



Living with Noise

Valuation in the face of uncertainty

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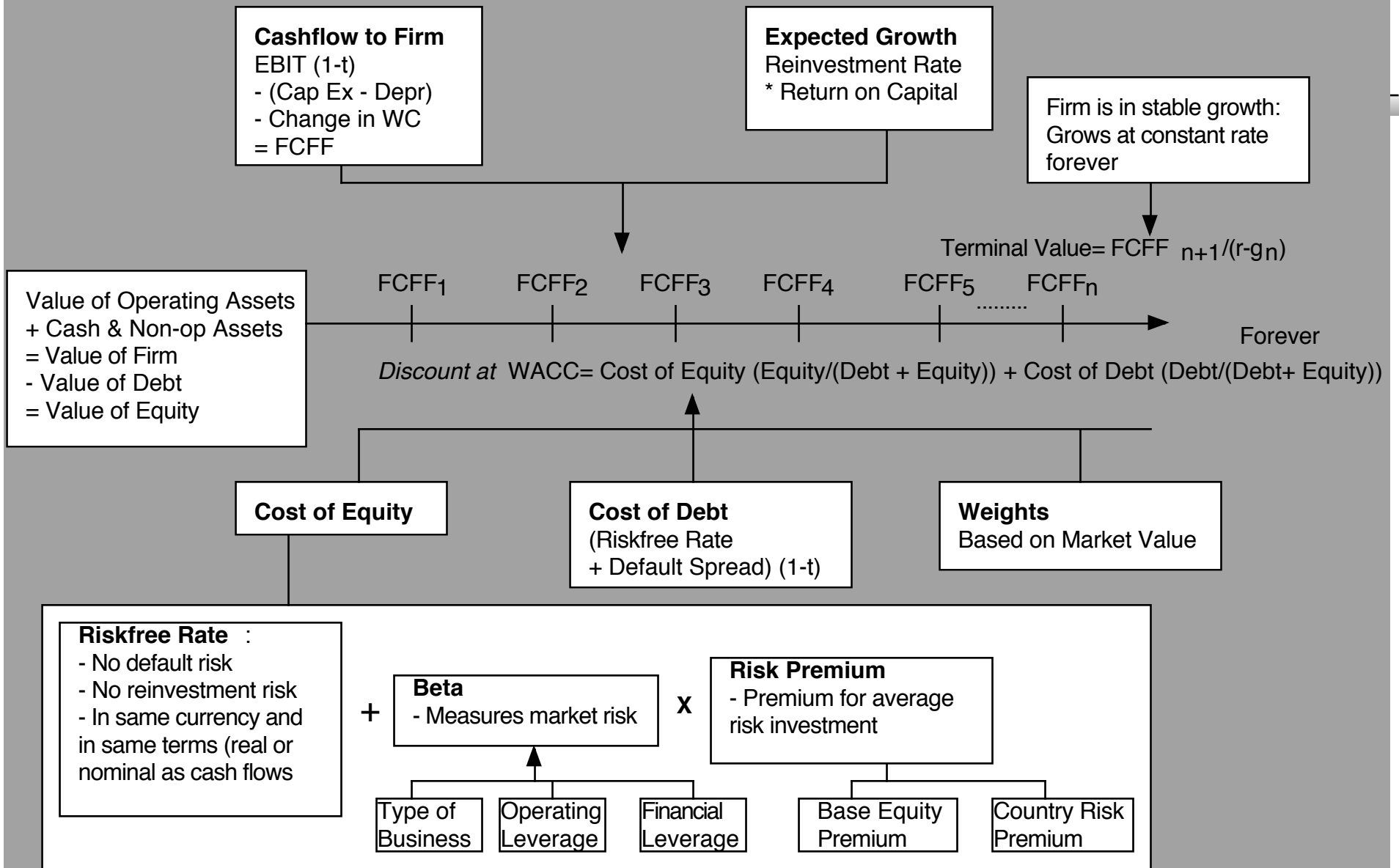
DCF Choices: Equity Valuation versus Firm Valuation

Firm Valuation: Value the entire business

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

DISCOUNTED CASHFLOW VALUATION



Tata Motors: April 2010

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%

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

Reinvestment Rate
 70%

Expected Growth
 from new inv.
 $.70 \times .1716 = 0.1201$

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 = $g/ROC = 5/12 = 41.67\%$

Op. Assets Rs 231,914
 + Cash: 11418
 + Other NO 140576
 - Debt 109198
 = Equity 274,710

Value/Share Rs 665

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

Terminal Value₅ = $26412 / (.1039 - .05) = \text{Rs } 489,813$

45278
 18866
 26412

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.*

On April 1, 2010
 Tata Motors price = Rs 781

Cost of Equity
 14.00%

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

Weights
 E = 74.7% D = 25.3%

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

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%

Average reinvestment rate from 2005--2009 = 56.73%

Reinvestment Rate
56.73%

Expected Growth from new inv.
 $5673 \cdot 40.63 = 0.2305$

Return on Capital
40.63%

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

Rs Cashflows

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

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

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

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

Lesson 1: Be currency consistent

- **Currency consistency: If your cash flows are in a specific currency, your discount rate has to be in the same currency as well.**
- **Currency Invariance: You can value any company in any currency and if you do it correctly, your value should be invariant to the currency used.**
- Generally speaking, you can value a company in its domestic currency or in a foreign currency.
 - The advantage of using a domestic currency is that the most complete financial statements for the firm are usually in that currency and a significant portion of the operations are in that currency. The disadvantage is that many of the inputs that we need to estimate discount rates (starting with the riskfree rate) may be difficult to get in that currency.
 - While estimating a discount rate for an emerging market may sometimes be easier to do in US dollars or Euros, the expected future cash flows will then have to be converted into US dollars or Euros, using expected exchange rates in the future.

