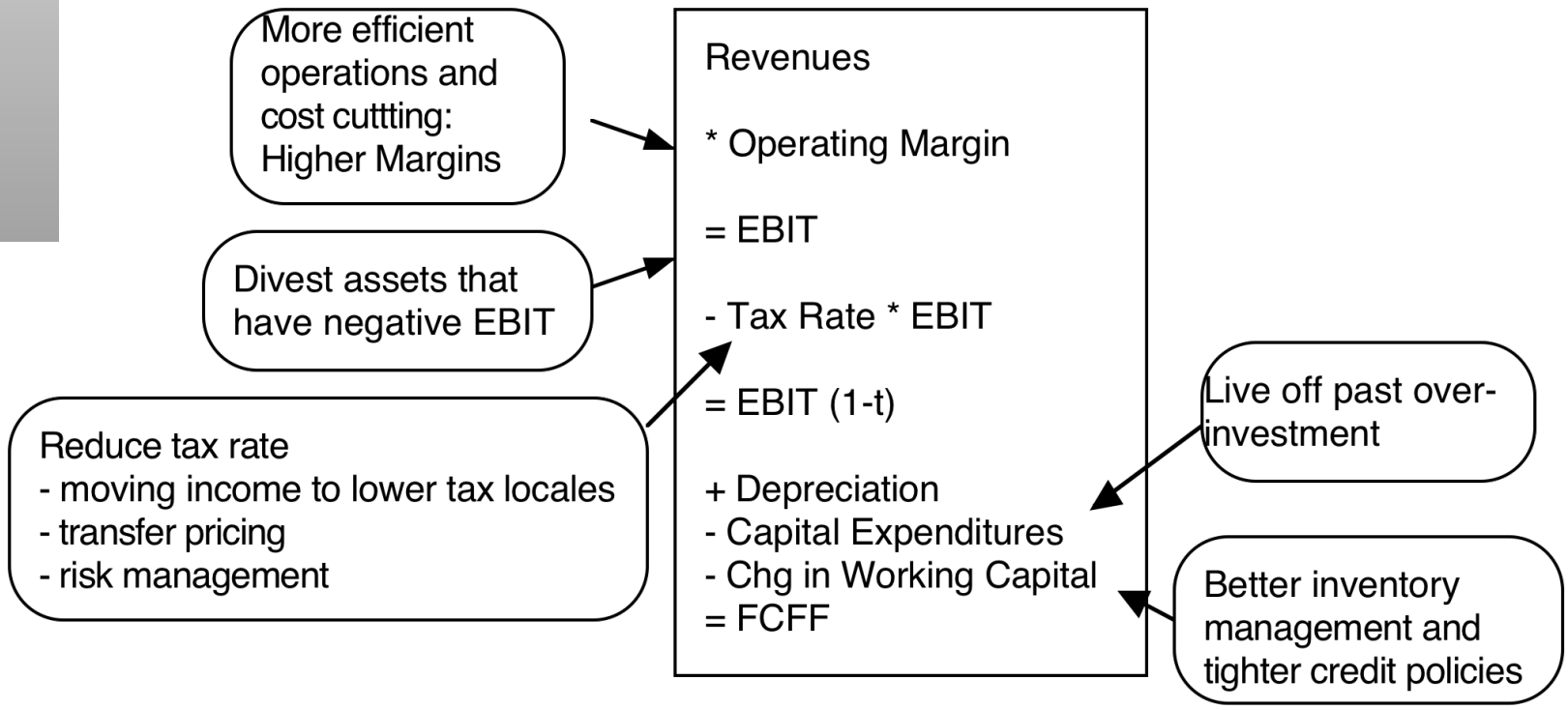
Value-Neutral Actions

- Stock splits and stock dividends change the number of units of equity in a firm, but cannot affect firm value since they do not affect cash flows, growth or risk.
- Accounting decisions that affect reported earnings but not cash flows should have no effect on value.
  - Changing inventory valuation methods from FIFO to LIFO or vice versa in financial reports but not for tax purposes
  - Changing the depreciation method used in financial reports (but not the tax books) from accelerated to straight line depreciation
  - Major non-cash restructuring charges that reduce reported earnings but are not tax deductible
  - Using pooling instead of purchase in acquisitions cannot change the value of a target firm.
- Decisions that create new securities on the existing assets of the firm (without altering the financial mix) such as tracking stock.

The Paths to Value Creation.. Back to the determinants of value..



Value Creation 1: Increase Cash Flows from Assets in Place



1.1.: Poor Investments: Should you divest?

