



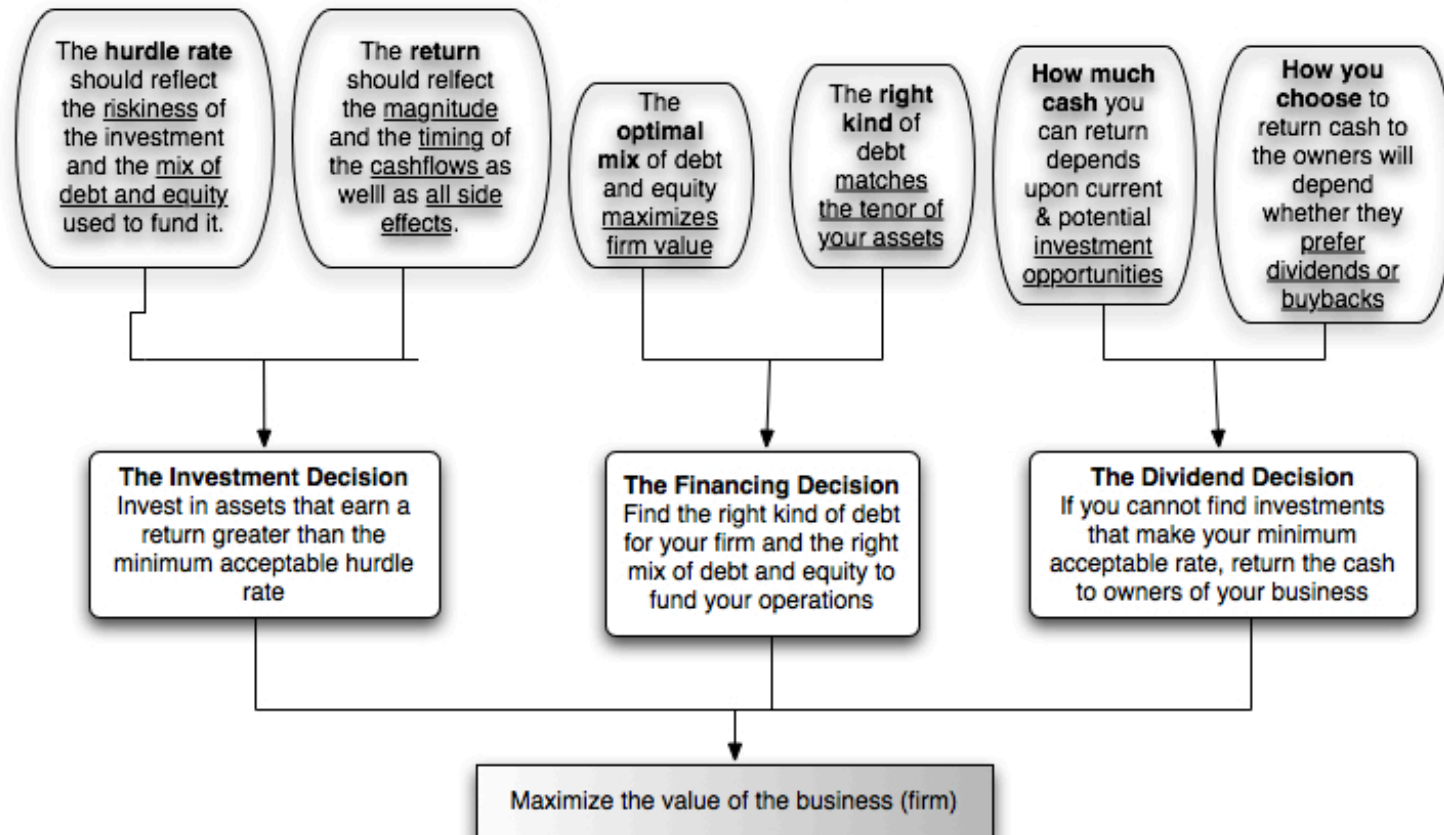
VALUATION

Cynic: A person who knows the price of everything but the value of nothing..
Oscar Wilde

First Principles

218

Chapter 12: Value and Corporate Decisions



Three approaches to valuation

219

- Intrinsic valuation: The value of an asset is a function of its fundamentals – cash flows, growth and risk. In general, discounted cash flow models are used to estimate intrinsic value.
- Relative valuation: The value of an asset is estimated based upon what investors are paying for similar assets. In general, this takes the form of value or price multiples and comparing firms within the same business.
- Contingent claim valuation: When the cash flows on an asset are contingent on an external event, the value can be estimated using option pricing models.

Discounted Cashflow Valuation: Basis for Approach

220

$$\text{Value of an asset} = \sum_{t=1}^{t=n} \frac{\text{Expected Cash flow in period } t}{(1+r)^t}$$

where,

n = Life of the asset

r = Discount rate reflecting the riskiness of the estimated cashflows

Equity Valuation

221

- The value of equity is obtained by discounting expected cashflows to equity, i.e., the residual cashflows after meeting all expenses, tax obligations and interest and principal payments, at the cost of equity, i.e., the rate of return required by equity investors in the firm.

$$\text{Value of Equity} = \sum_{t=1}^{t=n} \frac{\text{CF to Equity}_t}{(1+k_e)^t}$$

where,

CF to Equity_t = Expected Cashflow to Equity in period t

k_e = Cost of Equity

- The dividend discount model is a specialized case of equity valuation, and the value of a stock is the present value of expected future dividends.

Firm Valuation

222

- The value of the firm is obtained by discounting expected cashflows to the firm, i.e., the residual cashflows after meeting all operating expenses and taxes, but prior to debt payments, at the weighted average cost of capital, which is the cost of the different components of financing used by the firm, weighted by their market value proportions.