Estimating a riskfree rate

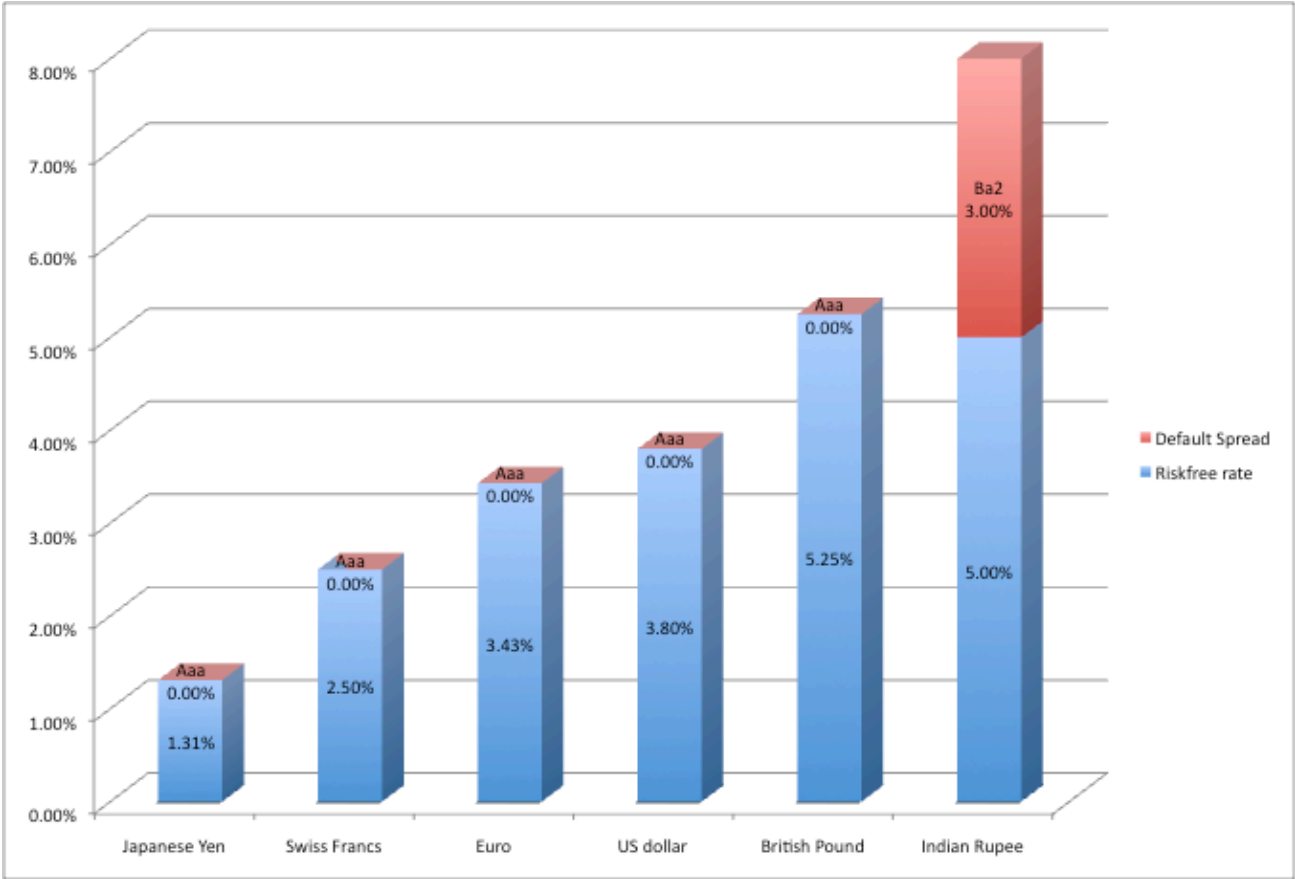
- On a riskfree asset, the actual return is equal to the expected return. Therefore, there is no variance around the expected return.
 - For an investment to be riskfree, then, it has to have
 - No default risk
 - No reinvestment risk
1. Time horizon matters: Thus, the riskfree rates in valuation will 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.. Or Euros

- 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?

Why do riskfree rates vary?



If you had to do it....Converting a Dollar Cost of Equity to a Nominal Rupee Cost of Equity

- One of the perils of working with domestic currency riskfree rates is that much of the information on risk premiums (equity and debt) come from developed markets and are often computed in US dollar or Euro terms. If the inflation rates are very different, it may be inappropriate to use these risk premiums with domestic riskfree rates.
- Here is the alternative.
- Step 1: Estimate the cost of equity and capital in US dollars.
- Step 2: Use the differential inflation rate to estimate the cost of capital

$$\text{Cost of capital}_{\text{Domestic currency}} = (1 + \text{Cost of Capital}_{\$}) \left[\frac{1 + \text{Inflation}_{\text{BR}}}{1 + \text{Inflation}_{\$}} \right]$$

(Thus, if the US dollar cost of equity is 8% and the inflation rates for India and the US are 4% and 2% respectively, the cost of equity in rupee terms is as follows:

$$(1.08) (1.04/1.02) - 1 = 10.12\%$$

Lesson 2: Don't look back to get Equity Risk Premiums... look forward..

	Arithmetic Average		Geometric Average	
	Stocks - T. Bills	Stocks - T. Bonds	Stocks - T. Bills	Stocks - T. Bonds
1928-2011	7.55%	5.79%	5.62%	4.10%
	2.22%	2.36%		
1962-2011	5.38%	3.36%	4.02%	2.35%
	2.39%	2.68%		
2002-2011	3.12%	-1.92%	1.08%	-3.61%
	6.46%	8.94%		

*Historical
premium*

In the trailing 12 months, the cash returned to stockholders was 74.17. Using the average cash yield of 4.71% for 2002-2011 the cash returned would have been 59.29.

Analysts expect earnings to grow 9.6% in 2012, 11.9% in 2013, 8.2% in 2014, 4.5% in 2015 and 2% thereafter, resulting in a compounded annual growth rate of 7.18% over the next 5 years. We will assume that dividends & buybacks will grow 7.18% a year for the next 5 years.

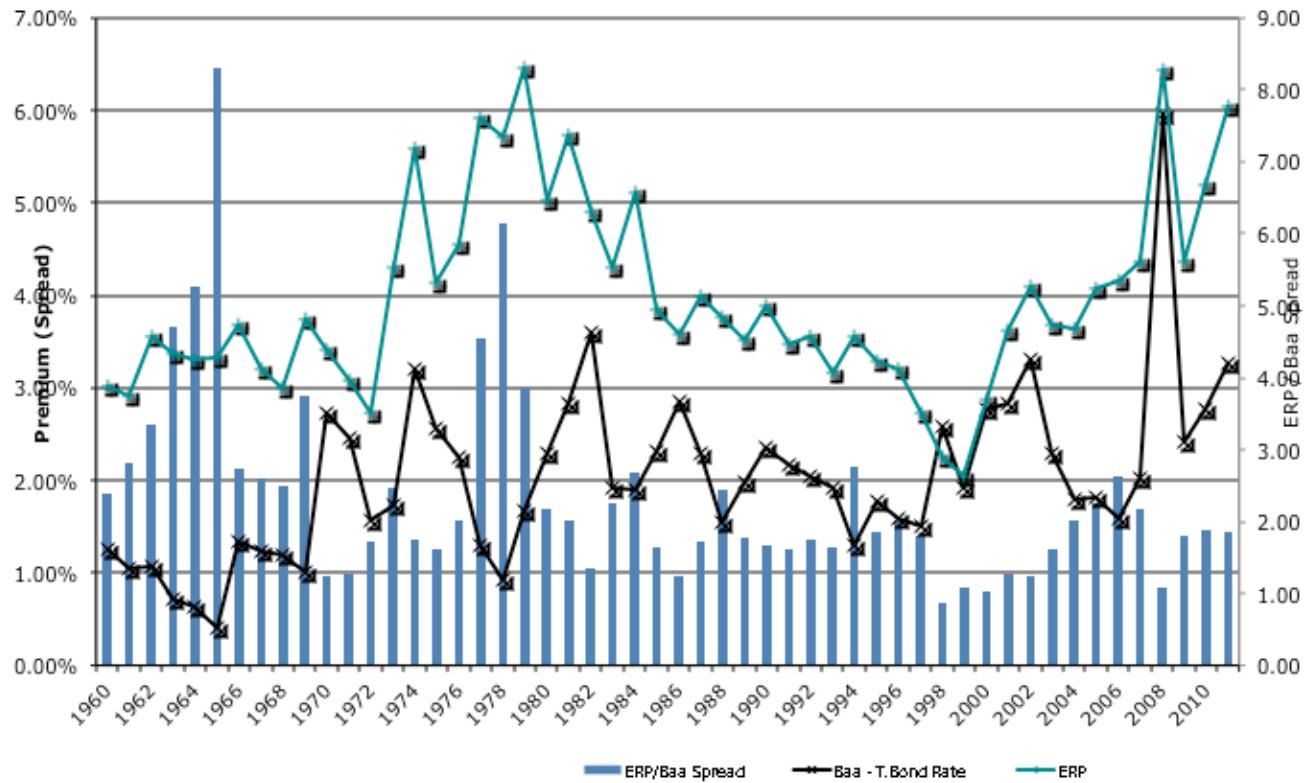
After year 5, we will assume that earnings on the index will grow at 1.87%, the same rate as the entire economy (= riskfree rate).