- Every firm has at least a few investments in place that are poor investments, earning less than the cost of capital or even losing money.
- In deciding whether to divest, there are three values that we need to consider:
  - **Continuing Value**: This is the present value of the expected cash flows from continuing the investment through the end of its life.
  - **Salvage or Liquidation Value**: This is the net cash flow that the firm will receive if it terminated the project today.
  - **Divestiture Value**: This is the price that will be paid by the highest bidder for this investment.
- If the continuing value is the greatest, there can be no value created by terminating or liquidating this investment, even if it is a bad investment.
- If the liquidation or divestiture value is greater than the continuing value, the firm value will increase by the difference between the two values:

  If liquidation is optimal: Liquidation Value - Continuing Value

  If divestiture is optimal: Divestiture Value - Continuing Value

1.2: Manage working capital

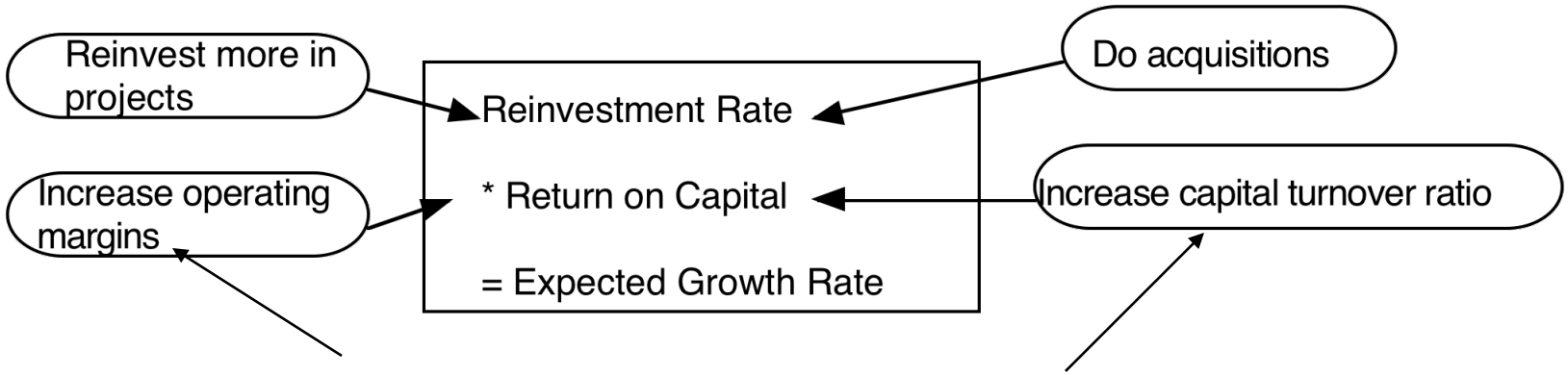
- If non-cash working capital is defined to be the difference between non-cash current assets (accounts receivable & inventory) and non-debt current liabilities (accounts payable & supplier credit), there are three ways in which you can reduce working capital (and increase cash flows):
  - Reduce inventory at every stage in the process (work in process, finished goods)
  - Offer less or tighter credit and/or demand a fair market interest rate when offering credit.
  - Use supplier credit or accounts payable, but only if the financing cost (explicit or implicit) is lower than the company's pre-tax cost of debt.
- Reducing working capital is not a free good. The cash flow gain from reducing inventory and tightening credit has to be weighed off against the cost of lost sales and profits.

Potential for increasing cash flows from existing assets: Tata Group

	Tata Chemicals	Tata Steel	Tata Motors	TCS
Revenues	INR 83,627	INR 243,158	INR 265,868	INR 219,478
Operating Income	INR 8,515	INR 84,683	INR 17,527	INR 51,414
Invested Capital	INR 56,379	INR 448,574	INR 117,227	INR 117,227
Operating Profit Margin	10.18%	34.83%	6.59%	23.43%
Industry average	*19.87%*	*18.78%*	*7.65%*	*24.51%*
Sales/Turnover Ratio	1.48	0.54	2.27	1.87
Industry average	*1.67*	*1.35*	*2.36*	*2.12*

Value Creation 2: Increase Expected Growth

- Keeping all else constant, increasing the expected growth in earnings will increase the value of a firm.
- The expected growth in earnings of any firm is a function of two variables:
  - The amount that the firm reinvests in assets and projects
  - The quality of these investments



Price Leader versus Volume Leader Strategies
*Return on Capital = Operating Margin * Capital Turnover Ratio*

2.1: Increase the Reinvestment Rate

- Holding all else constant, increasing the reinvestment rate will increase the expected growth in earnings of a firm. Increasing the reinvestment rate will, however, reduce the cash flows of the firms. The net effect will determine whether value increases or decreases.
- As a general rule,
  - Increasing the reinvestment rate when the ROC is less than the cost of capital will reduce the value of the firm
  - Increasing the reinvestment rate when the ROC is greater than the cost of capital will increase the value of the firm

2.2: Improve Quality of Investments

- If a firm can increase its return on capital on new projects, while holding the reinvestment rate constant, it will increase its firm value.
  - The firm's cost of capital still acts as a floor on the return on capital. If the return on capital is lower than the cost of capital, increasing the return on capital will reduce the amount of value destroyed but will not create value. The firm would be better off under those circumstances returning the cash to the owners of the business.
  - It is only when the return on capital exceeds the cost of capital, that the increase in value generated by the higher growth will more than offset the decrease in cash flows caused by reinvesting.
- This proposition might not hold, however, if the investments are in riskier projects, because the cost of capital will then increase.