$$\text{Value of Firm} = \sum_{t=1}^{t=n} \frac{\text{CF to Firm}_t}{(1+WACC)^t}$$

where,

CF to Firm_t = Expected Cashflow to Firm in period t

WACC = Weighted Average Cost of Capital

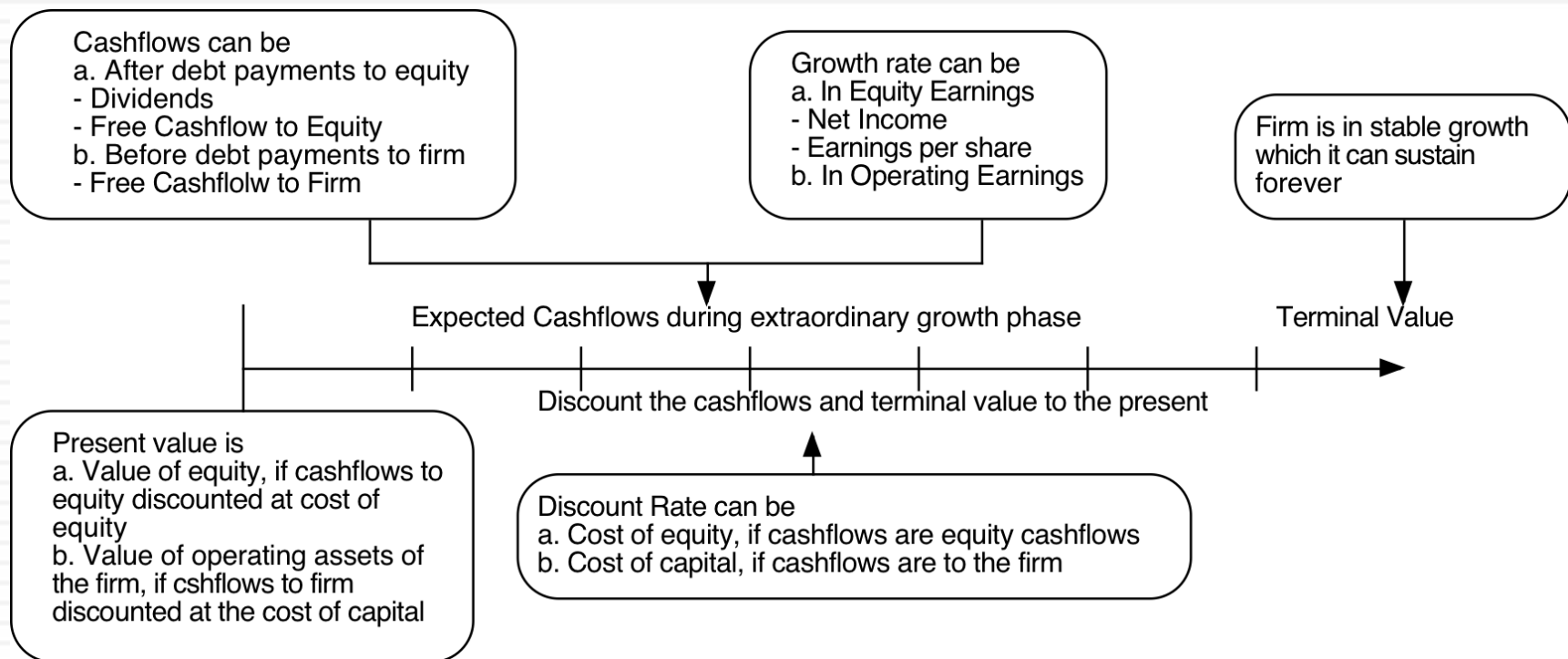
Choosing a Cash Flow to Discount

223

- When you cannot estimate the free cash flows to equity or the firm, the only cash flow that you can discount is dividends. For financial service firms, it is difficult to estimate free cash flows. For Deutsche Bank, we will be discounting dividends.
- If a firm's debt ratio is not expected to change over time, the free cash flows to equity can be discounted to yield the value of equity. For Aracruz, we will discount free cash flows to equity.
- If a firm's debt ratio might change over time, free cash flows to equity become cumbersome to estimate. Here, we would discount free cash flows to the firm. For Disney, we will discount the free cash flow to the firm.

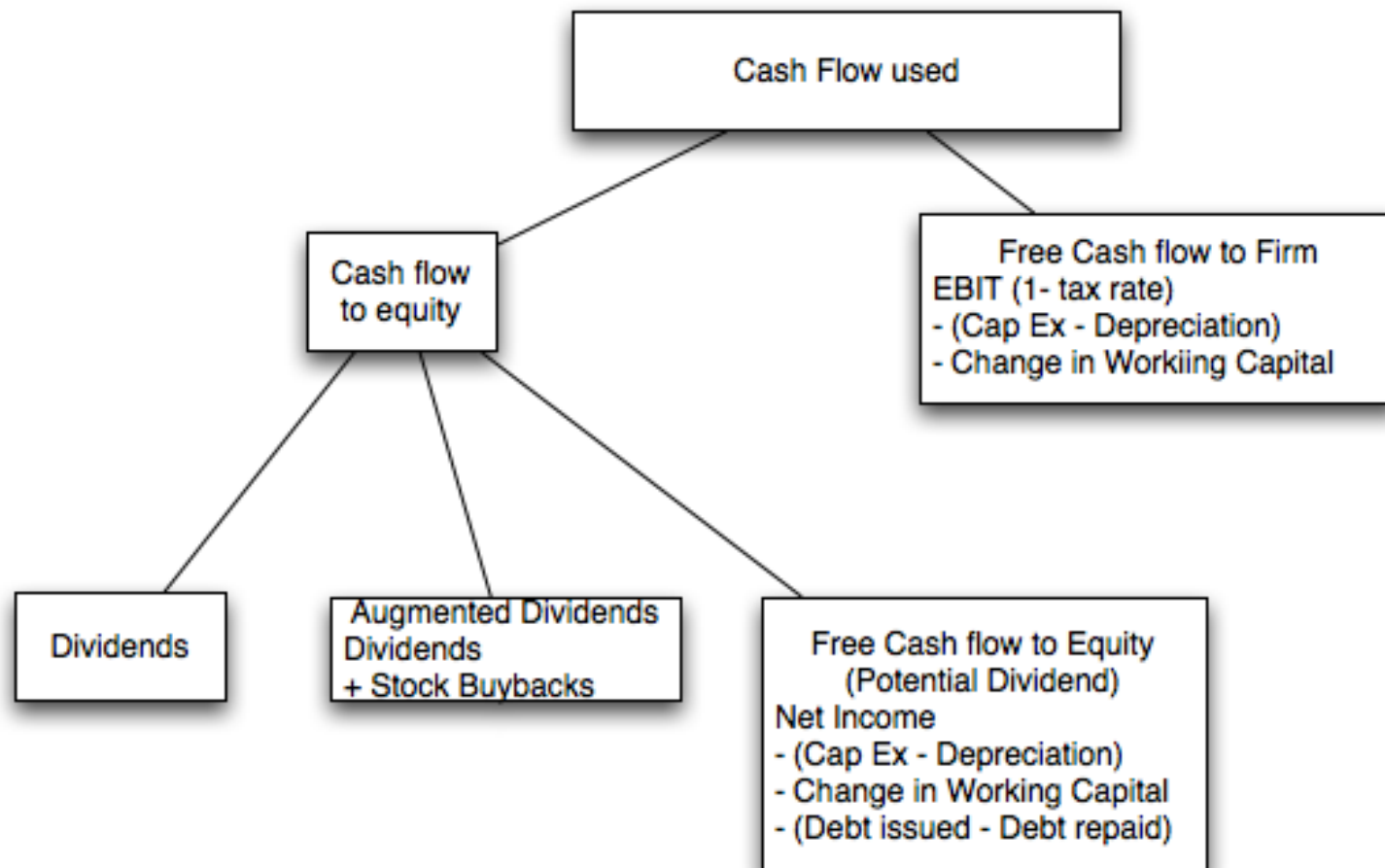
The Ingredients that determine value.

