Valuation

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First Principles

- Invest in projects that yield a return greater than the minimum acceptable hurdle rate.
  - The hurdle rate should be higher for riskier projects and reflect the financing mix used - owners' funds (equity) or borrowed money (debt)
  - Returns on projects should be measured based on cash flows generated and the timing of these cash flows; they should also consider both positive and negative side effects of these projects.
- Choose a financing mix that minimizes the hurdle rate and matches the assets being financed.
- If there are not enough investments that earn the hurdle rate, return the cash to stockholders.
  - The form of returns - dividends and stock buybacks - will depend upon the stockholders' characteristics.

Objective: Maximize the Value of the Firm

Discounted Cashflow Valuation: Basis for Approach

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

- where,
- n = Life of the asset
- CF_t = Cashflow in period t
- r = Discount rate reflecting the riskiness of the estimated cashflows

Equity Valuation

- 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 Equityt = Expected Cashflow to Equity in period t

ke = 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

- 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.

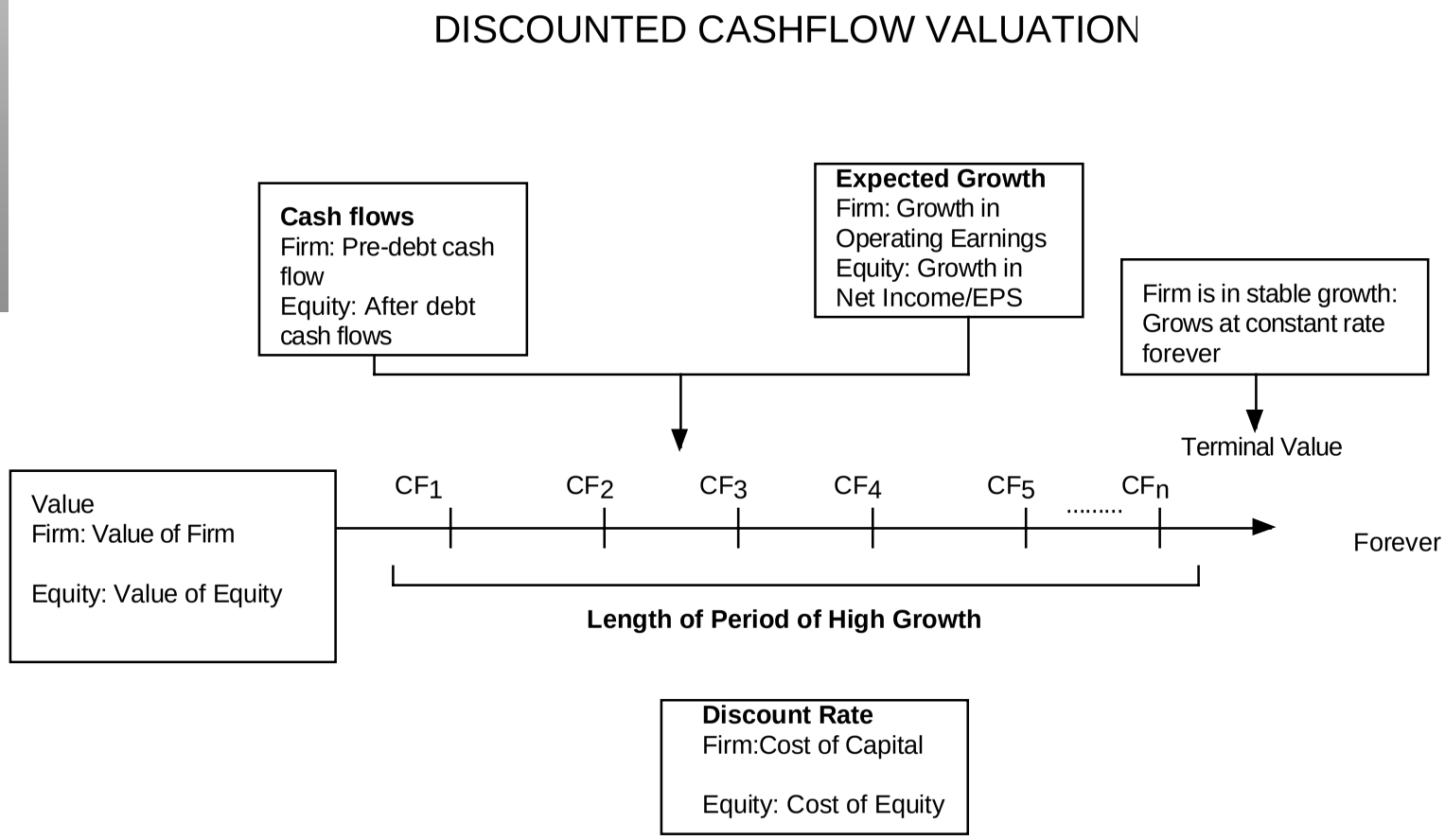
$$\text{Value of Firm} = \sum_{t=1}^{t=n} \frac{\text{CF to Firm}_t}{(1+\text{WACC})^t}$$

