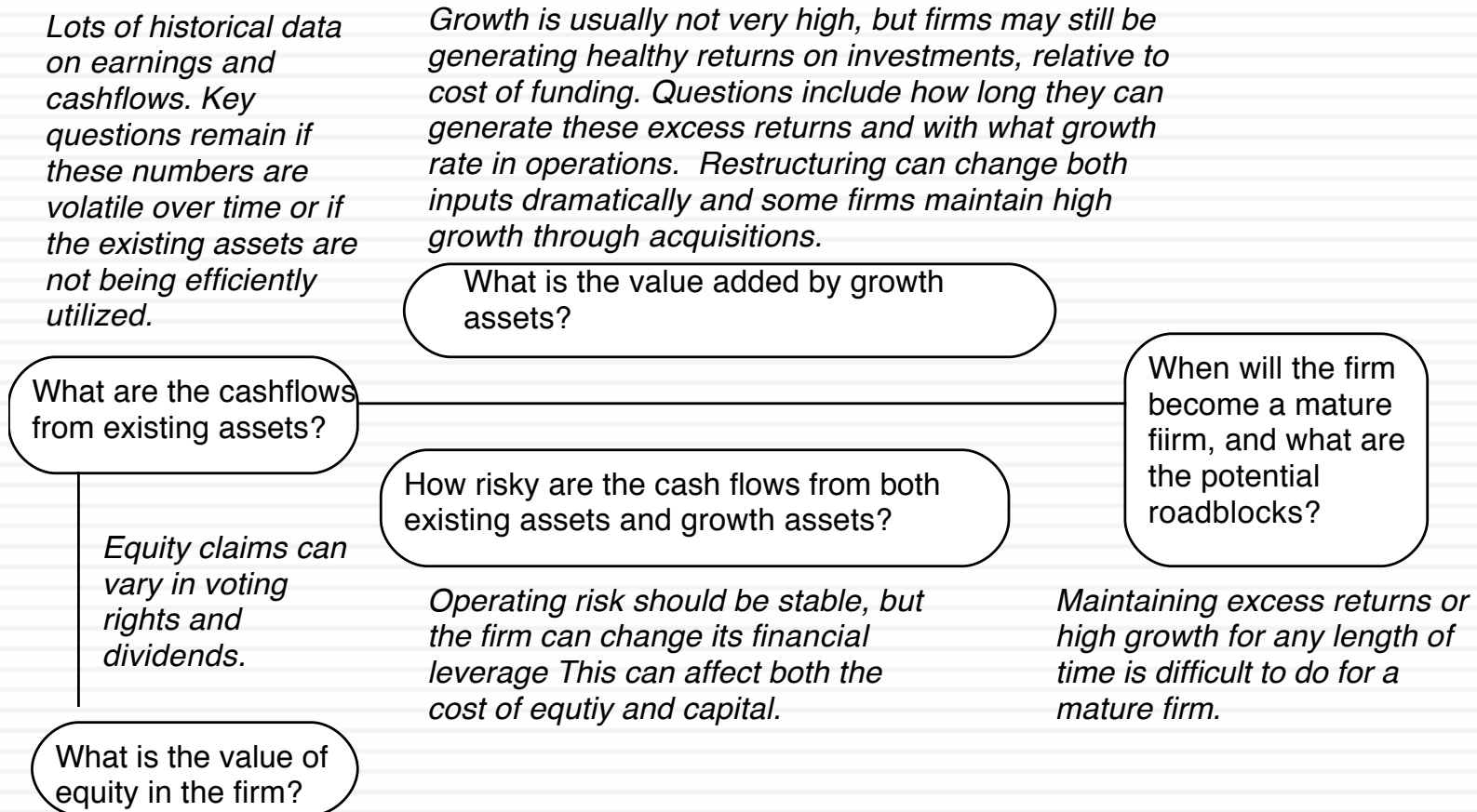


The perils of valuing mature companies...

266

Figure 7.1: Estimation Issues - Mature Companies



Hormel Foods: The Value of Control Changing

Hormel Foods sells packaged meat and other food products and has been in existence as a publicly traded company for almost 80 years. In 2008, the firm reported after-tax operating income of \$315 million, reflecting a compounded growth of 5% over the previous 5 years.

The Status Quo

Run by existing management, with conservative reinvestment policies (reinvestment rate = 14.34% and debt ratio = 10.4%.

Anemic growth rate and short growth period, due to reinvestment policy

Low debt ratio affects cost of capital

Year	Operating income after taxes	Expected growth rate	ROC	Reinvestment Rate	Reinvestment	FCFF	Cost of capital	Present Value
Trailing 12 months	\$315							
1	\$324	2.75%	14.34%	19.14%	\$62	\$262	6.79%	\$245
2	\$333	2.75%	14.34%	19.14%	\$64	\$269	6.79%	\$236
3	\$342	2.75%	14.34%	19.14%	\$65	\$276	6.79%	\$227
Beyond	\$350	2.35%	7.23%	32.52%	\$114	\$4,840	7.23%	\$3,974
Value of operating assets								\$4,682
(Add) Cash								\$155
(Subtract) Debt								\$491
(Subtract) Management Options								\$53
Value of equity in common stock								\$4,293
Value per share								\$31.91

New and better management

More aggressive reinvestment which increases the reinvestment rate (to 40%) and length of growth (to 5 years), and higher debt ratio (20%).

Operating Restructuring ①

Expected growth rate = ROC * Reinvestment Rate
 Expected growth rate (status quo) = 14.34% * 19.14% = 2.75%
 Expected growth rate (optimal) = 14.00% * 40% = 5.60%
 ROC drops, reinvestment rises and growth goes up.

Financial restructuring ②

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

Year	Operating income after taxes	Expected growth rate	ROC	Reinvestment Rate	Reinvestment	FCFF	Cost of capital	Present Value
Trailing 12 months	\$315							
1	\$333	5.60%	14.00%	40.00%	\$133	\$200	6.63%	\$187
2	\$351	5.60%	14.00%	40.00%	\$141	\$211	6.63%	\$185
3	\$371	5.60%	14.00%	40.00%	\$148	\$223	6.63%	\$184
4	\$392	5.60%	14.00%	40.00%	\$260	\$235	6.63%	\$182
5	\$414	5.60%	14.00%	40.00%	\$223	\$248	6.63%	\$180
Beyond	\$423	2.35%	6.74%	34.87%	\$148	\$6,282	6.74%	\$4,557
Value of operating assets								\$5,475
(Add) Cash								\$155
(Subtract) Debt								\$491
(Subtract) Management Options								\$53
Value of equity in common stock								\$5,085
Value per share								\$37.80

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

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

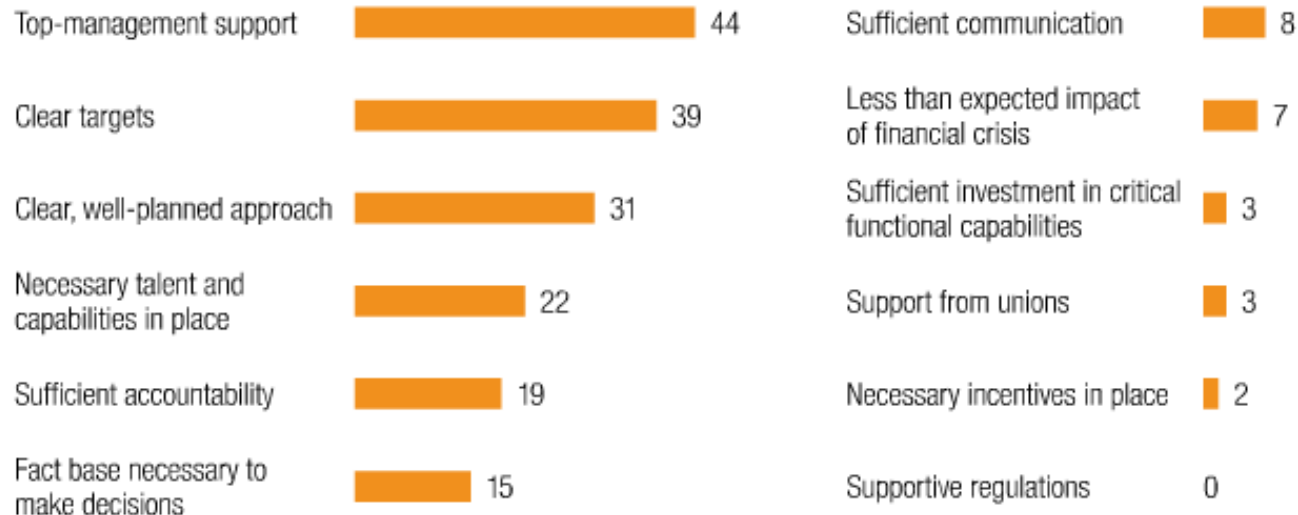
268

Exhibit 4: Top factors for meeting targets

expand

% of respondents whose companies have met their cost reduction strategies,¹ n = 178