224



I. Estimating Cash Flows

225



Dividends and Modified Dividends for Deutsche Bank

226

- In 2007, Deutsche Bank paid out dividends of 2,146 million Euros on net income of 6,510 million Euros. In early 2008, we valued Deutsche Bank using the dividends it paid in 2007. We are assuming the dividends are not only reasonable but sustainable.
- In early 2009, in the aftermath of the crisis, Deutsche Bank's dividend policy was in flux. The net income had plummeted and capital ratios were being reassessed. To forecast future dividends, we first forecast net income ($\text{ROE} \times \text{Asset Base}$) and then estimated the investments in regulatory capital:

	Current	1	2	3	4	5
Asset Base	312,882 €	325,398 €	338,414 €	351,950 €	366,028 €	380,669 €
Capital ratio	10.20%	10.16%	10.12%	10.08%	10.04%	10.00%
Regulatory Capital	31,914 €	33,060 €	34,247 €	35,477 €	36,749 €	38,067 €
Change in Regulatory Capital		1,146 €	1,187 €	1,229 €	1,273 €	1,318 €
ROE	9.40%	9.52%	9.64%	9.76%	9.88%	10.00%
Net Income	3,000 €	3,147 €	3,302 €	3,463 €	3,631 €	3,807 €
- Investment in Regulatory Capital		1,146 €	1,187 €	1,229 €	1,273 €	1,318 €
FCFE (Potential Dividend)		2,001 €	2,114 €	2,233 €	2,358 €	2,489 €

Estimating FCFE : Tata Chemicals

227

Year	Net Income	Cap Ex	Depreciation	Change in WC	Change in Debt	Equity Reinvestment	Equity Reinvestment Rate
2003-04	\$3,418	\$357	\$1,442	-\$557	-\$2,771	\$1,129	33.04%
2004-05	\$4,550	\$692	\$1,377	-\$493	\$5,448	-\$6,626	-145.64%
2005-06	\$5,156	\$11,730	\$1,389	\$2,823	\$867	\$12,297	238.51%
2006-07	\$6,338	\$1,196	\$1,504	-\$1,662	-\$4,411	\$2,442	38.53%
2007-08	\$11,571	\$28,956	\$1,488	\$88	\$17,054	\$10,502	90.76%
Aggregate	\$31,033	\$42,930	\$7,199	\$200	\$16,187	\$19,744	63.62%

Estimating FCFF: Disney

228



	2008	2008 normalized
EBIT	\$7,030	\$7,030
EBIT ($\times 1-t$)	\$4,359	\$4,359
+ Depreciaton	\$1,839	\$1,839
- Cap Ex	\$2,752	\$3,939
- Change in WC	\$241	\$241
FCFF	\$3,205	\$2,018
Reinvestment	\$1,154	\$2,341
Reinvestment Rate	26.48%	53.71%

II. Discount Rates

229

- ❑ Critical ingredient in discounted cashflow valuation. Errors in estimating the discount rate or mismatching cashflows and discount rates can lead to serious errors in valuation.
- ❑ At an intuitive level, the discount rate used should be consistent with both the riskiness and the type of cashflow being discounted.
- ❑ The cost of equity is the rate at which we discount cash flows to equity (dividends or free cash flows to equity). The cost of capital is the rate at which we discount free cash flows to the firm.

Cost of Equity: Deutsche Bank

2008 versus 2009

230

- In early 2008, we estimated a beta of 1.162 for Deutsche Bank, which used in conjunction with the Euro risk-free rate of 4% (in January 2008) and a risk premium of 4.50% (the mature market risk premium in early 2008), yielded a cost of equity of 9.23%.

Cost of Equity_{Jan 2008} = Riskfree Rate_{Jan 2008} + Beta * Mature Market Risk Premium

$$= 4.00\% + 1.162 (4.5\%) = 9.23\%$$

(We used the same beta for early 2008 and early 2009. We could have looked at the betas for banks in early 2008 and used that number instead)

- In early 2009, the Euro riskfree rate had dropped to 3.6% and the equity risk premium had risen to 6% for mature markets:

Cost of equity_{Jan 2009} = Riskfree Rate_{Jan 2009} + Beta (Equity Risk Premium)

$$= 3.6\% + 1.162 (6\%) = 10.572\%$$

Cost of Equity: Tata Chemicals

231

- We will be valuing Tata Chemicals in rupee terms. (That is a choice. Any company can be valued in any currency).
- Earlier, we estimated a beta for equity of 0.945 for Tata Chemical's operating assets. With a nominal rupee risk-free rate of 4 percent and an equity risk premium of 10.51% for India (also estimated in Chapter 4), we arrive at a cost of equity of 13.93%.

$$\text{Cost of Equity} = 4\% + 0.945 (10.51\%) = 13.93\%$$

Current Cost of Capital: Disney

232

- The beta for Disney's stock in May 2009 was 0.9011. The T. bond rate at that time was 3.5%. Using an estimated equity risk premium of 6%, we estimated the cost of equity for Disney to be 8.91%:

$$\text{Cost of Equity} = 3.5\% + 0.9011(6\%) = 8.91\%$$

- Disney's bond rating in May 2009 was A, and based on this rating, the estimated pretax cost of debt for Disney is 6%. Using a marginal tax rate of 38%, the after-tax cost of debt for Disney is 3.72%.

$$\text{After-Tax Cost of Debt} = 6.00\% (1 - 0.38) = 3.72\%$$

- The cost of capital was calculated using these costs and the weights based on market values of equity (45,193) and debt (16,682):

$$\text{Cost of capital} = 8.91\% \frac{45,193}{(16,682 + 45,193)} + 3.72\% \frac{16,682}{(16,682 + 45,193)} = 7.51\%$$