where,

CF to Firmt = Expected Cashflow to Firm in period t

WACC = Weighted Average Cost of Capital

Generic DCF Valuation Model



Estimating Inputs: I. Discount Rates

- **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 intutive 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.

Estimating Aracruz's Cost of Equity

- Average Unlevered Beta for Paper and Pulp firms is 0.61
- Aracruz has a cash balance which was 20% of the market value in 1997, which is much higher than the typical cash balance at other paper and pulp firms. The beta of cash is zero.

  Unlevered Beta for Aracruz = (0.8) (0.61) + 0.2 (0) = 0.488
- Using Aracruz's gross debt equity ratio of 66.67% and a tax rate of 33%:

  Levered Beta for Aracruz = 0.49 (1+ (1-.33) (.6667)) = 0.71
- Cost of Equity for Aracruz = Real Riskfree Rate + Beta(Premium)

  = 5% + 0.71 (7.5%) = 10.33%

Real Riskfree Rate = 5% (Long term Growth rate in Brazilian economy)

Risk Premium = 7.5% (U.S. Premium + Brazil Risk (from rating))

Estimating Cost of Equity: Deutsche Bank

- Deutsche Bank is in two different segments of business - commercial banking and investment banking.
- To estimate its commercial banking beta, we will use the average beta of commercial banks in Germany.
- To estimate the investment banking beta, we will use the average bet of investment banks in the U.S and U.K.

Comparable Firms	*Average Beta*	*Weight*
Commercial Banks in Germany	0.90	90%
U.K. and U.S. investment banks	1.30	10%

- Beta for Deutsche Bank = 0.9 (.90) + 0.1 (1.30)= 0.94
- Cost of Equity for Deutsche Bank (in DM) = 7.5% + 0.94 (5.5%)
  = 12.67%