	63.54	68.11	73.00	78.24	83.86
January 1, 2012 S&P 500 is at 1257.60 Adjusted Dividends & Buybacks for 2011 = 59.29	$1257.60 = \frac{63.54}{(1+r)} + \frac{68.11}{(1+r)^2} + \frac{73.00}{(1+r)^3} + \frac{78.24}{(1+r)^4} + \frac{83.86}{(1+r)^5} + \frac{83.86(1.0187)}{(r - .0187)(1+r)^5}$				
	Expected Return on Stocks (1/1/12)		= 7.91%		
	T.Bond rate on 1/1/12		= 1.87%		
	Equity Risk Premium = 8.03% - 3.29%		= 6.04%		

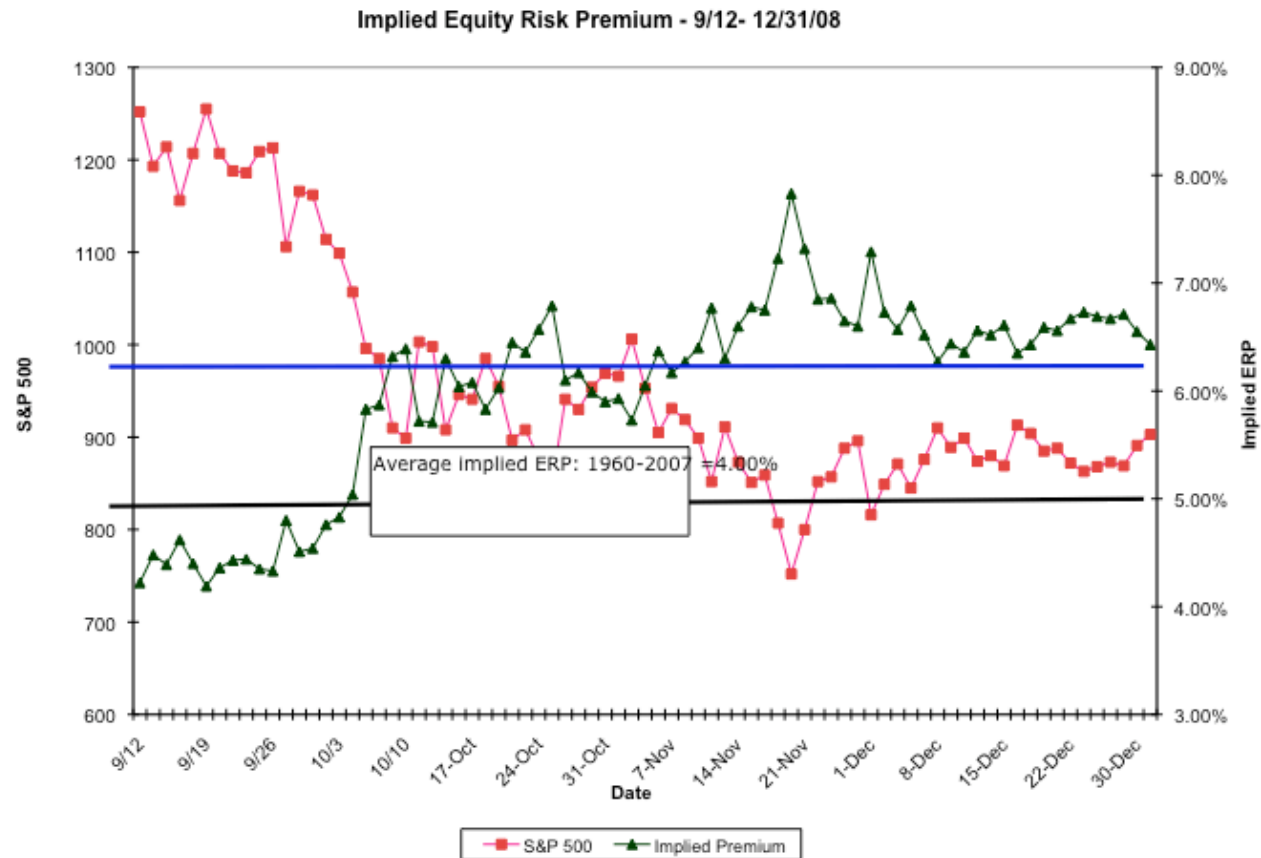
Data Sources:
Dividends and Buybacks last year: S&P
Expected growth rate: News stories, Yahoo! Finance, Bloomberg

Implied ERP for US: A Mature Market..

Figure 15: Equity Risk Premiums and Bond Default Spreads



Or is the US an Emerging Market?