Top two factors most responsible for companies meeting cost targets or goals

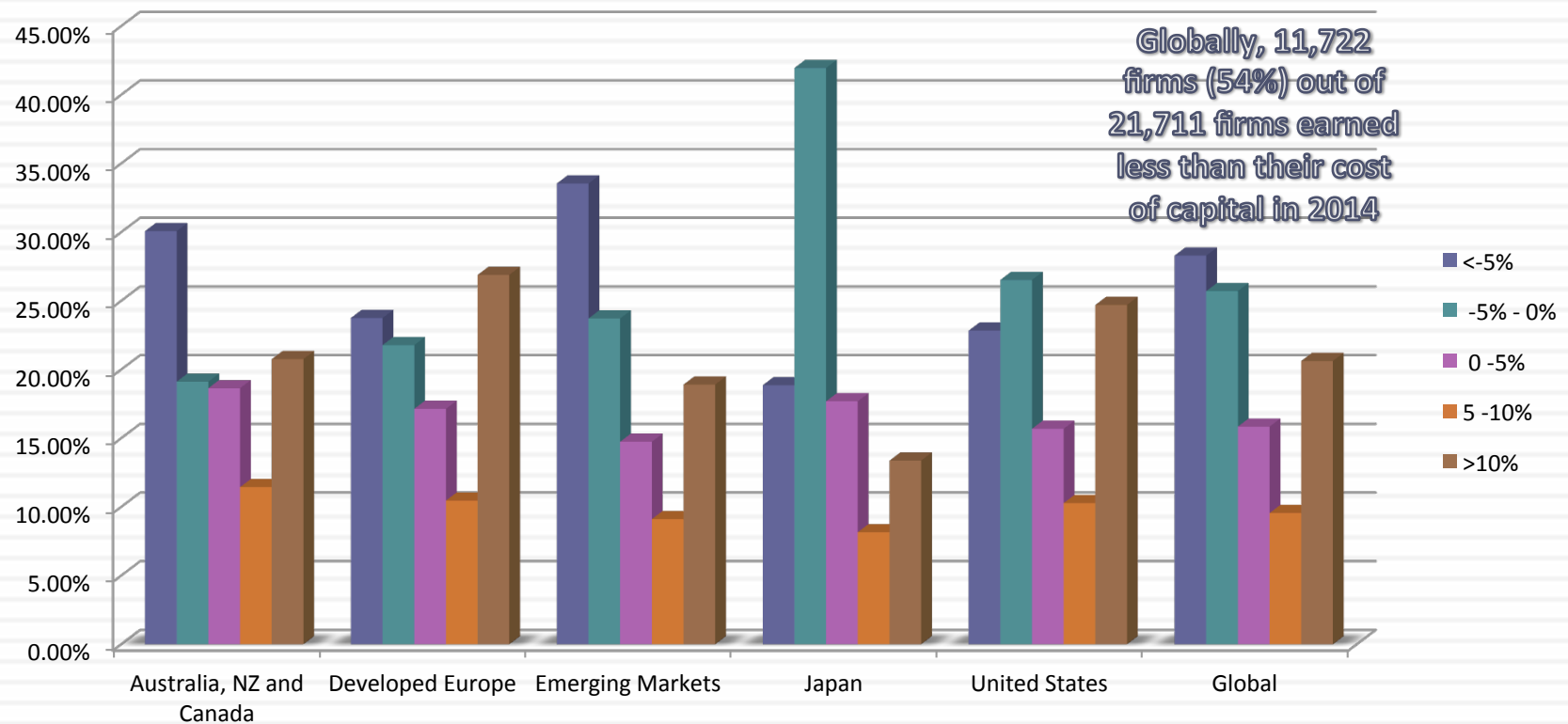


¹ Respondents who answered “don’t know” are not shown.

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

269

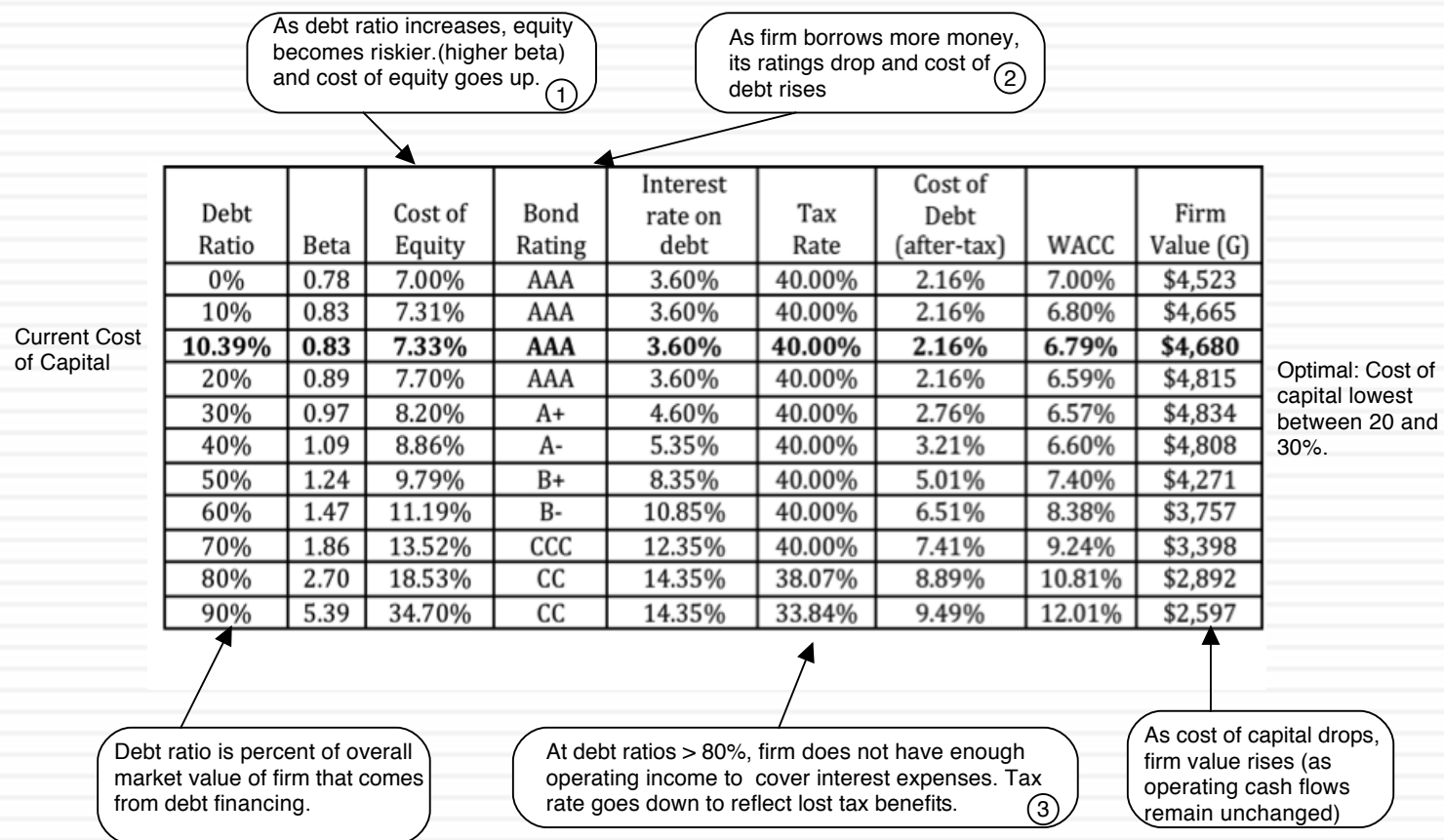
Excess Return (ROC minus Cost of Capital) for firms with market capitalization > \$50 million: Global in 2014



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

270

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



III. Dealing with decline and distress...

271

Historical data often reflects flat or declining revenues and falling margins. Investments often earn less than the cost of capital.

Growth can be negative, as firm sheds assets and shrinks. As less profitable assets are shed, the firm's remaining assets may improve in quality.

What is the value added by growth assets?

What are the cashflows from existing assets?

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

What is the value of equity in the firm?