Reviewing Disney's Costs of Equity & Debt

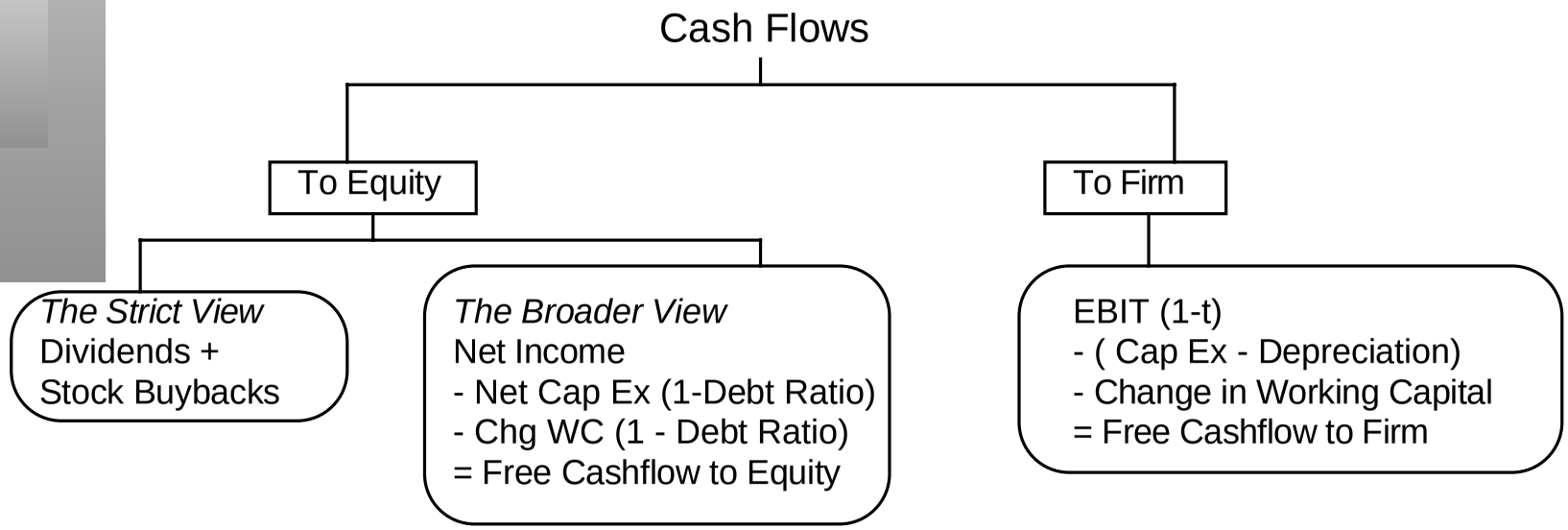
Business	Unlevered Beta	D/E Ratio	Levered Beta	Riskfree Rate	Risk Premium	Cost of Equity
Creative Content	1.25	20.92%	1.42	7.00%	5.50%	14.80%
Retailing	1.50	20.92%	1.70	7.00%	5.50%	16.35%
Broadcasting	0.90	20.92%	1.02	7.00%	5.50%	12.61%
Theme Parks	1.10	20.92%	1.26	7.00%	5.50%	13.91%
Real Estate	0.70	59.27%	0.92	7.00%	5.50%	12.31%
Disney	1.09	21.97%	1.25	7.00%	5.50%	13.85%

- Disney's Cost of Debt (based upon rating) = 7.50%

Estimating Cost of Capital: Disney

- Equity
  - Cost of Equity = 13.85%
  - Market Value of Equity = $50.88 Billion
  - Equity/(Debt+Equity) = 82%
- Debt
  - After-tax Cost of debt = 7.50% (1-.36) = 4.80%
  - Market Value of Debt = $ 11.18 Billion
  - Debt/(Debt +Equity) = 18%
- Cost of Capital = 13.85%(.82)+4.80%(.18) = 12.22%

II. Estimating Cash Flows



Estimating FCFE next year: Aracruz

All inputs are per share numbers:

Earnings	BR 0.222
- (CapEx-Depreciation)*(1-DR)	BR 0.042
-Chg. Working Capital*(1-DR)	BR 0.018
Free Cashflow to Equity	BR 0.170

- Earnings: Since Aracruz's 1996 earnings are "abnormally" low, I used the average earnings per share from 1992 to 1996.
- Capital Expenditures per share next year = 0.24 BR/share
- Depreciation per share next year = 0.18 BR/share
- Change in Working Capital = 0.03 BR/share
- Debt Ratio = 39%

Estimating FCFF: Disney

- EBIT = $5,559 Million
- Capital spending = $ 1,746 Million
- Depreciation = $ 1,134 Million
- Increase in Non-cash Working capital = $ 617 Million
- Estimating FCFF

EBIT (1-t)	$	3,558
+ Depreciation	$	1,134
- Capital Expenditures	$	1,746
- Change in WC	$	617
= FCFF	$	2,329 Million

Application Test: Estimating your firm's FCFF

- Estimate the FCFF for your firm in its most recent financial year:

In general,	If using statement of cash flows
EBIT (1-t)	EBIT (1-t)
+ Depreciation	+ Depreciation
- Capital Expenditures	+ Capital Expenditures
- Change in Non-cash WC	+ Change in Non-cash WC
= FCFF	= FCFF