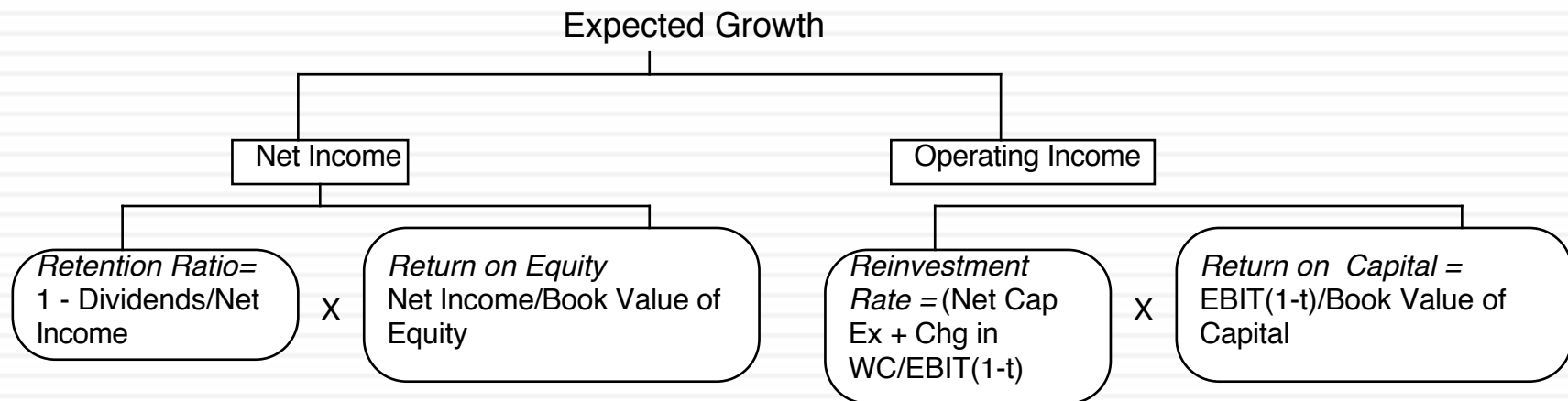
But costs of equity and capital can and should change over time...

233

Year	Beta	Cost of equity	Cost of debt	Debt Ratio	Cost of capital
1	0.90	8.91%	3.72%	26.73%	7.52%
2	0.90	8.91%	3.72%	26.73%	7.52%
3	0.90	8.91%	3.72%	26.73%	7.52%
4	0.90	8.91%	3.72%	26.73%	7.52%
5	0.90	8.91%	3.72%	26.73%	7.52%
6	0.92	9.03%	3.72%	26.73%	7.61%
7	0.94	9.14%	3.72%	26.73%	7.69%
8	0.96	9.26%	3.72%	26.73%	7.78%
9	0.98	9.38%	3.72%	26.73%	7.87%
10	1.00	9.50%	3.72%	26.73%	7.95%

III. Expected Growth

234



Estimating growth in EPS: Deutsche Bank in January 2008

235

- In 2007, Deutsche Bank reported net income of 6.51 billion Euros on a book value of equity of 33.475 billion Euros at the start of the year (end of 2006), and paid out 2.146 billion Euros as dividends.

$$\text{Return on Equity} = \frac{\text{Net Income}_{2007}}{\text{Book Value of Equity}_{2006}} = \frac{6,510}{33,475} = 19.45\%$$

$$\text{Retention Ratio} = 1 - \frac{\text{Dividends}}{\text{Net Income}} = 1 - \frac{2,146}{6,510} = 67.03\%$$

- If Deutsche Bank maintains the return on equity (ROE) and retention ratio that it delivered in 2007 for the long run:

$$\text{Expected Growth Rate}_{\text{Existing Fundamentals}} = 0.6703 * 0.1945 = 13.04\%$$

- If we replace the net income in 2007 with average net income of \$3,954 million, from 2003 to 2007:

$$\text{Normalized Return on Equity} = \frac{\text{Average Net Income}_{2003-07}}{\text{Book Value of Equity}_{2006}} = \frac{3,954}{33,475} = 11.81\%$$

$$\text{Normalized Retention Ratio} = 1 - \frac{\text{Dividends}}{\text{Net Income}} = 1 - \frac{2,146}{3,954} = 45.72\%$$

$$\text{Expected Growth Rate}_{\text{Normalized Fundamentals}} = 0.4572 * 0.1181 = 5.40\%$$

Estimating growth in Net Income: Tata Chemicals

236

Year	Net Income	Cap Ex	Depreciation	Change in WC	Change in Debt	Equity Reinvestment	Equity Reinvestment Rate
2003-04	INR 3,418	INR 357	INR 1,442	-INR 557	-INR 2,771	INR 1,129	33.04%
2004-05	INR 4,550	INR 692	INR 1,377	-INR 493	INR 5,448	-INR 6,626	-145.64%
2005-06	INR 5,156	INR 11,730	INR 1,389	INR 2,823	INR 867	INR 12,297	238.51%
2006-07	INR 6,338	INR 1,196	INR 1,504	-INR 1,662	-INR 4,411	INR 2,442	38.53%
2007-08	INR 11,571	INR 28,956	INR 1,488	INR 88	INR 17,054	INR 10,502	90.76%
Aggregate	INR 31,033	INR 42,930	INR 7,199	INR 200	INR 16,187	INR 19,744	63.62%

$$\text{Normalized Equity Reinvestment Rate} = \frac{\text{Equity Reinvestment}_{\text{Total 2004-08}}}{\text{Net Income}_{\text{Total 2004-08}}} = \frac{19,744}{31,033} = 63.62\%$$

Year	Net Income	BV of Equity	ROE
2003-04	INR 3,418	INR 20,353	16.80%
2004-05	INR 4,550	INR 19,978	22.78%
2005-06	INR 5,156	INR 39,451	13.07%
2006-07	INR 6,338	INR 37,258	17.01%
2007-08	INR 11,571	INR 61,952	18.68%
Aggregate	INR 31,033	INR 178,992	17.34%

$$\text{Normalized Return on Equity} = \frac{\text{Net Income}_{\text{Total 2004-08}}}{\text{Book Value of Equity}_{\text{Total 2004-08}}} = \frac{31,033}{178,992} = 17.34\%$$

$$\text{Expected Growth in Net Income} = 63.62\% * 17.34\% = 11.03\%$$

ROE and Leverage

237

- A high ROE, other things remaining equal, should yield a higher expected growth rate in equity earnings.
- The ROE for a firm is a function of both the quality of its investments and how much debt it uses in funding these investments. In particular

$$\text{ROE} = \text{ROC} + \text{D/E} (\text{ROC} - i (1-t))$$

where,

$$\text{ROC} = (\text{EBIT} (1 - \text{tax rate})) / (\text{Book Value of Capital})$$

$$\text{BV of Capital} = \text{BV of Debt} + \text{BV of Equity} - \text{Cash}$$

$$\text{D/E} = \text{Debt/ Equity ratio}$$

$$i = \text{Interest rate on debt}$$

$$t = \text{Tax rate on ordinary income.}$$

Decomposing ROE

238

- Assume that you are analyzing a company with a 15% return on capital, an after-tax cost of debt of 5% and a book debt to equity ratio of 100%. Estimate the ROE for this company.