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 June 2012

Canada	6.00%	0.00%
United States	6.00%	0.00%

Argentina	15.00%	9.00%
Belize	9.00%	3.00%
Bolivia	10.88%	4.88%
Brazil	8.63%	2.63%
Chile	7.05%	1.05%
Colombia	9.00%	3.00%
Costa Rica	9.00%	3.00%
Ecuador	18.75%	12.75%
El Salvador	10.13%	4.13%
Guatemala	9.60%	3.60%
Honduras	13.50%	7.50%
Mexico	8.25%	2.25%
Nicaragua	15.00%	9.00%
Panama	9.00%	3.00%
Paraguay	12.00%	6.00%
Peru	9.00%	3.00%
Uruguay	9.60%	3.60%
Venezuela	12.00%	6.00%

Spain	9.00%	3.00%
Austria	6.00%	0.00%
Belgium	7.05%	1.05%
Cyprus	10.88%	4.88%
Denmark	6.00%	0.00%
Finland	6.00%	0.00%
France	6.00%	0.00%
Germany	6.00%	0.00%
Greece	16.50%	10.50%
Iceland	9.00%	3.00%
Ireland	9.60%	3.60%
Italy	7.73%	1.73%
Malta	7.73%	1.73%
Netherlands	6.00%	0.00%
Norway	6.00%	0.00%
Portugal	10.88%	4.88%
Sweden	6.00%	0.00%
Switzerland	6.00%	0.00%
United Kingdom	6.00%	0.00%

Angola	10.88%	4.88%
Botswana	7.50%	1.50%
Egypt	13.50%	7.50%
Mauritius	8.25%	2.25%
Morocco	9.60%	3.60%
Namibia	9.00%	3.00%
South Africa	7.73%	1.73%
Tunisia	9.00%	3.00%

Albania	12.00%	6.00%	Bangladesh	10.88%	4.88%
Armenia	10.13%	4.13%	Cambodia	13.50%	7.50%
Azerbaijan	9.00%	3.00%	China	7.05%	1.05%
Belarus	15.00%	9.00%	Fiji Islands	12.00%	6.00%
Bosnia	15.00%	9.00%	Hong Kong	6.38%	0.38%
Bulgaria	8.63%	2.63%	India	9.00%	3.00%
Croatia	9.00%	3.00%	Indonesia	9.00%	3.00%
Czech Republic	7.28%	1.28%	Japan	7.05%	1.05%
Estonia	7.28%	1.28%	Korea	7.28%	1.28%
Georgia	10.88%	4.88%	Macao	7.05%	1.05%
Hungary	9.60%	3.60%	Malaysia	7.73%	1.73%
Kazakhstan	8.63%	2.63%	Mongolia	12.00%	6.00%
Latvia	9.00%	3.00%	Pakistan	15.00%	9.00%
Lithuania	8.25%	2.25%	New Guinea	12.00%	6.00%
Moldova	15.00%	9.00%	Philippines	10.13%	4.13%
Montenegro	10.88%	4.88%	Singapore	6.00%	0.00%
Poland	7.50%	1.50%	Sri Lanka	12.00%	6.00%
Romania	9.00%	3.00%	Taiwan	7.05%	1.05%
Russia	8.25%	2.25%	Thailand	8.25%	2.25%
Slovakia	7.50%	1.50%	Turkey	9.60%	3.60%
Slovenia [1]	7.50%	1.50%	Vietnam	12.00%	6.00%
Ukraine	13.50%	7.50%			

Bahrain	8.25%	2.25%
Israel	7.28%	1.28%
Jordan	10.13%	4.13%
Kuwait	6.75%	0.75%
Lebanon	12.00%	6.00%
Oman	7.28%	1.28%
Qatar	6.75%	0.75%
Saudi Arabia	7.05%	1.05%
UAE	6.75%	0.75%

Australia	6.00%	0.00%
New Zealand	6.00%	0.00%

Black #: Total ERP
Red #: Country risk premium

Lesson 3: Emerging Market Risk Exposure can vary across companies...

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

$$E(\text{Return}) = \text{Riskfree Rate} + \text{Country ERP} + \text{Beta (US premium)}$$

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

$$E(\text{Return}) = \text{Riskfree Rate} + \text{Beta (US premium} + \text{Country ERP)}$$

- 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)

$$E(\text{Return}) = \text{Riskfree Rate} + \beta (\text{US premium}) + \lambda (\text{Country ERP})$$

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:

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

Consider two firms – Tata Motors and Tata Consulting Services, both Indian companies. In 2008-09, Tata Motors got about 91.37% of its revenues in India and TCS got 7.62%. The average Indian firm gets about 80% of its revenues in India:

$$\lambda_{\text{Tata Motors}} = 91\%/80\% = 1.14$$

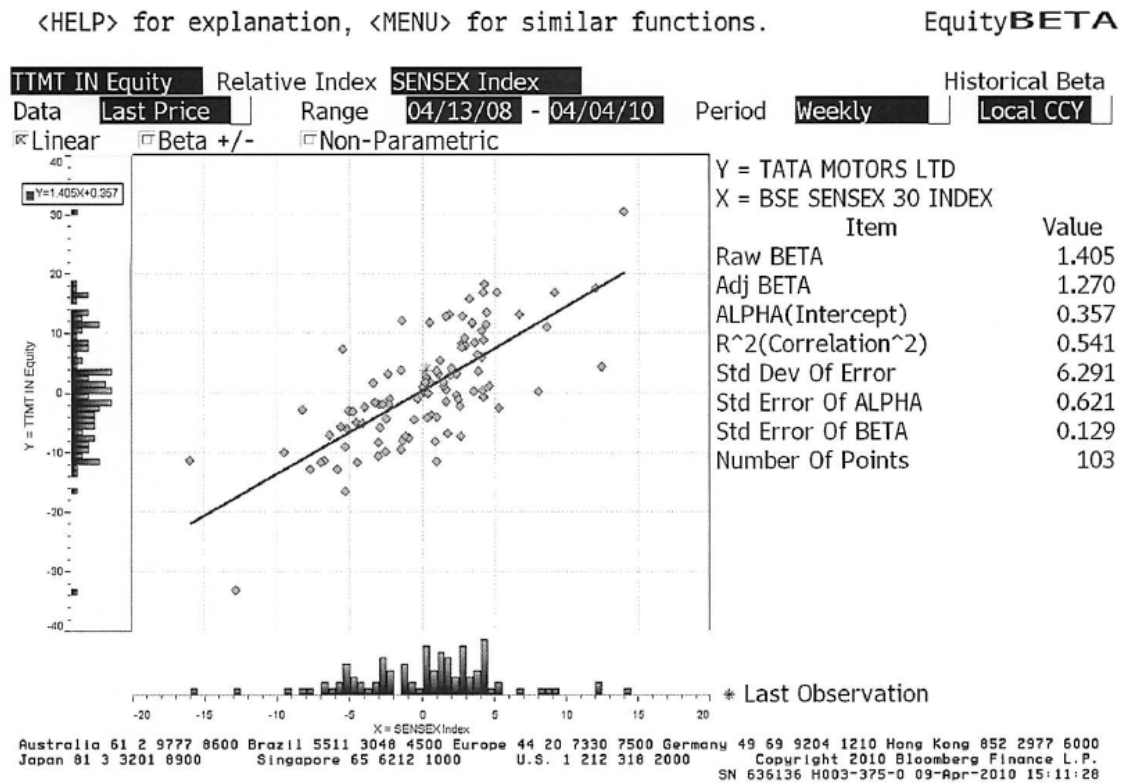
$$\lambda_{\text{TCS}} = 7.62\%/80\% = 0.09$$

- There are two implications
 - A company’s risk exposure is determined by where it does business and not by where it is incorporated.
 - Firms might be able to actively manage their country risk exposures