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

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

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

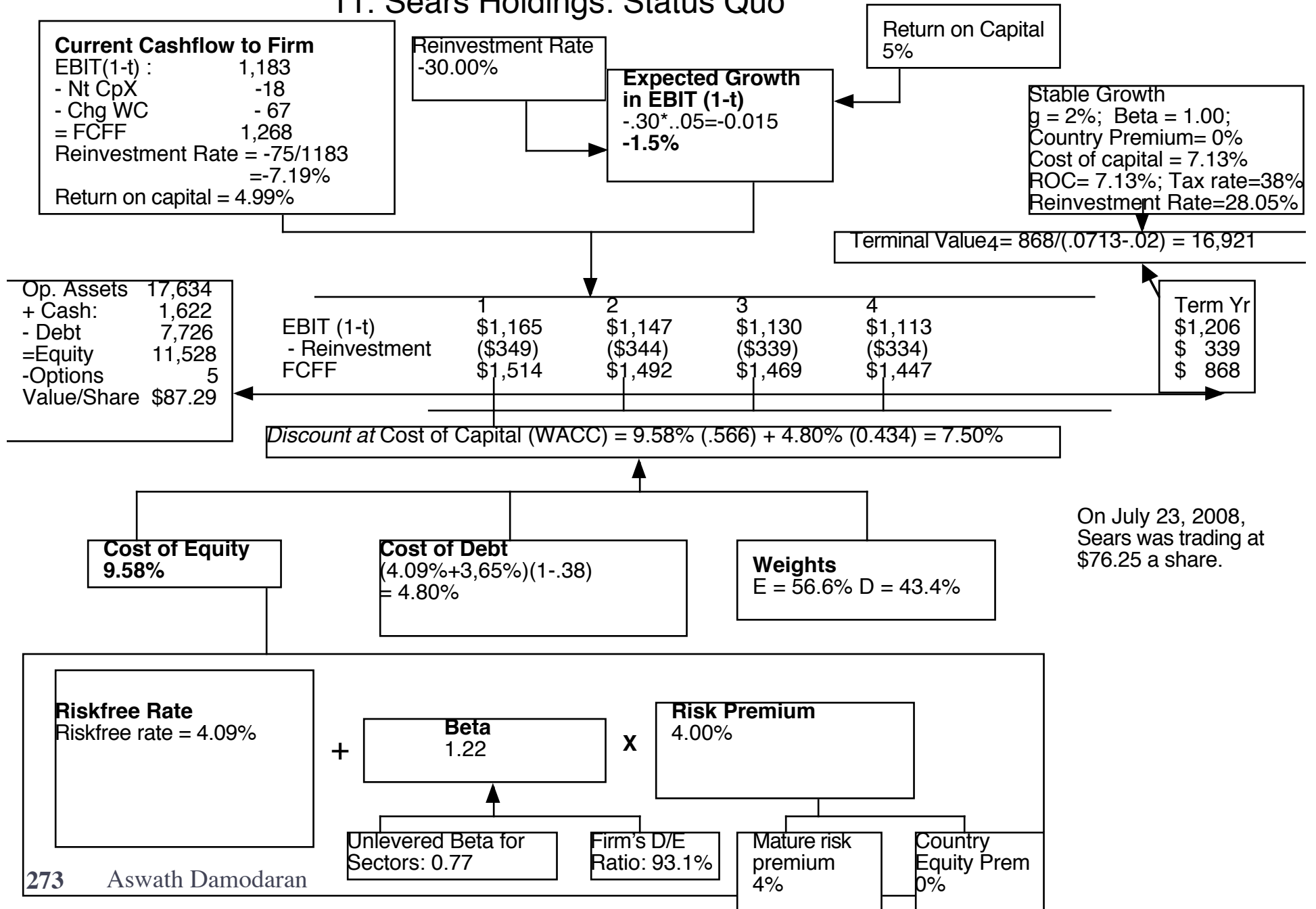
There is a real chance, especially with high financial leverage, that the firm will not make it. If it is expected to survive as a going concern, it will be as a much smaller entity.

a. Dealing with Decline

272

- In decline, firms often see declining revenues and lower margins, translating in negative expected growth over time.
- If these firms are run by good managers, they will not fight decline. Instead, they will adapt to it and shut down or sell investments that do not generate the cost of capital. This can translate into negative net capital expenditures (depreciation exceeds cap ex), declining working capital and an overall negative reinvestment rate. The best case scenario is that the firm can shed its bad assets, make itself a much smaller and healthier firm and then settle into long-term stable growth.
- As an investor, your worst case scenario is that these firms are run by managers in denial who continue to expand the firm by making bad investments (that generate lower returns than the cost of capital). These firms may be able to grow revenues and operating income but will destroy value along the way.

11. Sears Holdings: Status Quo



b. Dealing with the “downside” of Distress

274

- A DCF valuation values a firm as a going concern. If there is a significant likelihood of the firm failing before it reaches stable growth and if the assets will then be sold for a value less than the present value of the expected cashflows (a distress sale value), DCF valuations will overstate the value of the firm.
- $\text{Value of Equity} = \text{DCF value of equity} (1 - \text{Probability of distress}) + \text{Distress sale value of equity} (\text{Probability of distress})$
- There are three ways in which we can estimate the probability of distress:
 - Use the bond rating to estimate the cumulative probability of distress over 10 years
 - Estimate the probability of distress with a probit
 - Estimate the probability of distress by looking at market value of bonds..
- The distress sale value of equity is usually best estimated as a percent of book value (and this value will be lower if the economy is doing badly and there are other firms in the same business also in distress).

Current Revenue
\$ 4,390

Current Margin:
4.76%

EBIT
\$ 209m

Extended
reinvestment
break, due to
investment in
past

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

Industry
average

Expected
Margin:
-> 17%

Stable Growth

Stable
Revenue
Growth: 3%

Stable
Operating
Margin:
17%

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

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

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

Value per share \$ 8.12

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

Cost of Equity
21.82%

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

Weights
Debt= 73.5% ->50%

Riskfree Rate:
T. Bond rate = 3%

+ Beta
3.14-> 1.20

X

Risk Premium
6%

Casino
1.15

Current
D/E: 277%

Base Equity
Premium

Country Risk
Premium

Las Vegas Sands
February 2009
Trading @ \$4.25

Adjusting the value of LVS for distress..

276

- In February 2009, LVS was rated B+ by S&P. Historically, 28.25% of B+ rated bonds default within 10 years. LVS has a 6.375% bond, maturing in February 2015 (7 years), trading at \$529. If we discount the expected cash flows on the bond at the riskfree rate, we can back out the probability of distress from the bond price:

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

- Solving for the probability of bankruptcy, we get:
- π_{Distress} = Annual probability of default = 13.54%
- Cumulative probability of surviving 10 years = $(1 - .1354)^{10} = 23.34\%$
- Cumulative probability of distress over 10 years = $1 - .2334 = .7666$ or 76.66%
- If LVS is becomes distressed:
 - Expected distress sale proceeds = \$2,769 million < Face value of debt
 - Expected equity value/share = \$0.00
- Expected value per share = $\$8.12 (1 - .7666) + \$0.00 (.7666) = \$1.92$

IV. Emerging Market Companies

277

Estimation Issues - Emerging Market Companies

Big shifts in economic environment (inflation, interest rates) can affect operating earnings history. Poor corporate governance and weak accounting standards can lead to lack of transparency on earnings.

Growth rates for a company will be affected heavily by growth rate and political developments in the country in which it operates.

What is the value added by growth assets?

What are the cashflows from existing assets?

Cross holdings can affect value of equity

What is the value of equity in the firm?

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

Even if the company's risk is stable, there can be significant changes in country risk over time.

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

Economic crises can put many companies at risk. Government actions (nationalization) can affect long term value.

Lesson 1: Country risk has to be incorporated... but with a scalpel, not a bludgeon

278

- Emerging market companies are undoubtedly exposed to additional country risk because they are incorporated in countries that are more exposed to political and economic risk.
- Not all emerging market companies are equally exposed to country risk and many developed markets have emerging market risk exposure because of their operations.
- You can use either the “weighted country risk premium”, with the weights reflecting the countries you get your revenues from or the lambda approach (which may incorporate more than revenues) to capture country risk exposure.