- Now assume that another company in the same sector has the same ROE as the company that you have just analyzed but no debt. Will these two firms have the same growth rates in earnings per share if they have the same dividend payout ratio?

- Will they have the same equity value?

Estimating Growth in EBIT: Disney

The Reinvestment Rate

239

- We begin by estimating the reinvestment rate and return on capital for Disney in 2008 using the numbers from the latest financial statements.

$$\text{Reinvestment Rate}_{2008} = \frac{(2,752 - 1,839 + 241)}{7,030 (1 - .38)} = 26.48\%$$

- We include \$516 million in acquisitions made during 2008 in capital expenditures, but this is a volatile item. Disney does not make large acquisitions every year, but it does so infrequently - \$ 7.5 billion to buy Pixar in 2006 and \$ 11.5 billion to buy Capital Cities in 1996. Averaging out acquisitions from 1994-2008, we estimate an average annual value of \$1,761 million for acquisitions over this period:

$$\text{Reinvestment Rate}_{\text{Normalized}} = \frac{(3,939 - 1,839 + 241)}{7,030 (1 - .38)} = 53.72\%$$

Estimating Growth in Disney

ROC and Expected Growth

240

- We compute the return on capital, using operating income in 2008 and capital invested at the start of 2008 (end of 2007):

$$\text{Return on Capital}_{2008} = \frac{\text{EBIT} (1 - t)}{(\text{BV of Equity} + \text{BV of Debt} - \text{Cash})} = \frac{7,030 (1 - .38)}{(30,753 + 16,892 - 3,670)} = 9.91\%$$

- If Disney maintains its 2008 normalized reinvestment rate of 53.72% and return on capital of 9.91% for the next few years, its growth rate will be 5.32 percent.

$$\text{Expected Growth Rate} = 53.72\% * 9.91\% = 5.32\%$$

IV. Getting Closure in Valuation

241

- 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:

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

- 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 forever.

- This “constant” growth rate is called a stable growth rate and cannot be higher than the growth rate of the economy in which the firm operates.

Getting to stable growth...

242

- A key assumption in all discounted cash flow models is the period of high growth, and the pattern of growth during that period. In general, we can make one of three assumptions:
 - there is no high growth, in which case the firm is already in stable growth
 - there will be high growth for a period, at the end of which the growth rate will drop to the stable growth rate (2-stage)
 - there will be high growth for a period, at the end of which the growth rate will decline gradually to a stable growth rate(3-stage)
- The assumption of how long high growth will continue will depend upon several factors including:
 - the size of the firm (larger firm -> shorter high growth periods)
 - current growth rate (if high -> longer high growth period)
 - barriers to entry and differential advantages (if high -> longer growth period)

Choosing a Growth Period: Examples

243

	<i>Disney</i>	<i>Aracruz</i>	<i>Tata Chemicals</i>
Firm size/market size	Firm is one of the largest players in the entertainment and theme park business, but the businesses are being redefined and are expanding.	Firm has a small market share of the paper/pulp business, but the business is mature.	Firm has a large market share of Indian (domestic) market, but is small by global standards. Domestic market is also growing.
Current excess returns	Firm is earning more than its cost of capital, after a long period of negative excess returns.	Returns on capital are largely a function of paper/pulp prices, but on average have been less than the cost of capital.	Firm has a return on capital that is roughly equal to its cost of capital.
Competitive advantages	Has some of the most recognized brand names in the world. Knows more about operating theme parks than any other firm in the world. Has skilled animation studio staff.	Cost advantages because of access to Brazilian rain forests. Has invested in newer, updated plants and has skilled workforce.	Has cost advantages, because of lower labor and production costs in India.
Length of high-growth period	Ten years, entirely because of its strong competitive advantages (which have been wasted over the past few years), but the excess returns are likely to be small.	Five years, largely due to access to cheap raw material.	Five years, primarily because of high real growth in India.

Estimating Stable Period Inputs: Disney

244

- Respect the cap: The growth rate forever is assumed to be 3%. This is set lower than the riskfree rate (3.5%).
- Think about stable period excess returns: The return on capital for Disney will drop from its high growth period level of 9.91% to a stable growth return of 9%. This is still higher than the cost of capital of 7.95% but the competitive advantages that Disney has are unlikely to dissipate completely by the end of the 10th year.
- Reinvest to grow: The expected growth rate in stable growth will be 3%. In conjunction with the return on capital of 9%, this yields a stable period reinvestment rate of 33.33%:
 - $\text{Reinvestment Rate} = \text{Growth Rate} / \text{Return on Capital} = 3\% / 9\% = 33.33\%$
- Adjust risk and cost of capital: The beta for the stock will drop to one, reflecting Disney's status as a mature company.
 - $\text{Cost of Equity} = \text{Riskfree Rate} + \text{Beta} * \text{Risk Premium} = 3.5\% + 6\% = 9.5\%$
 - The debt ratio for Disney will stay at 26.73%. Since we assume that the cost of debt remains unchanged at 6%, this will result in a cost of capital of 7.95%
 - $\text{Cost of capital} = 9.5\% (.733) + 6\% (1-.38) (.267) = 7.95\%$

V. From firm value to equity value per share

245

Approach used	To get to equity value per share
Discount dividends per share at the cost of equity	Present value is value of equity per share
Discount aggregate FCFE at the cost of equity	Present value is value of aggregate equity. Subtract the value of equity options given to managers and divide by number of shares.
Discount aggregate FCFF at the cost of capital	$\begin{aligned} \text{PV} &= \text{Value of operating assets} \\ &+ \text{Cash \& Near Cash investments} \\ &+ \text{Value of minority cross holdings} \\ &- \text{Debt outstanding} \\ &= \text{Value of equity} \\ &- \text{Value of equity options} \\ &= \text{Value of equity in common stock} \\ &/ \text{Number of shares} \end{aligned}$

Valuing Deutsche Bank in early 2008

246

- To value Deutsche Bank, we started with the normalized income over the previous five years (3,954 million Euros) and the dividends in 2008 (2,146 million Euros). We assumed that the payout ratio and ROE, based on these numbers will continue for the next 5 years:
 - ▣ Payout ratio = $2,146/3954 = 54.28\%$
 - ▣ Expected growth rate = $(1 - .5428) * .1181 = 0.054$ or 5.4%
 - ▣ Cost of equity = 9.23%

<i>Year</i>	<i>Net Income</i>	<i>Payout Ratio</i>	<i>Dividends</i>	<i>PV @ 9.23%</i>
2008	4,167 €	54.28%	2,262 €	2,071 €
2009	4,392 €	54.28%	2,384 €	1,998 €
2010	4,629 €	54.28%	2,513 €	1,928 €
2011	4,879 €	54.28%	2,648 €	1,861 €
2012	5,143 €	54.28%	2,791 €	1,795 €
				9,653 €

Deutsche Bank in stable growth

247

- At the end of year 5, the firm is in stable growth. We assume that the cost of equity drops to 8.5% (as the beta moves to 1) and that the return on equity also drops to 8.5 (to equal the cost of equity).