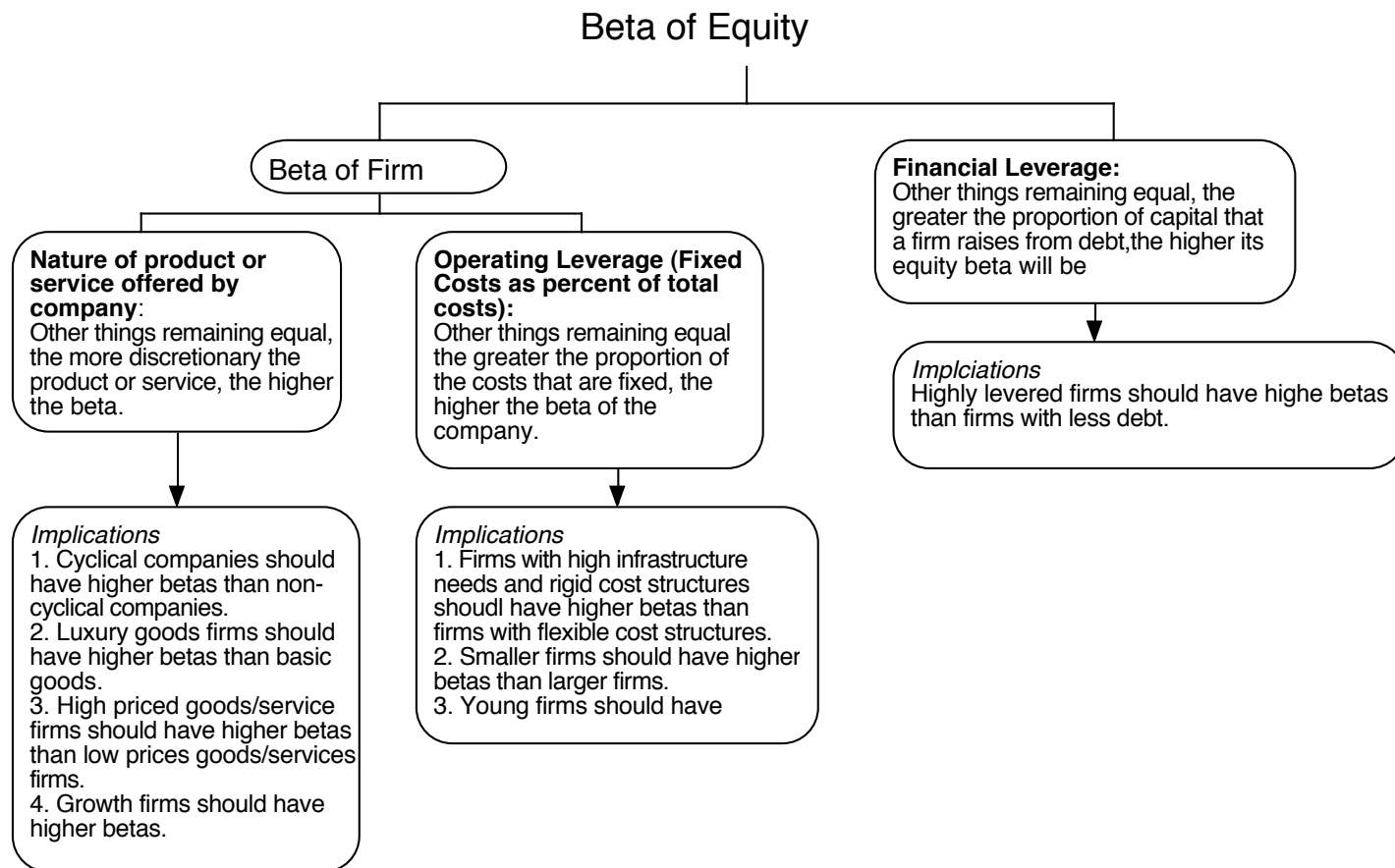
Estimating lambdas: Tata Group

	<i>Tata Chemicals</i>	<i>Tata Steel</i>	<i>Tata Motors</i>	<i>TCS</i>
% 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

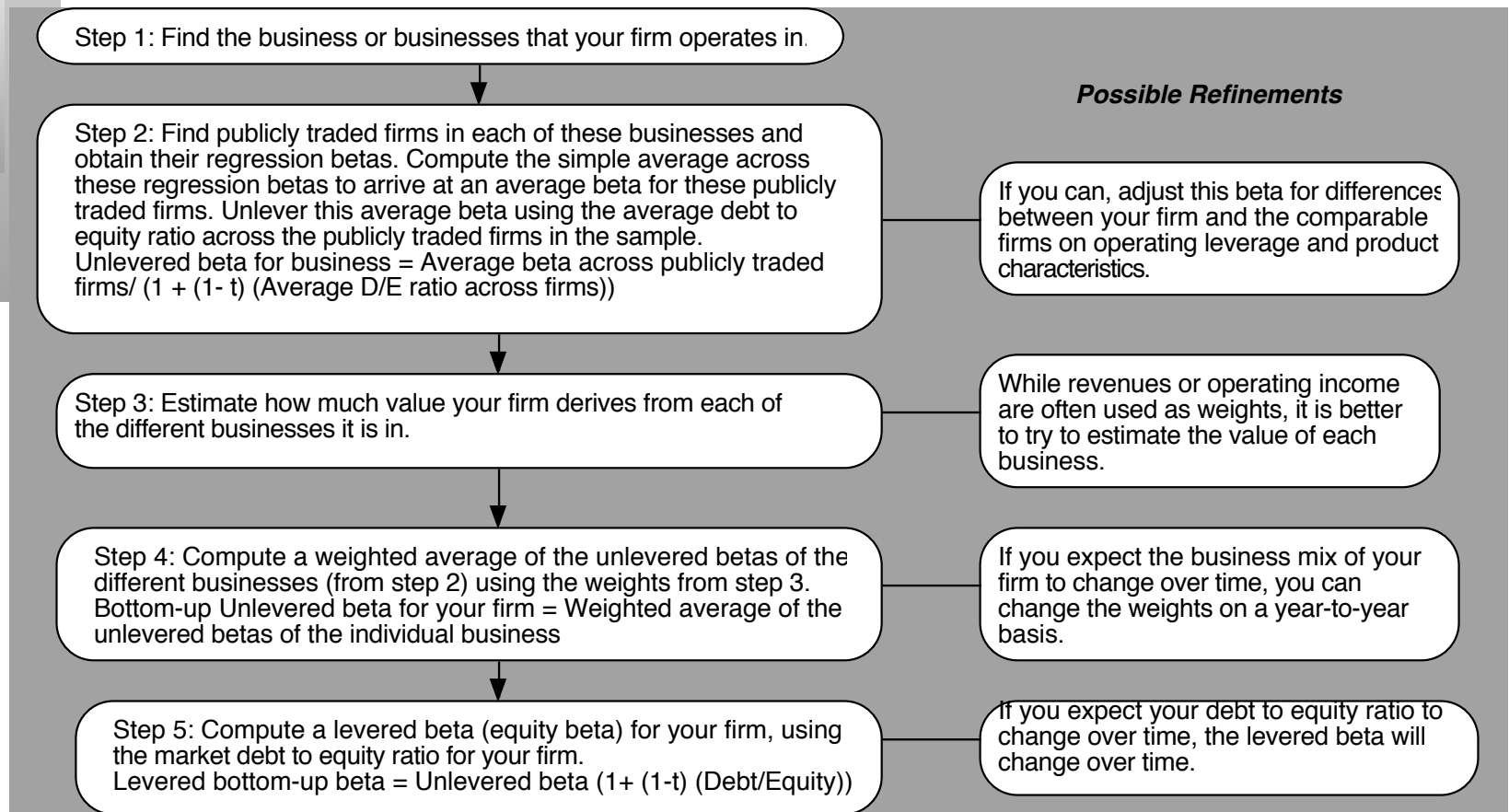
Lesson 4: Beta is not just a statistical artifact...