A \$ Valuation of Embraer

Avg Reinvestment rate =40%

Return on Capital 18.1%

Stable Growth
 $g = 3.8\%$; $Beta = 1.00$;
 Country Premium= 1.5%
 Cost of capital = 7.38%
 $ROC = 7.38\%$; Tax rate=34%
 Reinvestment Rate= g/ROC
 $= 3.8/7.38 = 51.47\%$

Current Cashflow to Firm
 EBIT(1-t) : \$ 434
 - Nt CpX - 11
 - Chg WC 178
 = FCFF \$ 267
 Reinvestment Rate = $167/289 = 56\%$
 Effective tax rate = 19.5%

Reinvestment Rate 40%

Expected Growth in EBIT (1-t)
 $.40 \cdot .181 = .072$
 7.2%

Terminal Value₅ = $254(.0738 - .038) = 8,371$

\$ Cashflows

Op. Assets \$ 6,239
 + Cash: 3,068
 - Debt 2,070
 - Minor. Int. 177
 =Equity 7,059
 -Options 4
 Value/Share \$9.53
 R\$ 15.72

Year	1	2	3	4	5
EBIT (1-t)	\$465	\$499	\$535	\$574	\$615
- Reinvestment	\$186	\$200	\$214	\$229	\$246
FCFF	\$279	\$299	\$321	\$344	\$369

Term Yr
 524
 270
 = 254

Discount at \$ Cost of Capital (WACC) = $8.31\% (.788) + 4.36\% (0.212) = 7.47\%$

Cost of Equity 8.31%

Cost of Debt
 $(3.8\% + 1.7\% + 1.1\%)(1 - .34)$
 = 4.36%

Weights
 E = 78.8% D = 21.2%

On May 22, 2008
 Embraer Price = R\$ 17.2

Riskfree Rate:
 US\$ Riskfree Rate= 3.8%

+ **Beta 0.88** X **Mature market premium 4 %** + **Lambda 0.27** X **Country Equity Risk Premium 3.66%**

Unlevered Beta for Sectors: 0.75

Firm's D/E Ratio: 26.84%

Country Default Spread 2.2%

Rel Equity Mkt Vol 1.64

Lesson 2: Currency should not matter

280

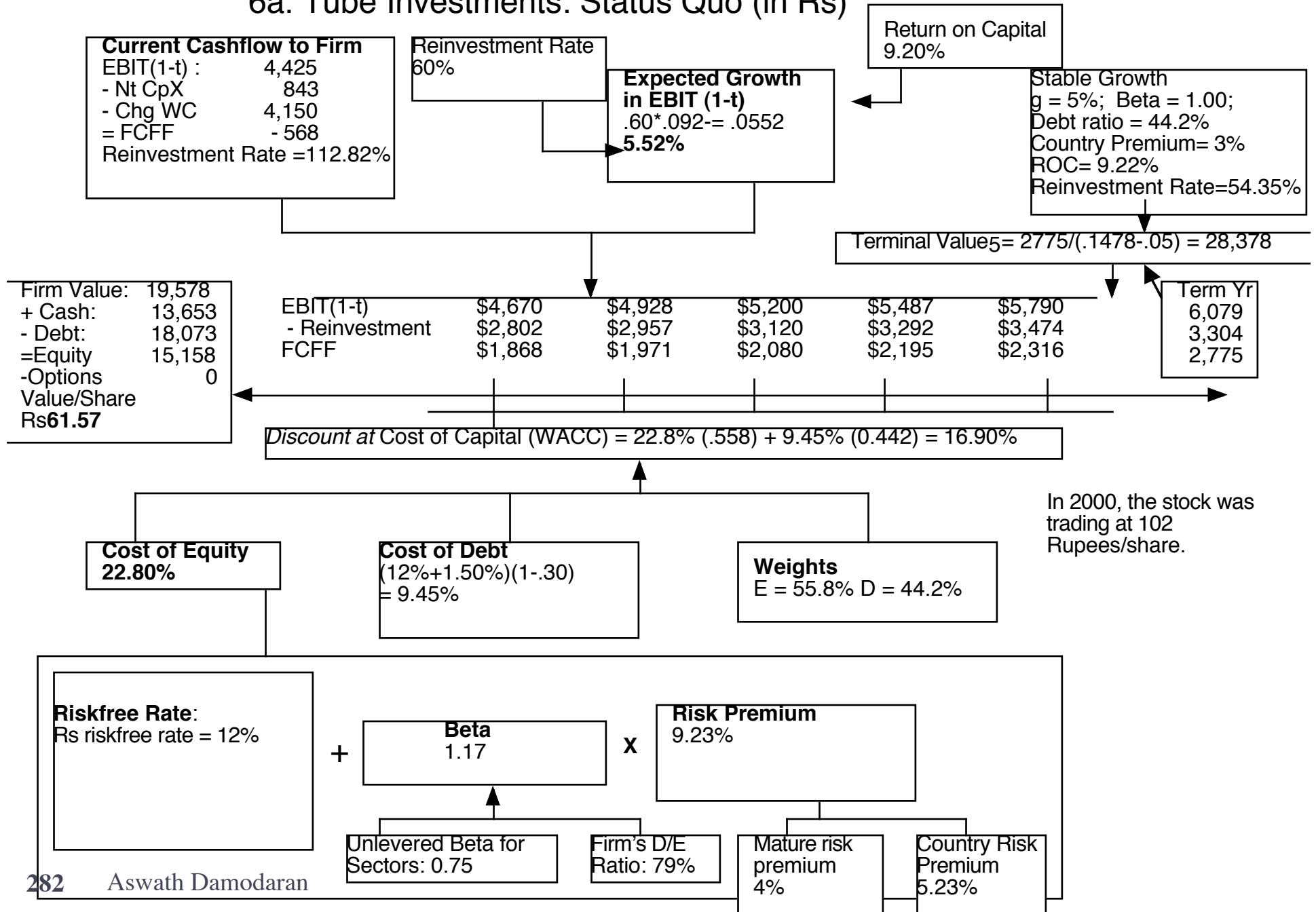
- You can value any company in any currency. Thus, you can value a Brazilian company in nominal reais, US dollars or Swiss Francs.
- For your valuation to stay invariant and consistent, your cash flows and discount rates have to be in the same currency. Thus, if you are using a high inflation currency, both your growth rates and discount rates will be much higher.
- For your cash flows to be consistent, you have to use expected exchange rates that reflect purchasing power parity (the higher inflation currency has to depreciate by the inflation differential each year).

Lesson 3: The “corporate governance” drag

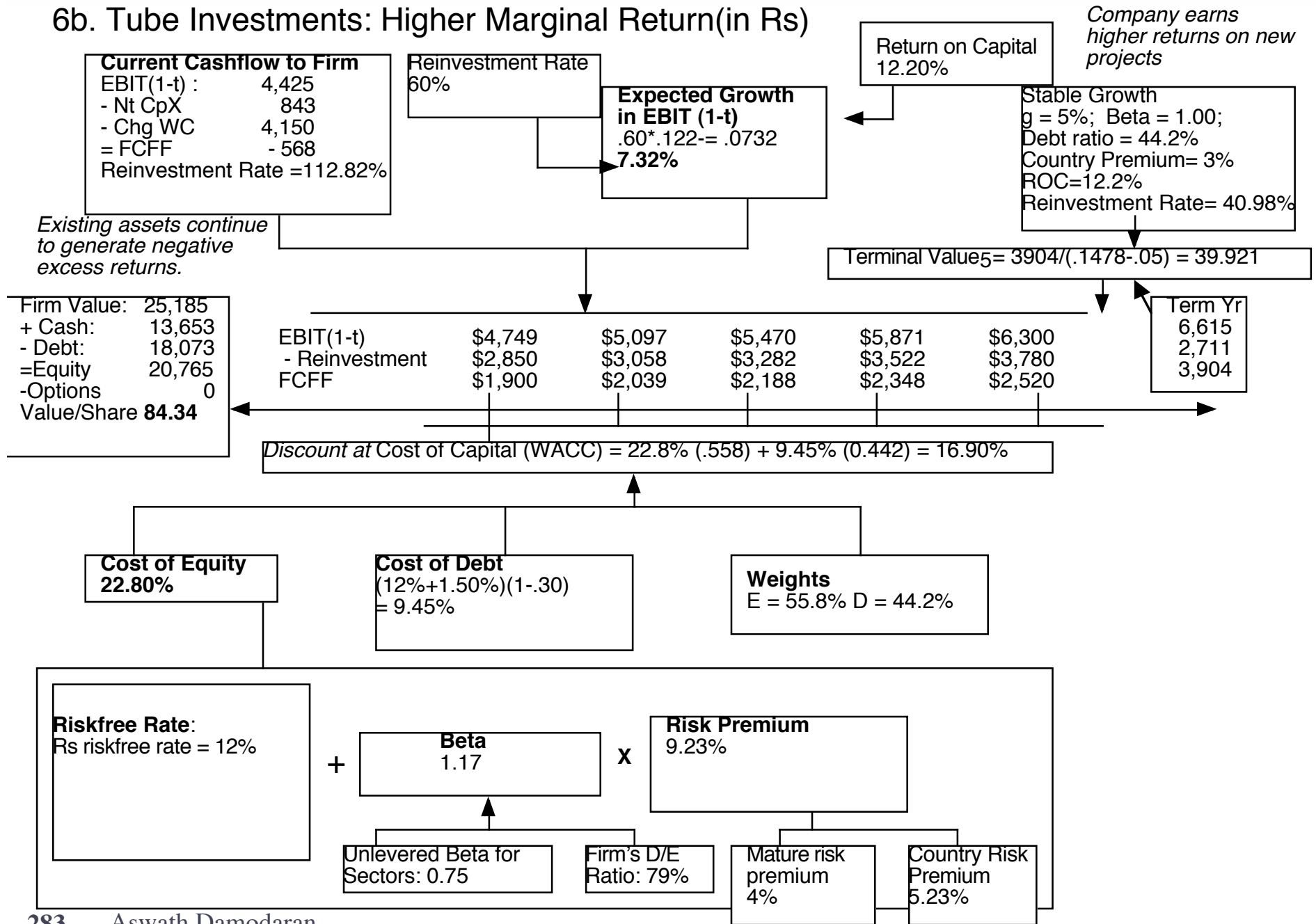
281

- Stockholders in Asian, Latin American and many European companies have little or no power over the managers of the firm. In many cases, insiders own voting shares and control the firm and the potential for conflict of interests is huge.
- This weak corporate governance is often a reason for given for using higher discount rates or discounting the estimated value for these companies.
- Would you discount the value that you estimate for an emerging market company to allow for this absence of stockholder power?
 - a. Yes
 - b. No.