Assessing the Tata Companies Growth Potential

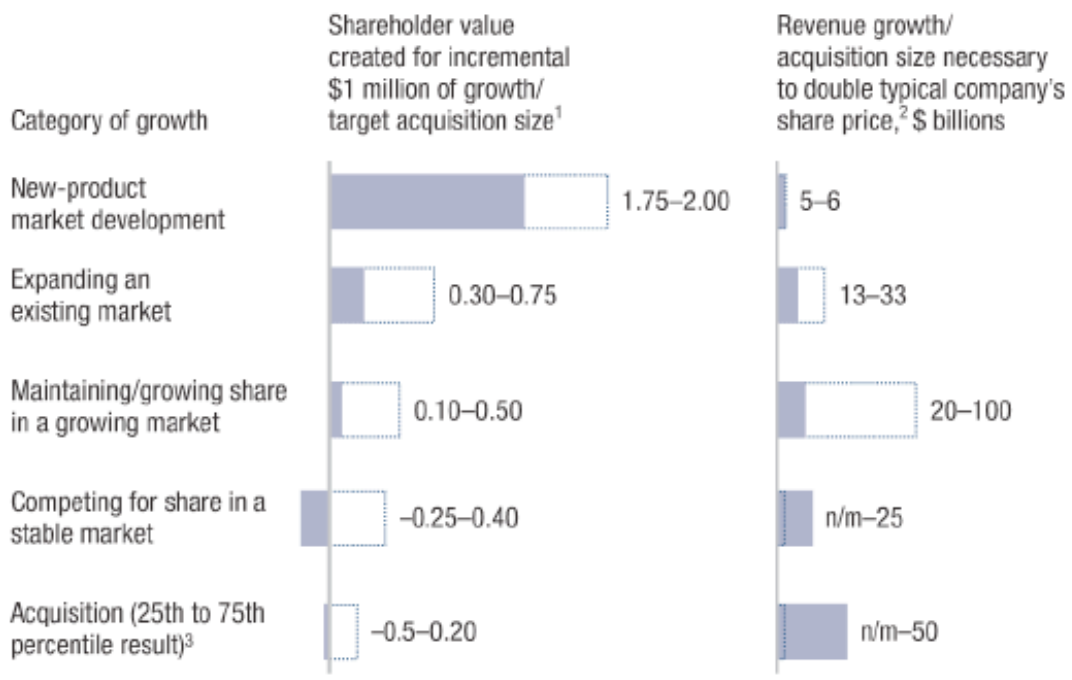
	Tata Chemical	Tata Steel	Tata Motors	TCS
Return on capital	10.35%	13.42%	11.81%	40.63%
Reinvestment Rate	56.50%	38.09%	70.00%	56.73%
Expected Growth	5.85%	5.11%	8.27%	23.05%
Cost of capital	11.62%	13.79%	12.50%	10.62%

A postscript on creating growth: The Role of Acquisitions and Divestitures

- An acquisition is just a large-scale project. All of the rules that apply to individual investments apply to acquisitions, as well. For an acquisition to create value, it has to
  - Generate a higher return on capital, after allowing for synergy and control factors, than the cost of capital.
  - Put another way, an acquisition will create value only if the present value of the cash flows on the acquired firm, inclusive of synergy and control benefits, exceeds the cost of the acquisitons
- A divestiture is the reverse of an acquisition, with a cash inflow now (from divesting the assets) followed by cash outflows (i.e., cash flows foregone on the divested asset) in the future. If the present value of the future cash outflows is less than the cash inflow today, the divestiture will increase value.
- A fair-price acquisition or divestiture is value neutral.

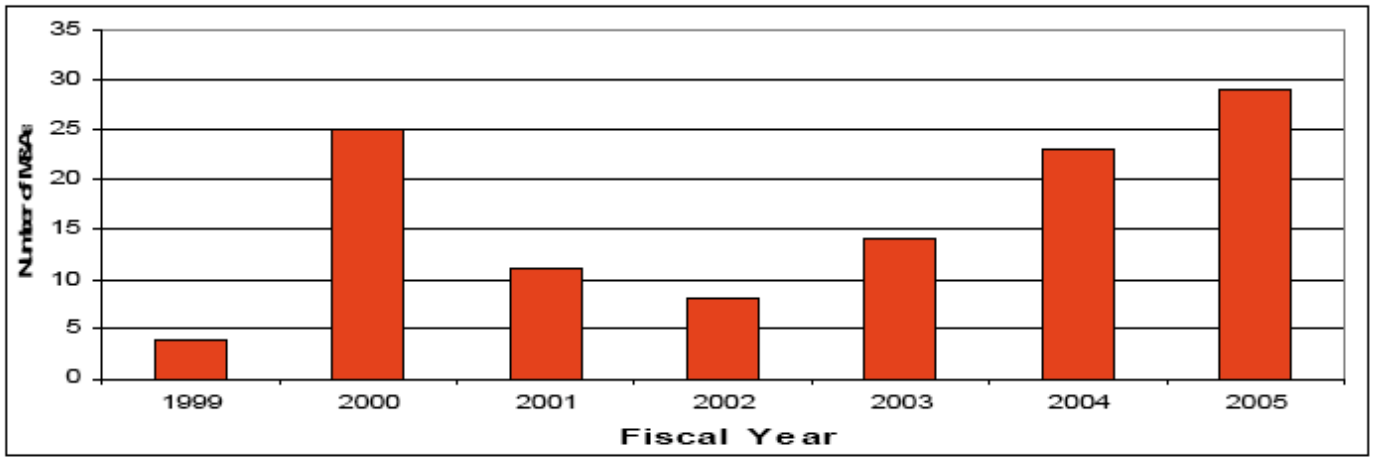
Value Creating Growth… Evaluating the Alternatives..