And has roots in fundamentals...



Bottom-up Betas



Bottom Up Beta Estimates for Tata Companies

	<i>Tata Chemicals</i>	<i>Tata Steel</i>	<i>Tata Motors</i>	<i>TCS</i>
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

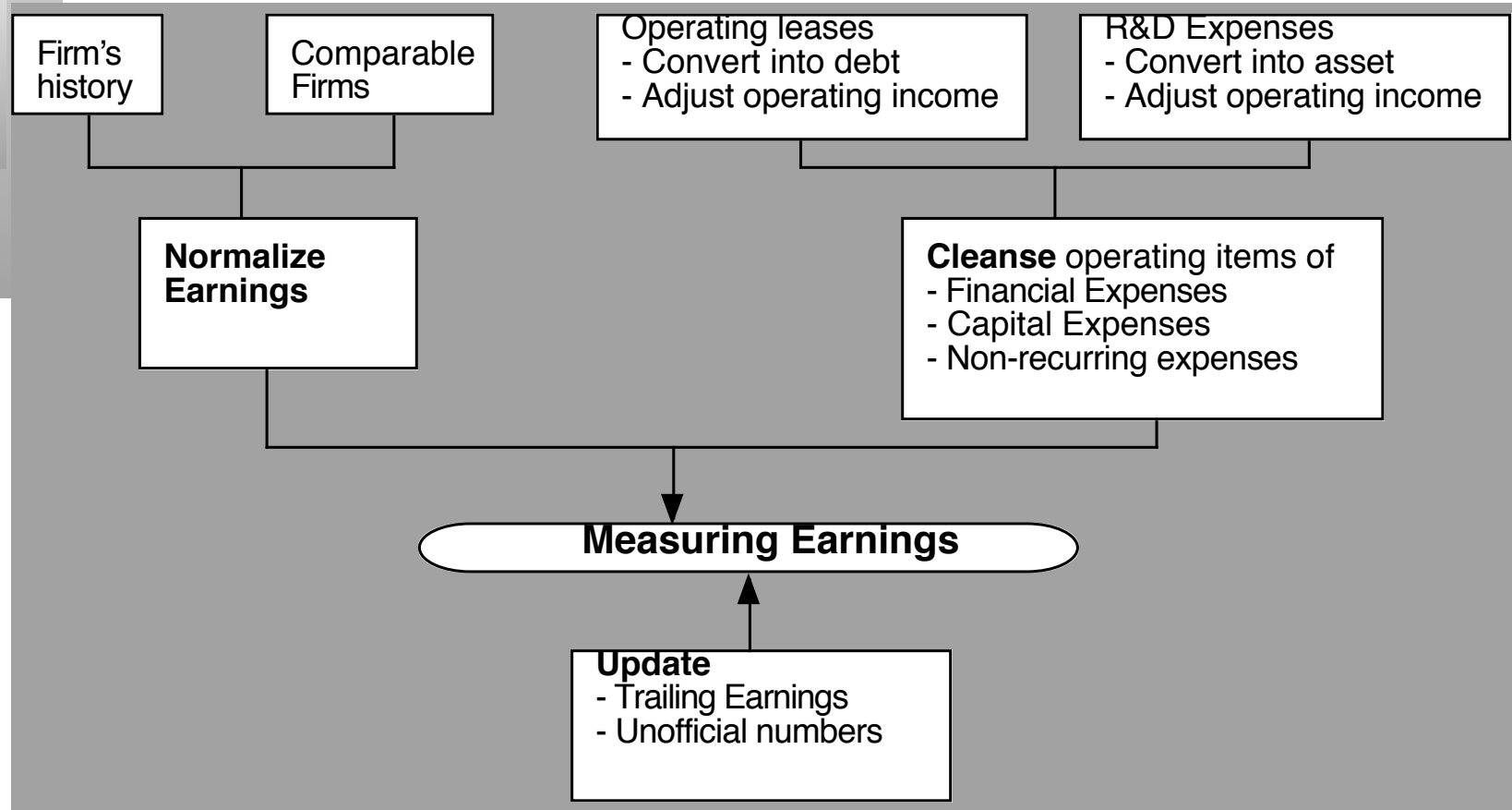
A closer look at Tata Chemicals

	% 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%

Lesson 5: Work on your base year earnings...