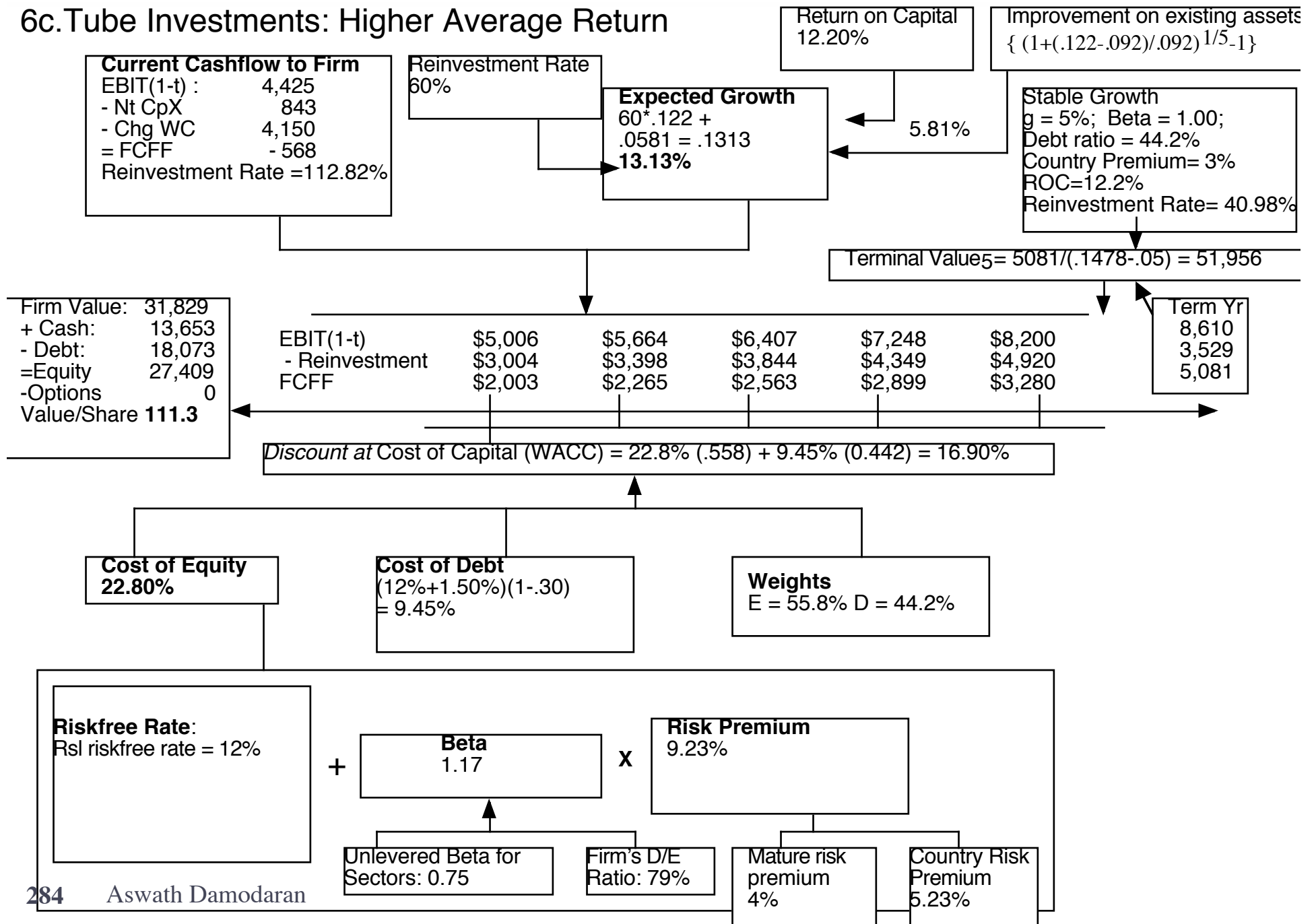
6a. Tube Investments: Status Quo (in Rs)



6b. Tube Investments: Higher Marginal Return(in Rs)



6c. Tube Investments: Higher Average Return



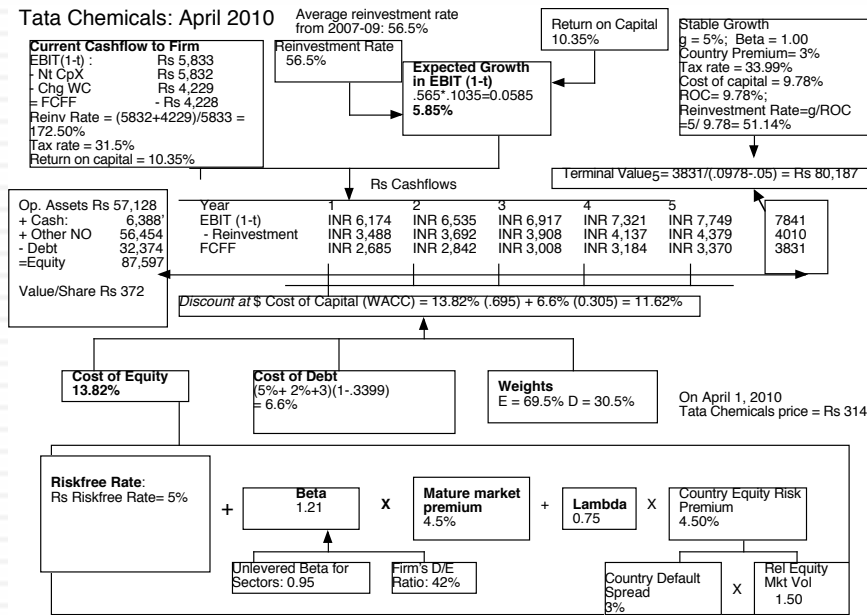
Lesson 4: Watch out for cross holdings...

285

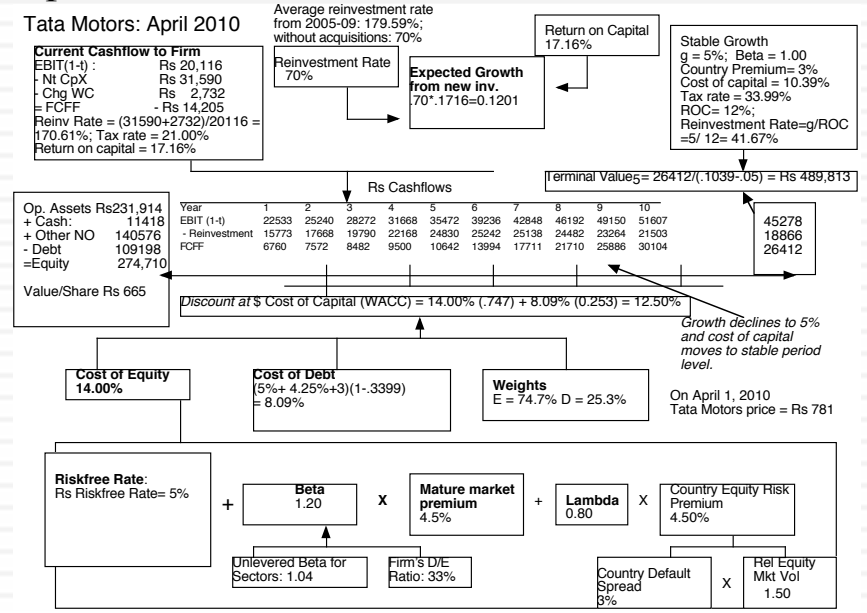
- Emerging market companies are more prone to having cross holdings than companies in developed markets. This is partially the result of history (since many of the larger public companies used to be family owned businesses until a few decades ago) and partly because those who run these companies value control (and use cross holdings to preserve this control).
- In many emerging market companies, the real process of valuation begins when you have finished your DCF valuation, since the cross holdings (which can be numerous) have to be valued, often with minimal information.