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



Indian companies are becoming acquirers…

Figure 1. Number of US Acquisitions Made by Indian Firms (Year 1999 to 2005)



This trend makes us feel good, but does it create value? Returns to Indian firms acquiring US firms..

Figure 2. Acquisition Announcement Effect on the Acquiring Firms' Stocks

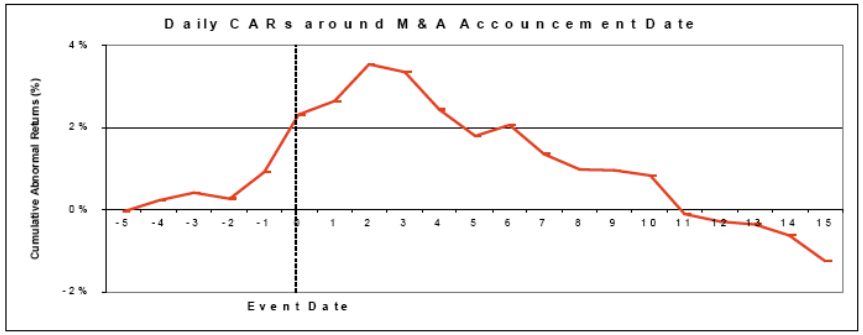
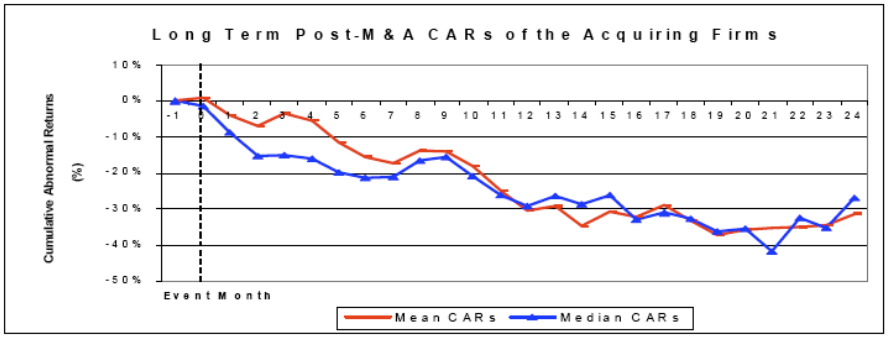