Normalizing Earnings: Tata Motors

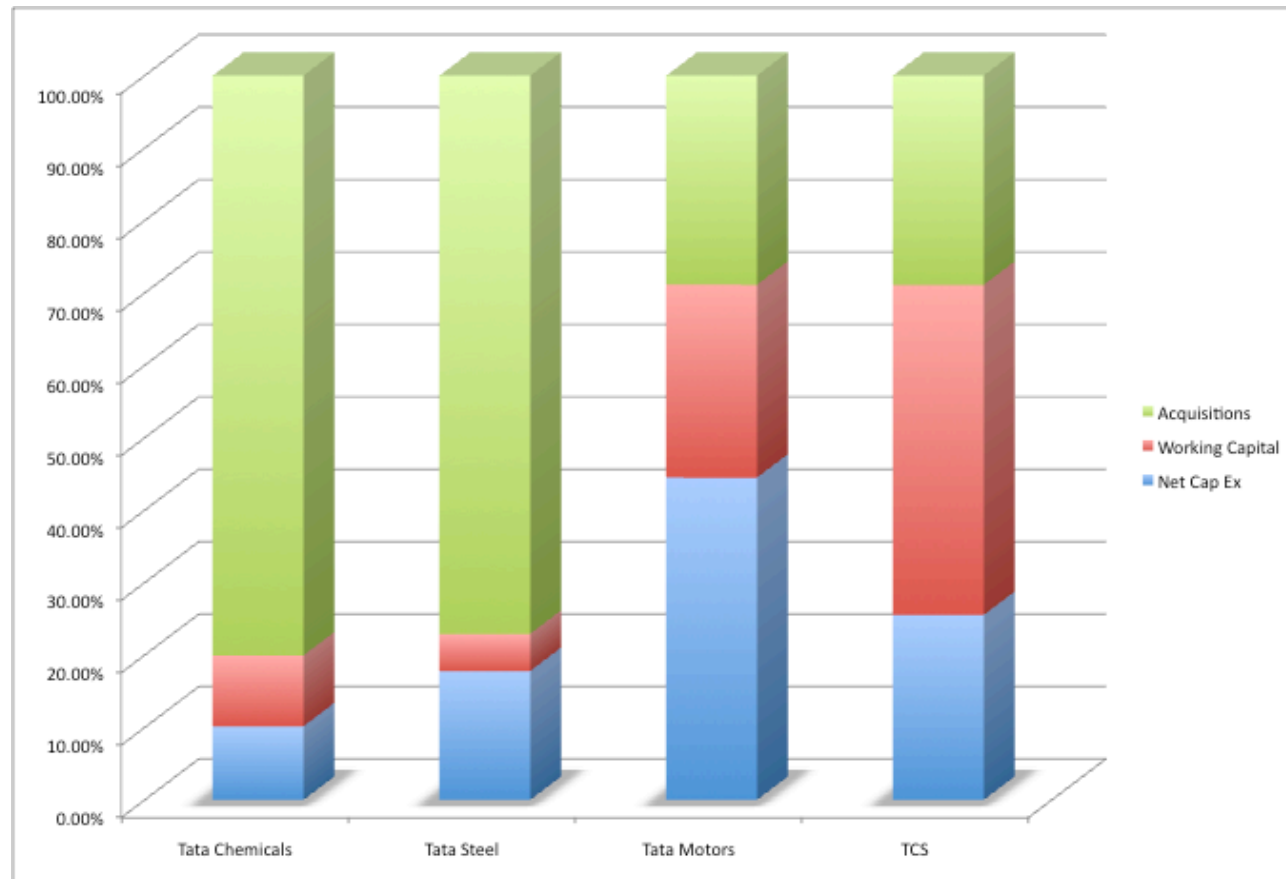
	Tata Chemicals	Tata Steel	Tata Motors (actual)	Tata Motors (normalized)	TCS
EBIT (1-t)	INR 5,833	INR 60,213	INR 13,846	INR 20,117	INR 43,420
- Net Cap Ex	INR 5,832	INR 61,620	INR 31,590	INR 31,590	INR 5,611
- Chg in WC	INR 4,229	-INR 3,658	INR 2,732	INR 2,732	INR 6,130
FCFF	-INR 4,229	INR 2,252	-INR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

$\text{Normalized EBIT} = \text{Normalized EBT} + \text{Interest Expense in 2009}$
 $= \text{Rs } 18,727 + \text{Rs } 6,737 \text{ m} = \text{Rs } 25,464 \text{ m}$

$\text{Normalized EBT} = \text{Revenues in 2009} * \text{Average Margin}$
 $= \text{Rs } 265,868 \text{ m} * 7.04\% = \text{Rs } 18,727 \text{ m}$

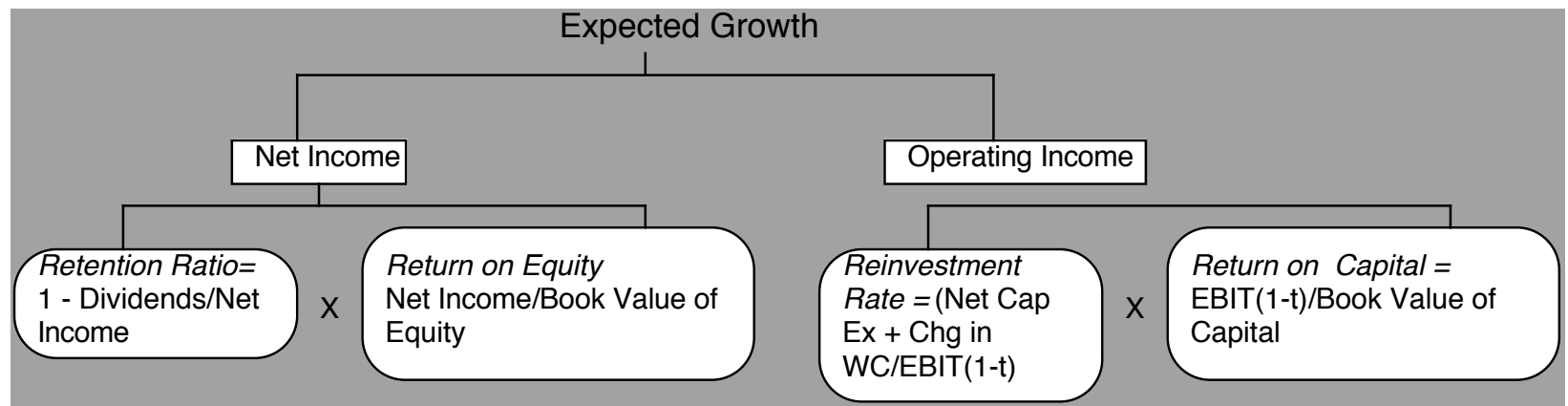
	2004	2005	2006	2007	2008	Total
Revenues	INR 206,487	INR 242,905	INR 320,648	INR 335,771	INR 295,252	INR 1,401,063
EBT	INR 16,519	INR 20,534	INR 25,732	INR 25,765	INR 10,138	INR 98,688
EBT Margin	8.00%	8.45%	8.02%	7.67%	3.43%	7.04%

Lesson 6: For capital expenditures, look past narrow accounting categorizations...



Lesson 7: History provides little information on growth and managers are no help...

- Historical earnings growth has always been a poor measure of future growth and is even less reliable in markets that are changing and dynamic.
- Trusting other analysts or managers to estimate or provide growth rates for the future is futile. Not only are they biased but they have little basis for their forecasts (other than hope and prayer).
- So, tie growth to fundamentals:



The key number driving value: Return on Invested Capital

Adjust EBIT for

- a. Extraordinary or one-time expenses or income
- b. Operating leases and R&D
- c. Cyclical in earnings (Normalize)
- d. Acquisition Debris (Goodwill amortization etc.)