8. The Tata Group – April 2010

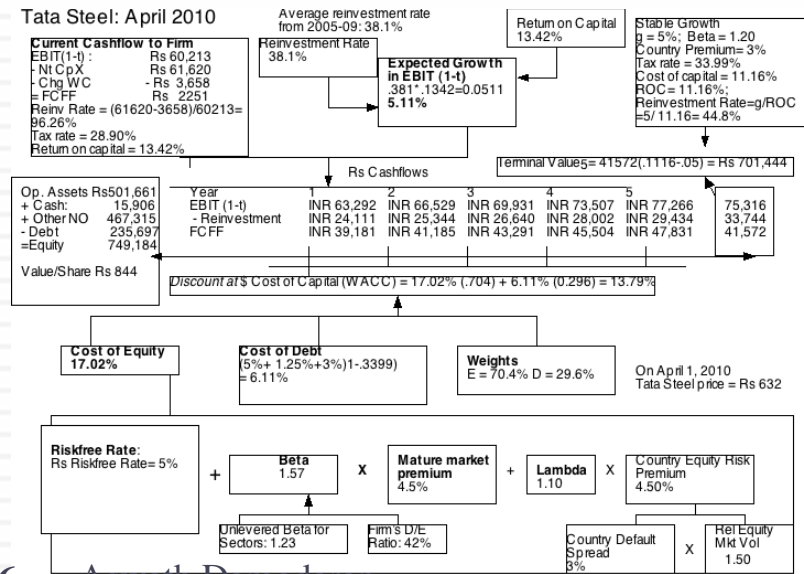
Tata Chemicals: April 2010



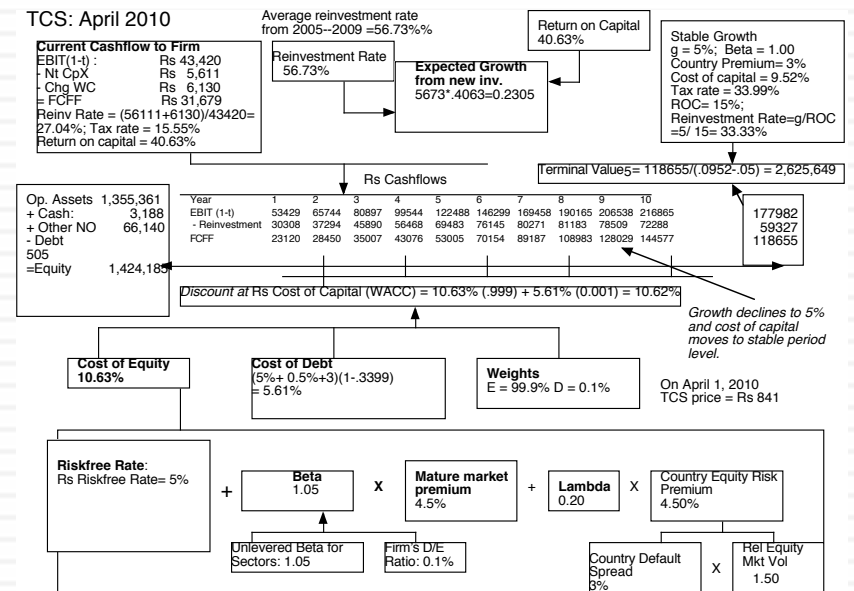
Tata Motors: April 2010



Tata Steel: April 2010

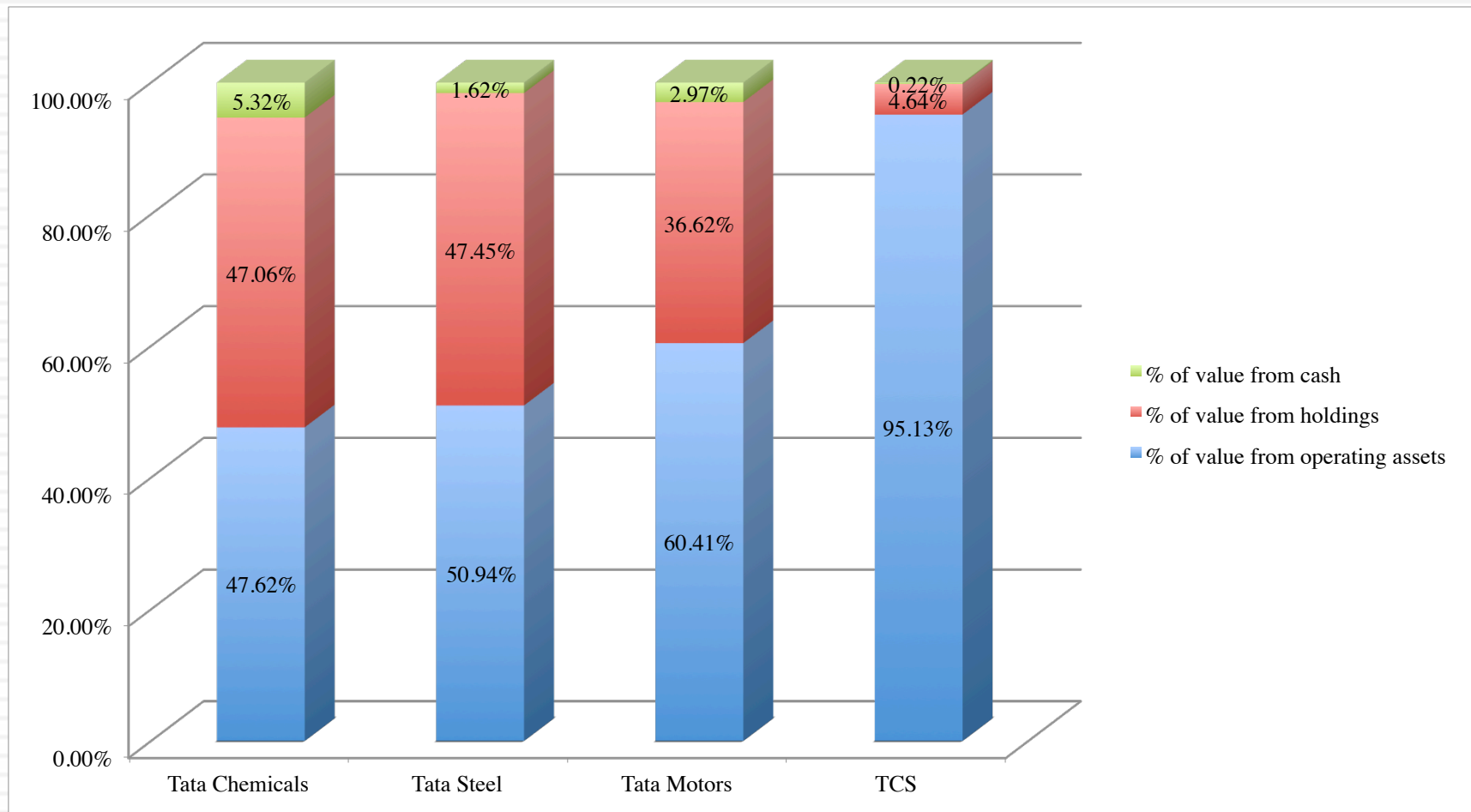


TCS: April 2010



Tata Companies: Value Breakdown

287



Lesson 5: Truncation risk can come in many forms...

288

- Natural disasters: Small companies in some economies are much exposed to natural disasters (hurricanes, earthquakes), without the means to hedge against that risk (with insurance or derivative products).
- Terrorism risk: Companies in some countries that are unstable or in the grips of civil war are exposed to damage or destruction.
- Nationalization risk: While less common than it used to be, there are countries where businesses may be nationalized, with owners receiving less than fair value as compensation.

Dealing with truncation risk..

289

- Assume that you are valuing Gazprom, the Russian oil company and have estimated a value of US \$180 billion for the operating assets. The firm has \$30 billion in debt outstanding. What is the value of equity in the firm?
- Now assume that the firm has 15 billion shares outstanding. Estimate the value of equity per share.
- The Russian government owns 42% of the outstanding shares. Would that change your estimate of value of equity per share?

V. Valuing Financial Service Companies

290

Existing assets are usually financial assets or loans, often marked to market. Earnings do not provide much information on underlying risk.

What are the cashflows from existing assets?

Preferred stock is a significant source of capital.

What is the value of equity in the firm?

Defining capital expenditures and working capital is a challenge. Growth can be strongly influenced by regulatory limits and constraints. Both the amount of new investments and the returns on these investments can change with regulatory changes.

What is the value added by growth assets?

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

For financial service firms, debt is raw material rather than a source of capital. It is not only tough to define but if defined broadly can result in high financial leverage, magnifying the impact of small operating risk changes on equity risk.