Figure 3. Long Term Stock Performance of the Acquiring Firms



A more general problem… Growing through acquisitions has never been easy…

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

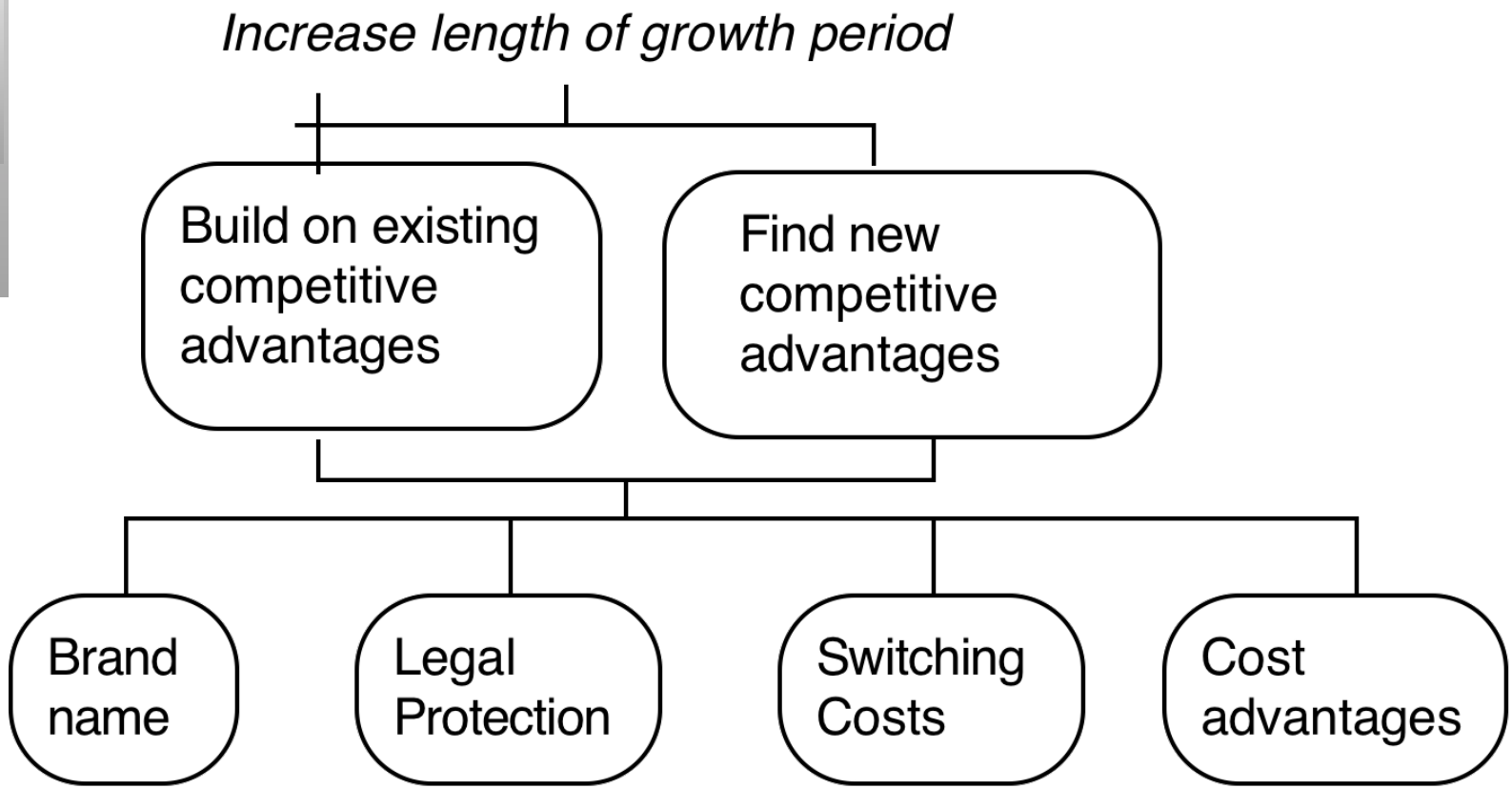
Seven reasons why acquisitions fail…

1. Risk Transference: Attributing acquiring company risk characteristics to the target firm. Just because you are a safe firm and operate in a secure market, does not mean that you can transfer these characteristics to a target firm.
2. Debt subsidies: Subsiding target firm stockholders for the strengths of the acquiring firm is providing them with a benefit they did not earn.
3. Auto-pilot Control: Adding 20% or some arbitrary number to the market price just because other people do it is a recipe for overpayment. Using silly rules such as EPS accretion just makes the problem worse.
4. Elusive Synergy: While there is much talk about synergy in mergers, it is seldom valued realistically or appropriately.
5. Its all relative: The use of transaction multiples (multiples paid by other acquirers in acquisitions) perpetuates over payment.
6. Verdict first, trial afterwards: Deciding you want to do an acquisition first and then looking for justification for the price paid does not make sense.
7. It's not my fault: Holding no one responsible for delivering results is a sure-fire way not to get results…

Testing Tata's acquisition strategy?

- Do you use your company's cost of equity to value the target company?
- Do you use your company's cost of debt and debt capacity to estimate the cost of capital for the target company?
- Do you add arbitrary premiums for control and other components or justify acquisitions based upon EPS accretion?
- Do you value synergy realistically? Do you try to bargain for a share of that value?
- Do you use transaction multiples to justify acquisitions?
- Do you decide on whether to do the acquisition before you look at the value?
- Do you hold those who are the strongest advocates for the acquisitions (managers, investment bankers) accountable for their performance?