Use a marginal tax rate to be safe. A high ROC created by paying low effective taxes is not sustainable

$$\text{ROC} = \frac{\text{EBIT} (1 - \text{tax rate})}{\text{Book Value of Equity} + \text{Book value of debt} - \text{Cash}}$$

Adjust book equity for

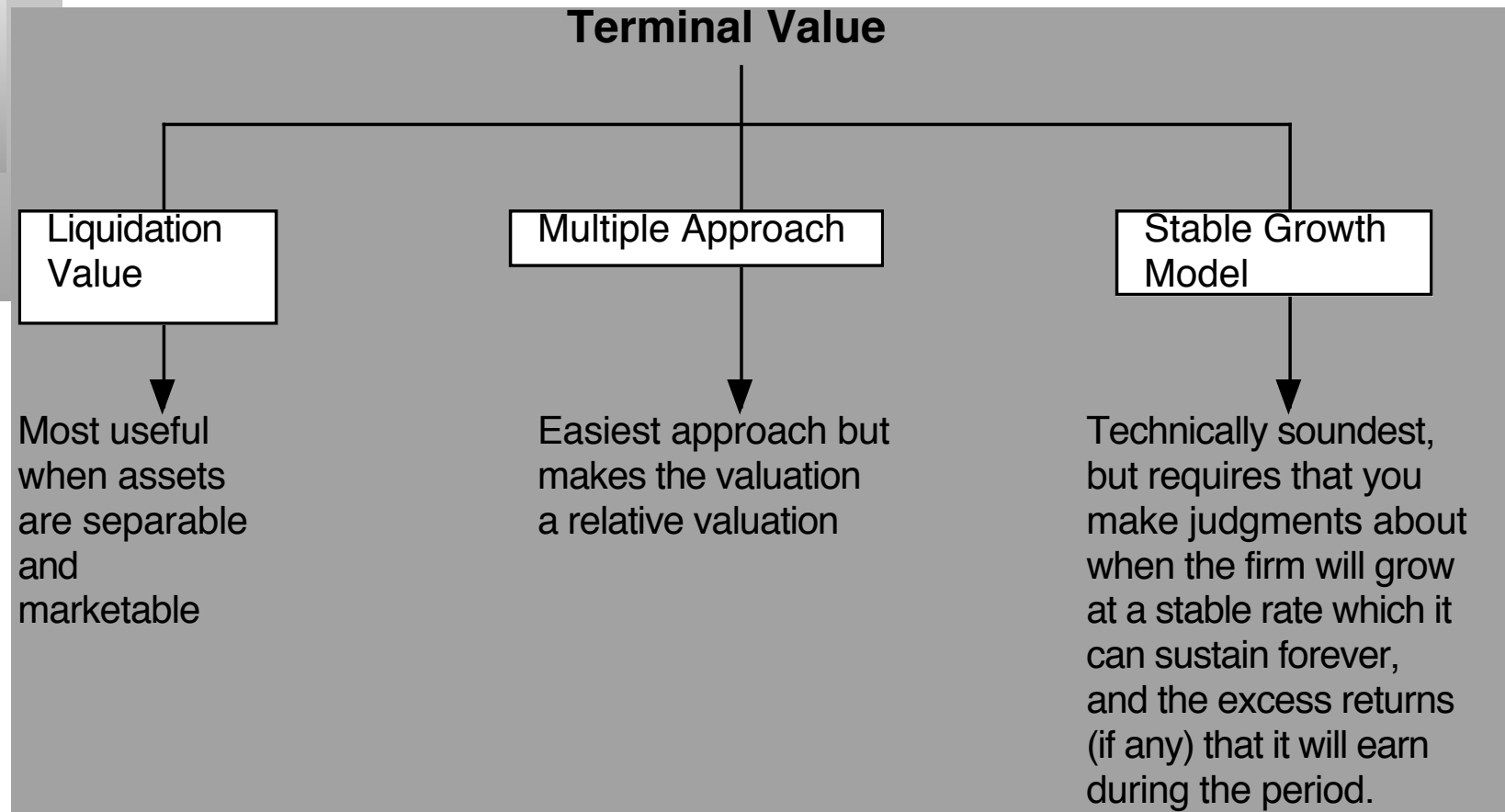
1. Capitalized R&D
2. Acquisition Debris (Goodwill)

Adjust book value of debt for

- a. Capitalized operating leases

Use end of prior year numbers or average over the year but be consistent in your application

Lesson 8: Don't make the terminal value an ATM



Four Rules for Terminal value

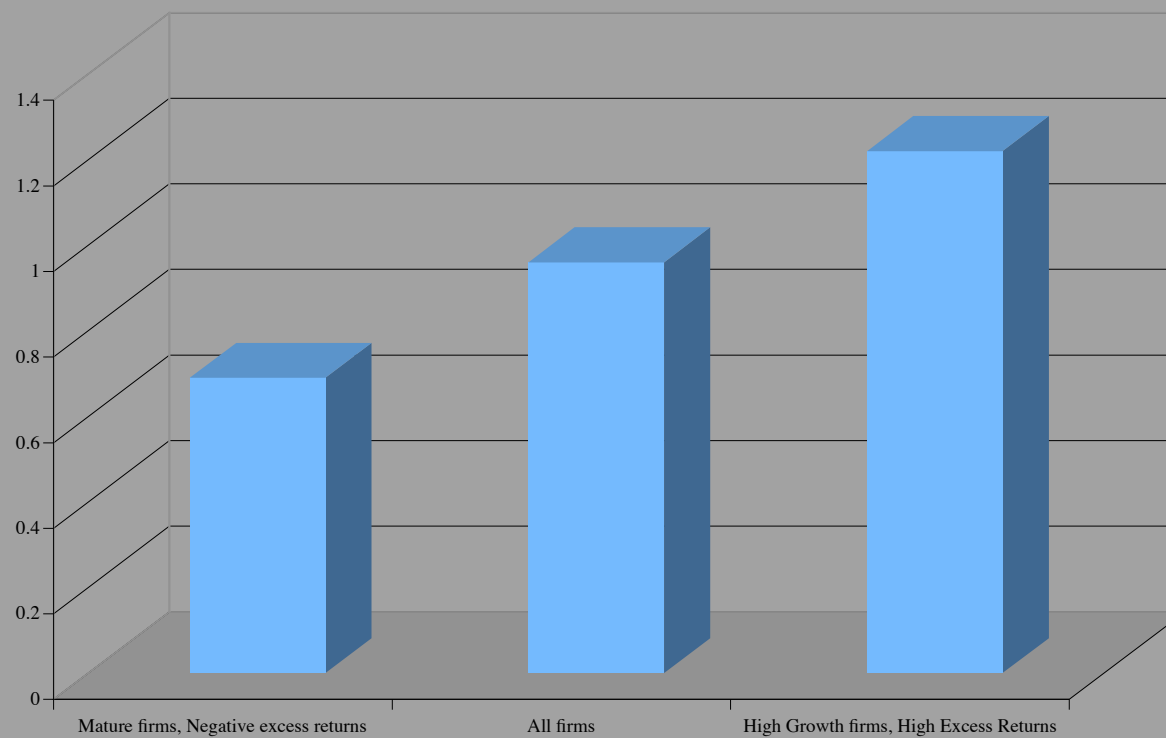
- Respect the cap: The stable growth rate cannot exceed the growth rate of the economy but it can be set lower. One simple proxy for the nominal growth rate of the economy is the riskfree rate.
 - Riskfree rate = Expected inflation + Expected Real Interest Rate
 - Nominal growth rate in economy = Expected 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

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%

Lesson 9: A dollar in cash is not always worth a dollar...

*Market Value of \$ 1 in cash:
Estimates obtained by regressing Enterprise Value against Cash Balances*



Lesson 10: Watch out for cross holdings..

- 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,
 - 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?
- 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

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.