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

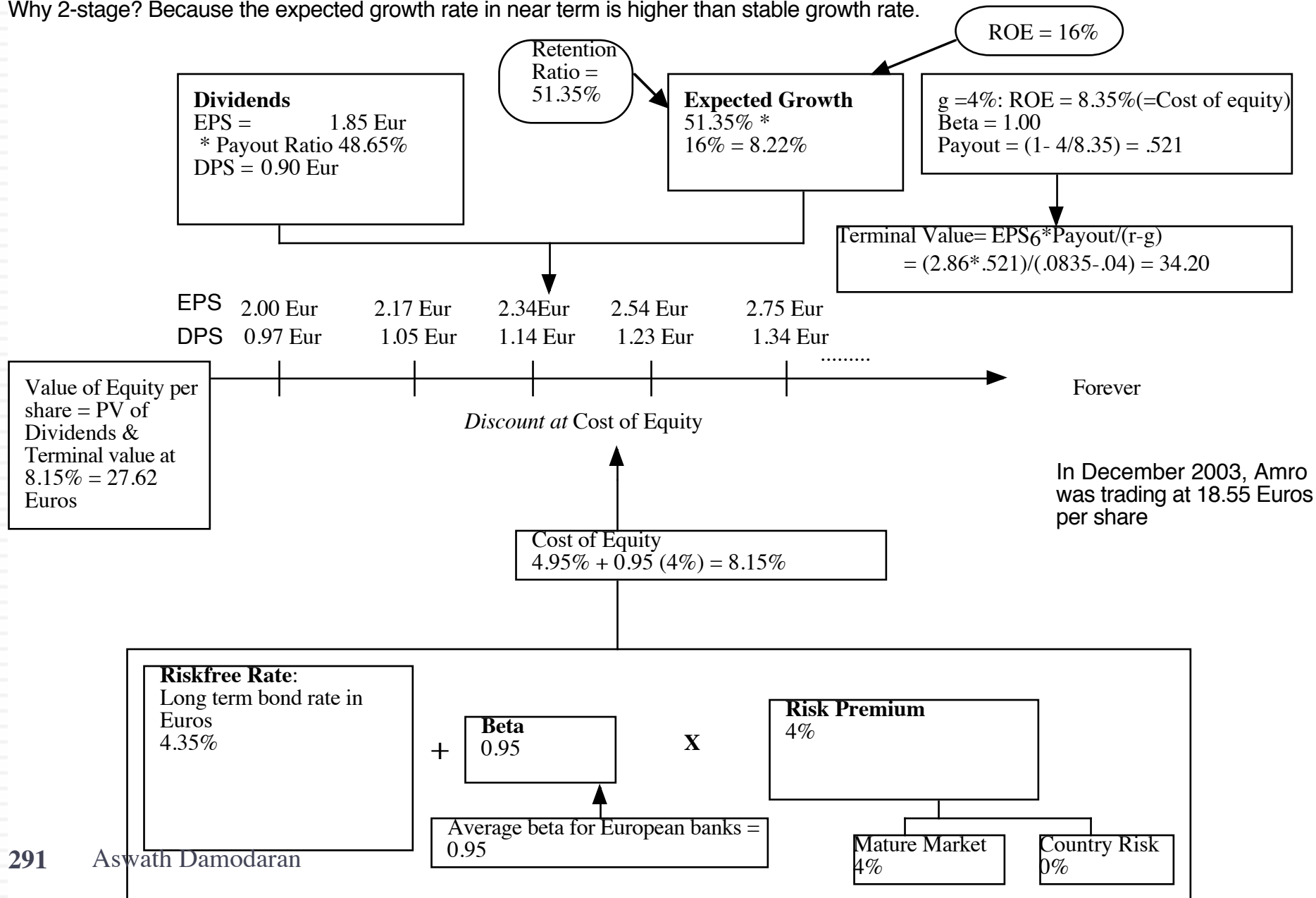
In addition to all the normal constraints, financial service firms also have to worry about maintaining capital ratios that are acceptable to regulators. If they do not, they can be taken over and shut down.

2a. ABN AMRO - December 2003

Rationale for model

Why dividends? Because FCFE cannot be estimated

Why 2-stage? Because the expected growth rate in near term is higher than stable growth rate.



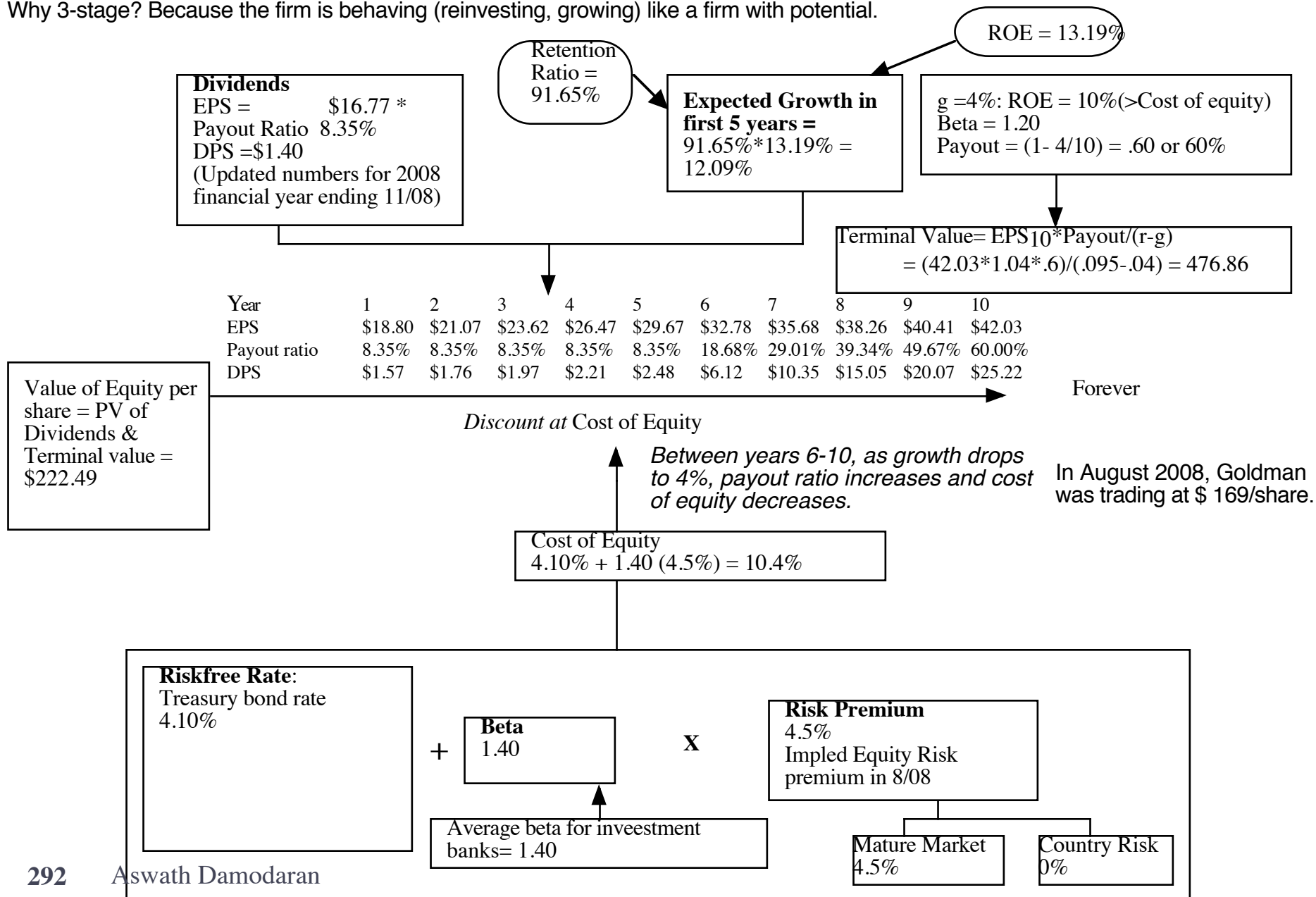
2b. Goldman Sachs: August 2008

Rationale for model

Why dividends? Because FCFE cannot be estimated

Why 3-stage? Because the firm is behaving (reinvesting, growing) like a firm with potential.

Left return on equity at 2008 levels. well below 16% in 2007 and 20% in 2004-2006.



Lesson 1: Financial service companies are opaque...

293

- With financial service firms, we enter into a Faustian bargain. They tell us very little about the quality of their assets (loans, for a bank, for instance are not broken down by default risk status) but we accept that in return for assets being marked to market (by accountants who presumably have access to the information that we don't have).
- In addition, estimating cash flows for a financial service firm is difficult to do. So, we trust financial service firms to pay out their cash flows as dividends. Hence, the use of the dividend discount model.
- During times of crises or when you don't trust banks to pay out what they can afford to in dividends, using the dividend discount model may not give you a "reliable" value.