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

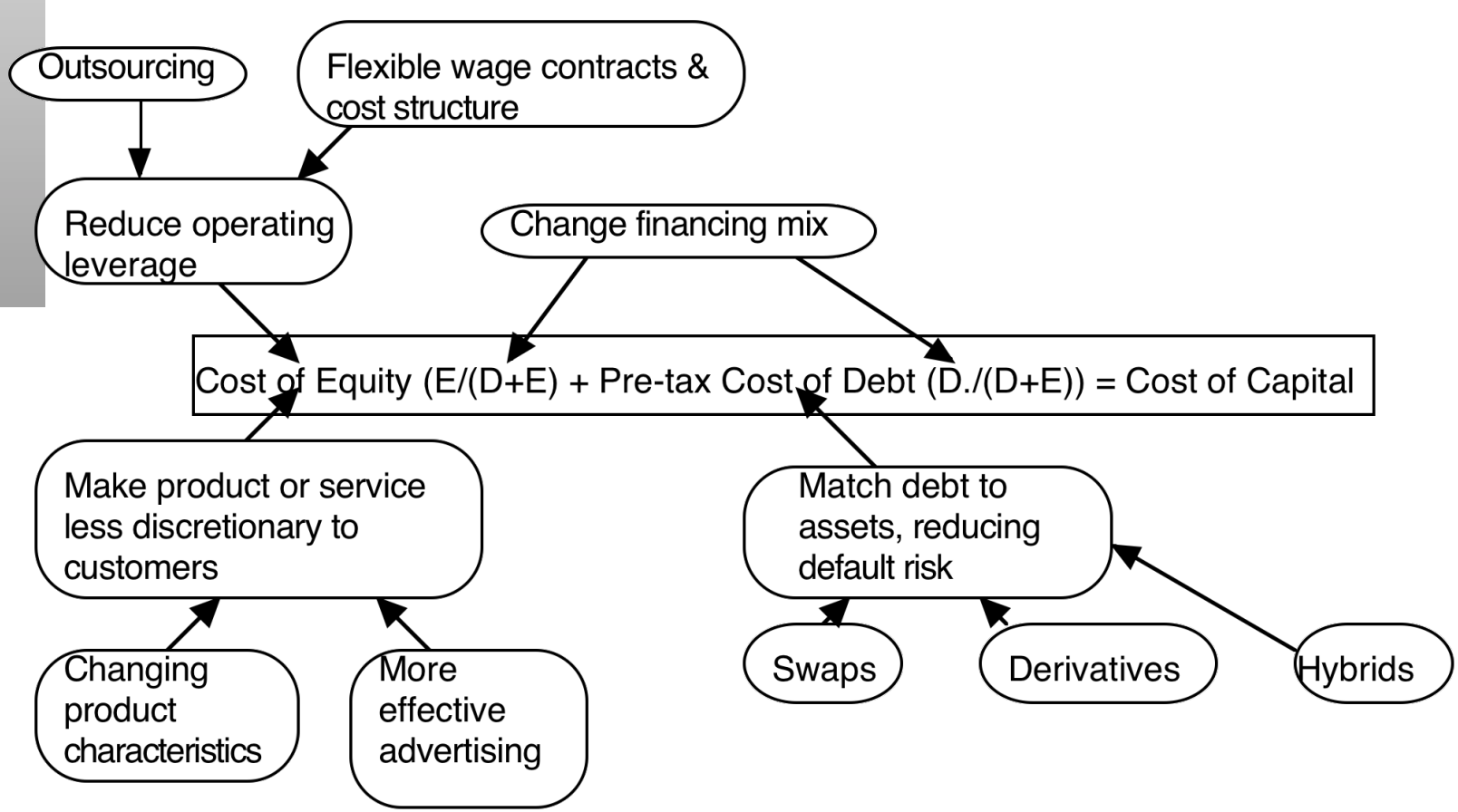


Gauging Barriers to Entry

	Tata Chemicals	Tata Steel	Tata Motors	TCS
ROC	10.35%	13.42%	11.81% (17.16%)	40.63%
Cost of capital	11.62%	13.79%	12.50%	10.62%
Length of growth period	5	5	10	10
Competitive Advantages	Is there one?	Breaking even?	What is the edge?	The jewel in the crown?

- For the two companies where there is little evidence of a competitive edge, which barrier to entry offers the most promise? What if you cannot find one?
- For the one company (Tata Motors) which may or may not have excess returns, what is the competitive edge? How can you make it stronger?
- For the one company (TCS) which seems to have the most significant excess returns, what is the most significant competitive advantage? What are the biggest threats you see to this competitive advantage?

Value Creation 4: Reduce Cost of Capital



Optimal Financing Mix: Tata Chemicals

Debt Ratio	Beta	Cost of Equity	Bond Rating	Interest rate on debt	Tax Rate	Cost of Debt (after-tax)	WACC	Firm Value (G)
0%	0.94	11.84%	AAA	8.50%	33.99%	5.61%	11.84%	INR 102,601
10%	1.01	12.34%	AAA	8.50%	33.99%	5.61%	11.67%	INR 105,375
20%	1.09	12.97%	A+	9.00%	33.99%	5.94%	11.56%	INR 107,152
30%	1.20	13.78%	A-	9.50%	33.99%	6.27%	11.52%	INR 107,831
40%	1.35	14.85%	B+	12.25%	33.99%	8.09%	12.14%	INR 98,001
50%	1.56	16.36%	B-	13.50%	33.99%	8.91%	12.63%	INR 91,387
60%	1.87	18.61%	CC	18.00%	33.99%	11.88%	14.57%	INR 71,784
70%	2.46	22.92%	CC	18.00%	30.58%	12.50%	15.62%	INR 64,170
80%	3.82	32.83%	C	20.00%	23.29%	15.34%	18.84%	INR 48,022
90%	7.70	61.16%	C	20.00%	19.89%	16.02%	20.54%	INR 42,200

Optimal Financing: Tata Companies

	Tata Chemicals	Tata Steel	Tata Motors	TCS
Debt Ratio	30.48%	29.59%	25.30%	0.03%
Cost of capital	11.62%	13.79%	12.50%	10.62%
Optimal Debt Ratio	30%	40%	10%	0%
Cost of capital	11.52%	13.77%	12.20%	10.62%

Is the debt matched to assets at these companies?
Can you reduce your fixed costs? If so, how?
Are there ways you can make your product/service less discretionary?