Stable Period Payout Ratio = $1 - g/\text{ROE} = 1 - 0.03/0.085 = 0.6471$ or 64.71%

Expected Dividends in Year 6 = Expected Net Income₅ * (1+g_{Stable}) * Stable Payout Ratio
 = €5,143 (1.03) * 0.6471 = €3,427 million

Terminal Value = $\frac{\text{Expected Dividends}_6}{(\text{Cost of Equity}-g)} = \frac{3,427}{(.085-.03)} = 62,318$ million Euros

PV of Terminal Value = $\frac{\text{Terminal Value}_n}{(1+\text{Cost of Equity}_{\text{High growth}})^n} = \frac{62,318}{(1.0923)^5} = 40,079$ mil Euros

- Value of equity = €9,653+ €40,079 = €49,732 million Euros
- Value of equity per share = $\frac{\text{Value of Equity}}{\# \text{ Shares}} = \frac{49,732}{474.2} = 104.88$ Euros/share

Stock was trading at 89 Euros per share at the time of the analysis.

What does the valuation tell us? One of three possibilities...

248

- Stock is under valued: This valuation would suggest that Deutsche Bank is significantly overvalued, given our estimates of expected growth and risk.
- Dividends may not reflect the cash flows generated by Deutsche Bank. The FCFE could have been significantly lower than the dividends paid.
- Estimates of growth and risk are wrong: It is also possible that we have over estimated growth or under estimated risk in the model, thus reducing our estimate of value.

Valuing Tata Chemicals in early 2009: The high growth period

249

- We used the normalized return on equity of 17.34% (see earlier table) and the current book value of equity (Rs 35,717 million) to estimate net income:

$$\text{Normalized Net Income} = 35,717 * .1734 = \text{Rs, 6,193 million}$$

(We removed interest income from cash to arrive at the normalized return on equity)

- We use the average equity reinvestment rate of 63.62 percent and the normalized return on equity of 17.34% to estimate growth:

$$\text{Expected Growth in Net Income} = 63.62\% * 17.34\% = 11.03\%$$

- We assume that the current cost of equity (see earlier page) of 13.93% will hold for the next 5 years.

	2009	2010	2011	2012	2013	Sum
Net Income	Rs 6,876	Rs 7,634	Rs 8,476	Rs 9,411	Rs 10,449	
Equity Reinvestment Rate	63.62%	63.62%	63.62%	63.62%	63.62%	
FCFE	Rs 2,501	Rs 2,777	Rs 3,084	Rs 3,423	Rs 3,801	
Cost of Equity	13.93%	13.93%	13.93%	13.93%	13.93%	
Present Value	Rs 2,195	Rs 2,160	Rs 2,085	Rs 2,032	Rs 1,980	Rs 10,433

Stable growth and value....

250

- After year five, we will assume that the beta will increase to 1 and that the equity risk premium will decline to 7.5 percent (we assumed India country risk would drop). The resulting cost of equity is 11.5 percent.

$$\text{Cost of Equity in Stable Growth} = 4\% + 1(7.5\%) = 11.5\%$$

- We will assume that the growth in net income will drop to 4% and that the return on equity will rise to 11.5% (which is also the cost of equity).

$$\text{Equity Reinvestment Rate}_{\text{Stable Growth}} = 4\%/11.5\% = 34.78\%$$

$$\text{FCFE in Year 6} = 10,449(1.04)(1 - 0.3478) = \text{Rs } 7,087 \text{ million}$$

$$\text{Terminal Value of Equity} = 7,087/(0.115 - 0.04) = \text{Rs } 94,497 \text{ million}$$

- To value equity in the firm today

$$\text{Value of equity} = \text{PV of FCFE during high growth} + \text{PV of terminal value} + \text{Cash}$$

$$= 10,433 + 94,497/1.13935 + 1,759 = \text{Rs } 61,423 \text{ million}$$

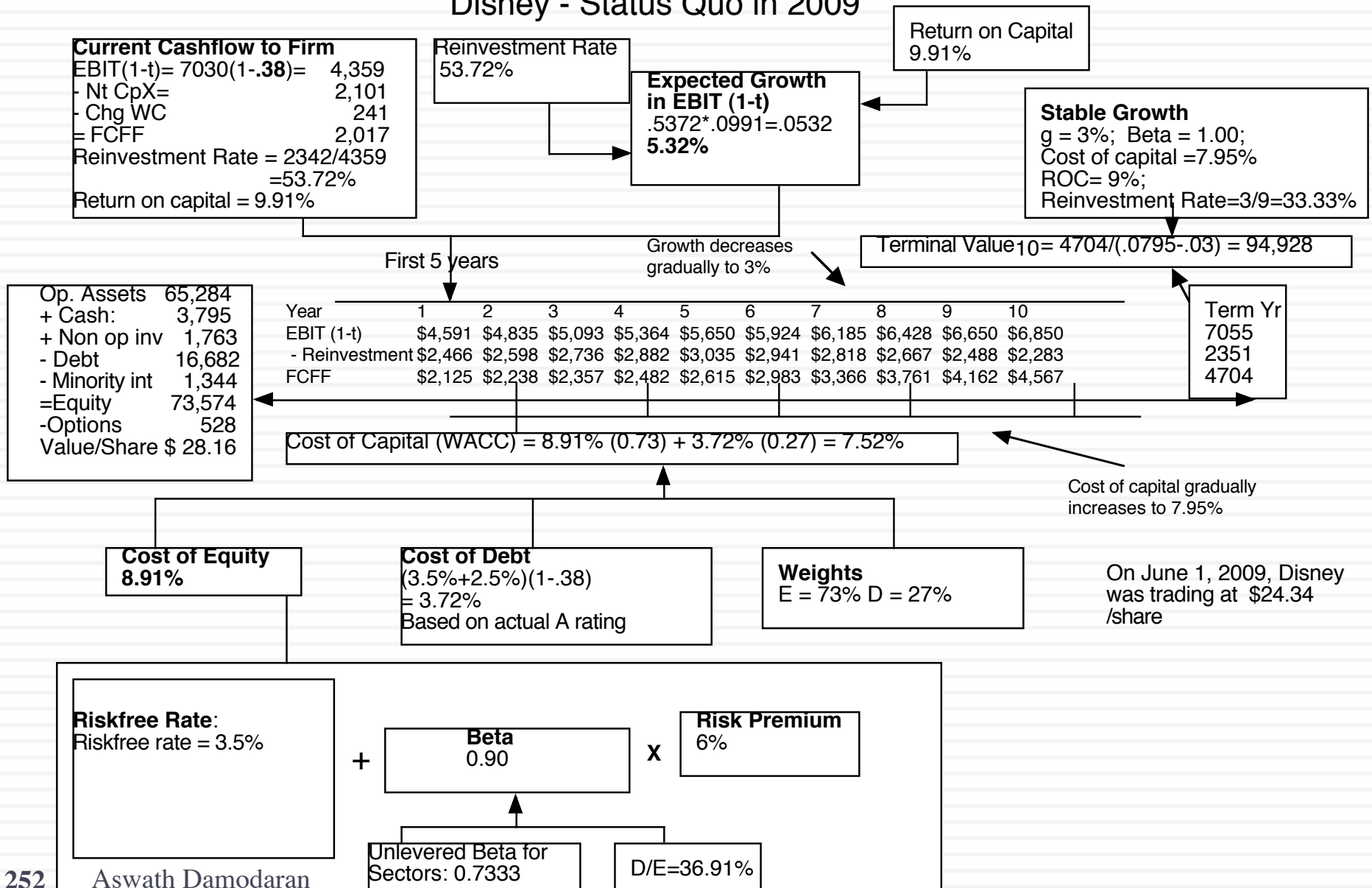
- Dividing by 235.17 million shares yields a value of equity per share of Rs 261, about 20% higher than the stock price of Rs 222 per share.