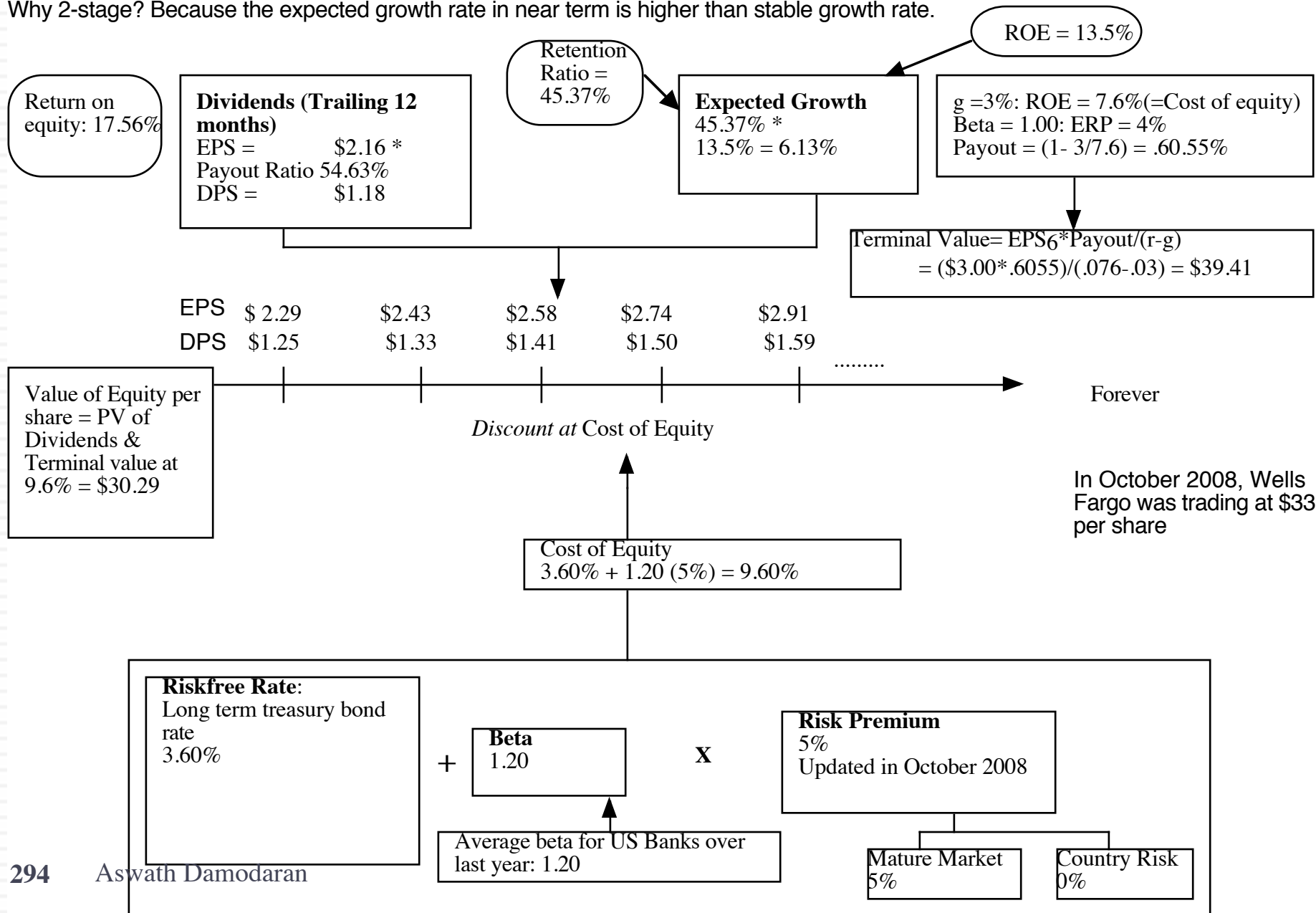
2c. Wells Fargo: Valuation on October 7, 2008

Rationale for model

Why dividends? Because FCFE cannot be estimated

Why 2-stage? Because the expected growth rate in near term is higher than stable growth rate.

Assuming that Wells will have to increase its capital base by about 30% to reflect tighter regulatory concerns. $(.1756/1.3 = .135)$



Lesson 2: For financial service companies, book value matters...

295

- The book value of assets and equity is mostly irrelevant when valuing non-financial service companies. After all, the book value of equity is a historical figure and can be nonsensical. (The book value of equity can be negative and is so for more than a 1000 publicly traded US companies)
- With financial service firms, book value of equity is relevant for two reasons:
 - Since financial service firms mark to market, the book value is more likely to reflect what the firms own right now (rather than a historical value)
 - The regulatory capital ratios are based on book equity. Thus, a bank with negative or even low book equity will be shut down by the regulators.
- From a valuation perspective, it therefore makes sense to pay heed to book value. In fact, you can argue that reinvestment for a bank is the amount that it needs to add to book equity to sustain its growth ambitions and safety requirements:
 - $FCFE = \text{Net Income} - \text{Reinvestment in regulatory capital (book equity)}$

FCFE for a bank...

296

- To estimate the FCFE for a bank, we redefine reinvestment as investment in regulatory capital. Since any dividends paid deplete equity capital and retained earnings increase that capital, the FCFE is:

$$FCFE_{\text{Bank}} = \text{Net Income} - \text{Increase in Regulatory Capital (Book Equity)}$$

Deutsche Bank: FCFE

	Current	1	2	3	4	5	Steady state
Asset Base	312,882 €	325,398 €	338,414 €	351,950 €	366,028 €	380,669 €	392,089 €
Capital ratio	10.20%	10.16%	10.12%	10.08%	10.04%	10.00%	10.00%
Regulatory Capital	31,914 €	33,060 €	34,247 €	35,477 €	36,749 €	38,067 €	39,244 €
Change in regulatory capital		1,146 €	1,187 €	1,229 €	1,273 €	1,318 €	1,177 €
ROE	9.40%	9.56%	9.72%	9.88%	10.04%	10.20%	10.20%
Net Income	3,000 €	3,161 €	3,329 €	3,505 €	3,690 €	3,883 €	4,003 €
- Investment in Regulatory Capital		1,146 €	1,187 €	1,229 €	1,273 €	1,318 €	1,177 €
FCFE		2,014 €	2,142 €	2,276 €	2,417 €	2,565 €	2,826 €

2d. Deutsche Bank: March 2009

Last 2 years

	2007	2008
Net Income	3,954 m	-3,855m
Dividends	2,146 m	285 m
Risk adjusted assets =		312,882m
Book Equity =		31,914 m
Regulatory Capital =		

Normalized
Net Income
for base year
3,000 m
Normalized
ROE = 9.4%

Expected
growth in
asset base
4%

Target capital
ratio 10%

Target ROE
10.2%

Stable Growth
 $g = 3\%$; Beta = 1.00
Cost of equity = 10.20%
Return on equity = 10.20%
Reinvestment Rate = g/ROE
 $= 3/10.20\% = 29.41\%$

Cashflows

Terminal Value₅ = $2,823 / (.102 - .03) = 39,209$ m

	1	2	3	4	5
Asset Base	325,398 €	338,414 €	351,950 €	366,028 €	380,669 €
Capital ratio	10.16%	10.12%	10.08%	10.04%	10.00%
Regulatory Capital	33,060 €	34,247 €	35,477 €	36,749 €	38,067 €
Change in capital	1,146 €	1,187 €	1,229 €	1,273 €	1,318 €
ROE	9.56%	9.72%	9.88%	10.04%	10.20%
Net Income	3,161 €	3,329 €	3,505 €	3,690 €	3,883 €
-Reinvestment	1,146 €	1,187 €	1,229 €	1,273 €	1,318 €
FCFE	2,014 €	2,142 €	2,276 €	2,417 €	2,565 €

3,999
1,176
2,823

PV of CF = 31,383 m
/ # shares 581.85
Value/Share 53.94 €

Discount at Cost of equity = $3.60\% + 1.162 \times 6\% + -0.60\% = 11.172\%$

In March 2009
Deutsche Bank price = 48
Euros/share (down from 89
Euros in early 2008)

Riskfree Rate:
Euro Riskfree Rate =
3.6%

+

Beta
1.162

X

**Mature market
premium**
6%

+

Beta for commercial &
investment banking

Region	Lambda	CRP
Western Europe	0.68	0.00%
United States	0.42	0.00%
Latin America	0.01	4.50%
Africa & Middle East	0.01	7.00%
Asia	0.11	3.50%
Eastern Europe	0.04	3.00%
Deutsche Bank		0.60%

VI. Valuing Companies with “intangible” assets

298

If capital expenditures are miscategorized as operating expenses, it becomes very difficult to assess how much a firm is reinvesting for future growth and how well its investments are doing.

What are the cashflows from existing assets?

The capital expenditures associated with acquiring intangible assets (technology, human capital) are mis-categorized as operating expenses, leading to incorrect accounting earnings and measures of capital invested.

What is the value added by growth assets?

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

It can be more difficult to borrow against intangible assets than it is against tangible assets. The risk in operations can change depending upon how stable the intangible asset is.

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

Intangible assets such as brand name and customer loyalty can last for very long periods or dissipate overnight.