V. From fair value to fair price..

There is many a slip between the cup and the lip…

Are markets fair?

- In an efficient market, the market price converges instantaneously on value. Thus, a firm that takes value increasing actions will see its stock price go up and a firm that is value destructive will be punished by the market.
- In practice, there are three potential impediments to this process working smoothly:
  - Investors may be irrational and/or short term.
  - Markets may not trust the managers of the firm.
  - Information about the actions may not get to markets or the message may be muddled.

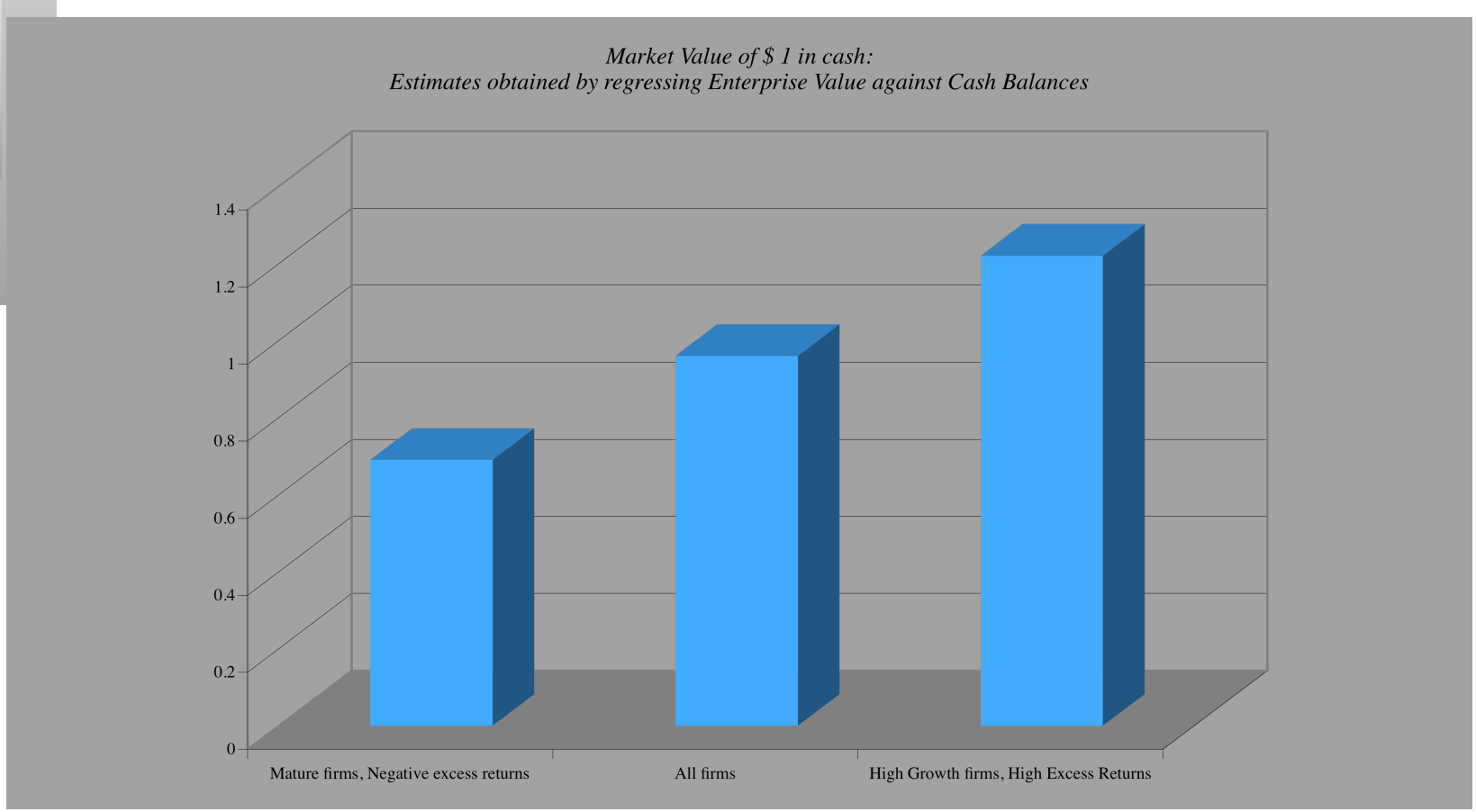
I. The "right" investors

- Optimally, a firm that is focused on long term value would like to get investors who
  - Have long time horizons
  - Care about fundamentals
  - Do their research/homework
- While firms do not get to pick their investors, they can influence the composition by
  - Having a core of long term investors who may also be insiders in the firm
  - Choosing a dividend policy that attracts the right type of investors
  - What they focus on when they make decisions