Disney: Inputs to Valuation

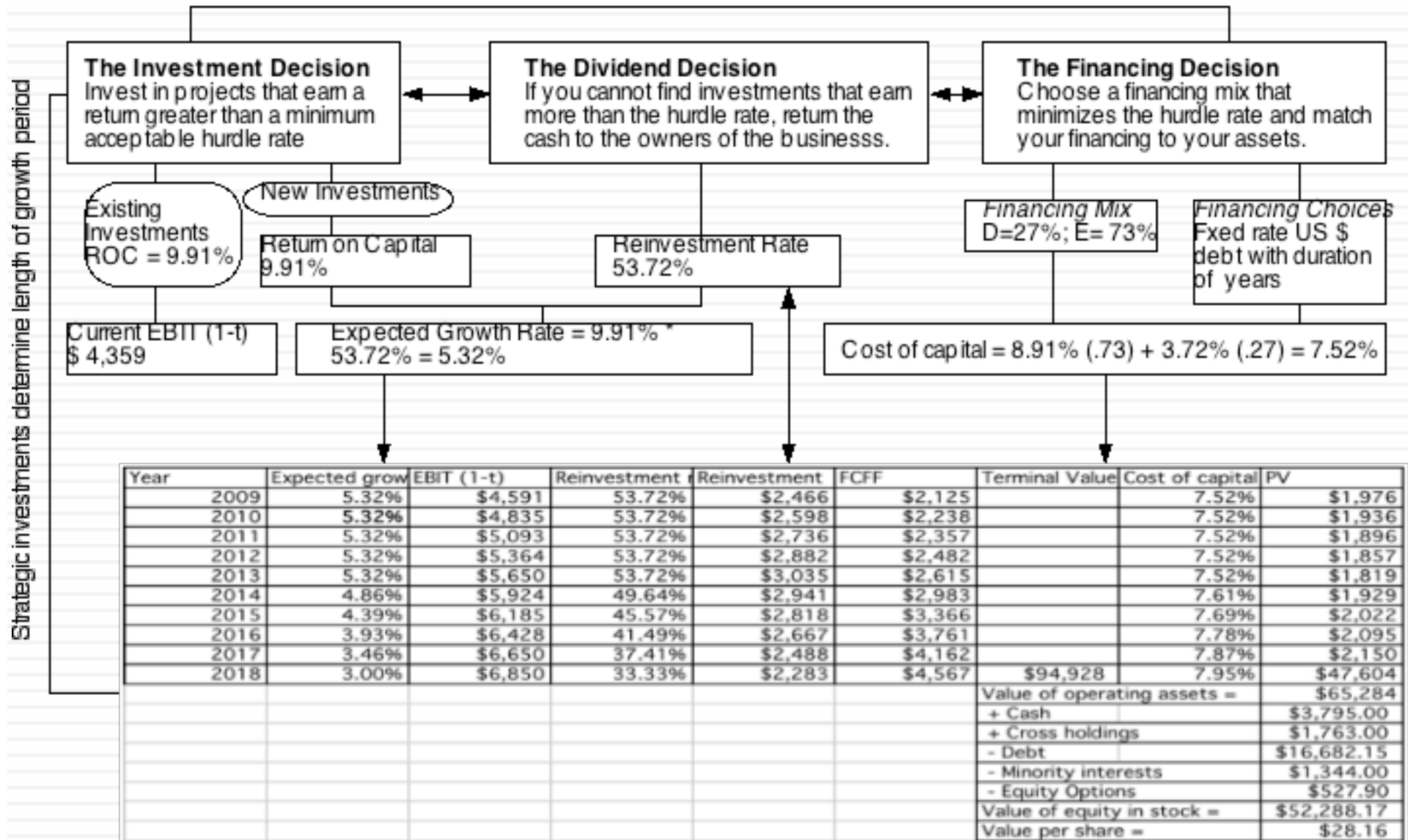
251

	<i>High Growth Phase</i>	<i>Transition Phase</i>	<i>Stable Growth Phase</i>
Length of Period	5 years	5 years	Forever after 10 years
Tax Rate	38%	38%	38%
Return on Capital	9.91%	Declines linearly to 9%	Stable ROC of 9%
Reinvestment Rate (Net Cap Ex + Working Capital Investments/EBIT)	53.72% (based on normalized acquisition costs)	Declines to 33.33% as ROC and growth rates drop: Reinvestment Rate = g/ROC	33.33% of after-tax operating income, estimated from stable growth rate of 3% and return on capital of 9%. Reinvestment rate = $3/9=33.33\%$
Expected Growth Rate in EBIT	$ROC * Reinvestment Rate =$ $9.91\% * 53.72\% = 5.32\%$	Linear decline to Stable Growth Rate of 3%	3%
Debt/Capital Ratio	26.7%	Stays unchanged	Stays unchanged
Risk Parameters	Beta = 0.9033, $k_e = 8.91\%$ Pre-tax Cost of Debt = 6% Cost of capital = 7.52%	Beta changes linearly to 1.00; Cost of debt stays at 6% Cost of capital goes to 7.95%	Beta = 1.00; $k_e = 9.5\%$ Cost of debt stays at 6% Cost of capital = 7.95%