II. Management Trust

- Management trust is earned through a history of being focused on delivering value to investors. In other words, firms that have delivered solid returns to stockholders over time and taken good investments earn the trust of their stockholders, whereas firms that have delivered poor returns or over promised lose that trust.
- When a firm loses the trust of its stockholders, it will not only find every action that it takes subjected to scrutiny and scrutiny but will come under intense pressure to return more of its cash to stockholders.

A Symbol of Distrust
How much cash is too much cash?



III. Information Gaps

- For markets to react appropriately to actions taken by a firm, information about those actions has to be conveyed clearly and credibly to markets. In practice, information disclosure is hindered by
  - An unwillingness to provide "key" details of actions, for fear of letting competitors in on secrets.
  - A belief that investors are not intelligent or informed enough to use information appropriately.
  - An inability to communicate effectively and directly.
  - Complexity and confusion in the disclosure,
- Managers will be better served trusting their investors to make the right judgments about actions and providing them with the information (positive and negative) to make these judgments.

Information Overload
A Discount for Complexity

	Company A	*Company B*
Operating Income	$ 1 billion	$ 1 billion
Tax rate	40%	40%
ROIC	10%	10%
Expected Growth	5%	5%
Cost of capital	8%	8%
Business Mix	Single Business	Multiple Businesses
Holdings	Simple	Complex
Accounting	Transparent	Opaque

- *Which firm would you value more highly?*

Measuring Complexity: Volume of Data in Financial Statements

Company	*Number of pages in last 10Q*	*Number of pages in last 10K*
General Electric	65	410
Microsoft	63	218
Wal-mart	38	244
Exxon Mobil	86	332
Pfizer	171	460
Citigroup	252	1026
Intel	69	215
AIG	164	720
Johnson & Johnson	63	218
IBM	85	353

Measuring Complexity: A Complexity Score

Item	Factors	Follow-up Question	Answer	Weighting factor	Gerdau Score	GE Score
Operating Income	1. Multiple Businesses	Number of businesses (with more than 10% of revenues) =	1	2.00	2	30
	2. One-time income and expenses	Percent of operating income =	10%	10.00	1	0.8
	3. Income from unspecified sources	Percent of operating income =	0%	10.00	0	1.2
	4. Items in income statement that are volatile	Percent of operating income =	15%	5.00	0.75	1
Tax Rate	1. Income from multiple locales	Percent of revenues from non-domestic locales =	70%	3.00	2.1	1.8
	2. Different tax and reporting books	Yes or No	No	Yes=3	0	3
	3. Headquarters in tax havens	Yes or No	No	Yes=3	0	0
	4. Volatile effective tax rate	Yes or No	Yes	Yes=2	2	0
Capital Expenditures	1. Volatile capital expenditures	Yes or No	Yes	Yes=2	2	2
	2. Frequent and large acquisitions	Yes or No	Yes	Yes=4	4	4
	3. Stock payment for acquisitions and investments	Yes or No	No	Yes=4	0	4
Working capital	1. Unspecified current assets and current liabilities	Yes or No	No	Yes=3	0	0
	2. Volatile working capital items	Yes or No	Yes	Yes=2	2	2
Expected Growth rate	1. Off-balance sheet assets and liabilities (operating leases and R&D)	Yes or No	No	Yes=3	0	3
	2. Substantial stock buybacks	Yes or No	No	Yes=3	0	3
	3. Changing return on capital over time	Is your return on capital volatile?	Yes	Yes=5	5	5
	4. Unsustainably high return	Is your firm's ROC much higher than industry average?	No	Yes=5	0	0
Cost of capital	1. Multiple businesses	Number of businesses (more than 10% of revenues) =	1	1.00	1	20
	2. Operations in emerging markets	Percent of revenues=	50%	5.00	2.5	2.5
	3. Is the debt market traded?	Yes or No	No	No=2	2	0
	4. Does the company have a rating?	Yes or No	Yes	No=2	0	0
	5. Does the company have off-balance sheet debt?	Yes or No	No	Yes=5	0	5
No-operating assets	Minority holdings as percent of book assets	Minority holdings as percent of book assets	0%	20.00	0	0.8
Firm to Equity value	Consolidation of subsidiaries	Minority interest as percent of book value of equity	63%	20.00	12.6	1.2
Per share value	Shares with different voting rights	Does the firm have shares with different voting rights?	Yes	Yes = 10	10	0
	Equity options outstanding	Options outstanding as percent of shares	0%	10.00	0	0.25
		Complexity Score =			48.95	90.55

Back to Lemmings...