Disney - Status Quo in 2009

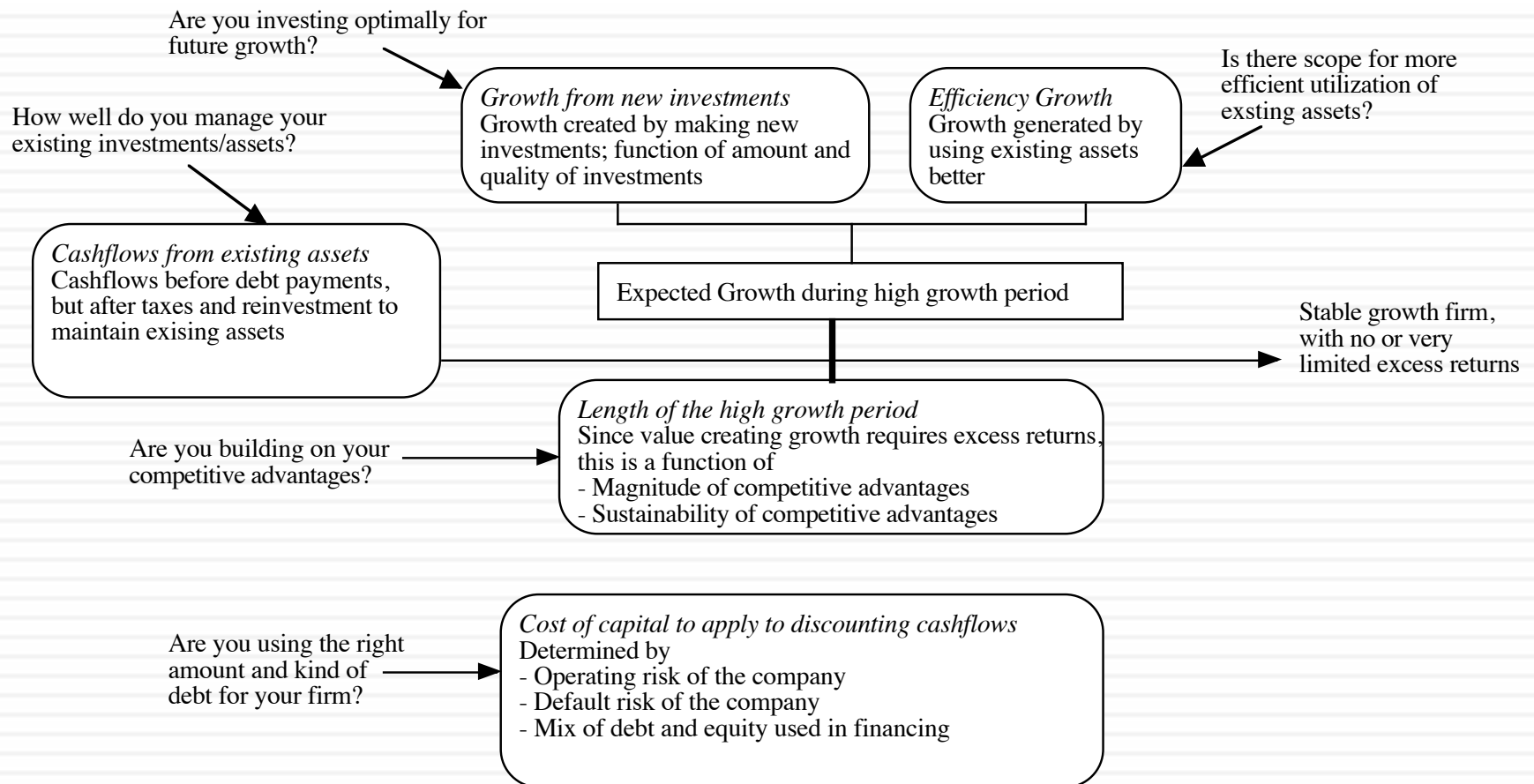


Investment decision affects risk of assets being finance and financing decision affects hurdle rate



Ways of changing value...

254



Disney - Restructured

Current Cashflow to Firm

$EBIT(1-t) = 7030(1-.38) = 4,359$
 $- Nt CpX = 2,101$
 $- Chg WC = 241$
 $= FCFF = 2,017$
 $Reinvestment Rate = 2342/4359 = 53.72\%$
 $Return on capital = 9.91\%$

Reinvestment Rate
 53.72%

Expected Growth in EBIT (1-t)
 $.5372 \times .12 = .0645$
6.45%

Return on Capital
 12%

Stable Growth

$g = 3\%$; $Beta = 1.00$;
 $Cost of capital = 7.19\%$
 $ROC = 9\%$;
 $Reinvestment Rate = 3/9 = 33.33\%$

Terminal Value₁₀ = $5067 / (.0719 - .03) = 120,982$

First 5 years

Growth decreases gradually to 3%

Op. Assets 81,089
 + Cash: 3,795
 + Non op inv 1,763
 - Debt 16,682
 - Minority int 1,344
 = Equity 68,621
 - Options 528
 Value/Share \$ 36.67

Year	1	2	3	4	5	6	7	8	9	10
EBIT (1-t)	\$4,640	\$4,939	\$5,257	\$5,596	\$5,957	\$6,300	\$6,619	\$6,909	\$7,164	\$7,379
- Reinvestment	\$2,492	\$2,653	\$2,824	\$3,006	\$3,200	\$3,127	\$3,016	\$2,866	\$2,680	\$2,460
FCFF	\$2,147	\$2,286	\$2,433	\$2,590	\$2,757	\$3,172	\$3,603	\$4,043	\$4,484	\$4,919

Term Yr
 7600
 2533
 5067

Cost of Capital (WACC) = $9.74\% (0.60) + 3.72\% (0.40) = 7.33\%$

Cost of capital gradually decreases to 7.19%

Cost of Equity
9.74%

Cost of Debt
 $(3.5\% + 2.5\%)(1-.38) = 3.72\%$
 Based on synthetic A rating

Weights
 $E = 60\%$ $D = 40\%$

On June 1, 2009, Disney was trading at \$24.34 /share

Riskfree Rate:
 Riskfree rate = 3.5%

+

Beta
 1.04

x

Risk Premium
 6%

Unlevered Beta for Sectors: 0.7333

$D/E = 66.67\%$

First Principles

256

Corporate Finance: The Big Picture