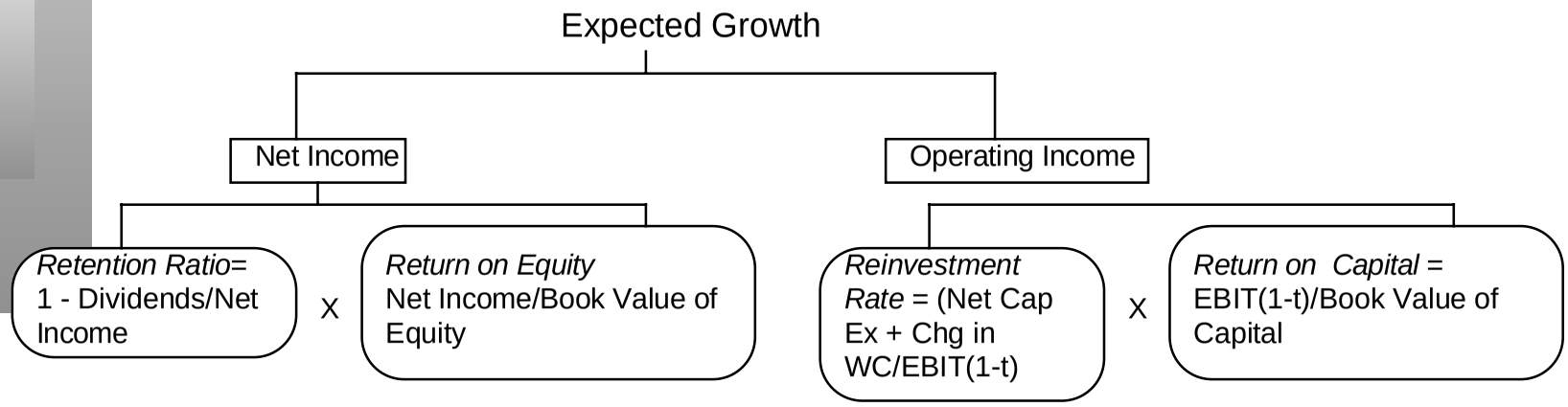
Estimate the dollar reinvestment at your firm:

Reinvestment = EBIT (1-t) - FCFF

Choosing a Cash Flow to Discount

- When you cannot estimate the free cash fllows 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.

III. Expected Growth



Expected Growth in EPS

g_{EPS} = Retained Earnings$_{t-1}$/ NI$_{t-1}$ * ROE
= Retention Ratio * ROE
= b * ROE

- Proposition 1: The expected growth rate in earnings for a company cannot exceed its return on equity in the long term.

Estimating Expected Growth in EPS: Disney, Aracruz and Deutsche Bank

Company	*ROE*	*Retention Ratio*	*Exp. Growth*	*Forecast ROE*	*Retention Ratio*	*Exp Growth*
Disney	24.95%	77.68%	19.38%	25%	77.68%	19.42%
Aracruz	2.22%	65.00%	1.44%	13.91%	65.00%	9.04%
Deutsche Bank	7.25%	39.81%	2.89%	14.00%	45.00%	6.30%

ROE: Return on Equity for most recent year

Forecasted ROE = Expected ROE for the next 5 years

- For Disney, forecasted ROE is expected to be close to current ROE
- For Aracruz, the average ROE between 1994 and 1996 is used, since 1996 was a abnormally bad year
- For Deutsche Bank, the forecast ROE is set equal to the average ROE for German banks

ROE and Leverage

- ROE = ROC + D/E (ROC - i (1-t))

where,

ROC = (EBIT (1 - tax rate)) / Book Value of Capital

= EBIT (1- t) / Book Value of Capital

D/E = BV of Debt/ BV of Equity

i = Interest Expense on Debt / Book Value of Debt

t = Tax rate on ordinary income

- Note that BV of Capital = BV of Debt + BV of Equity.

Decomposing ROE: Disney in 1996

- Return on Capital

= (EBIT(1-tax rate) / (BV: Debt + BV: Equity)

= 5559 (1-.36)/ (7663+11668) = 18.69%

- Debt Equity Ratio

= Book Value of Debt/ Book Value of Equity= 45%

- Interest Rate on Debt = 7.50%
- Expected Return on Equity = ROC + D/E (ROC - i(1-t))

  = 18.69 % + .45 (18.69% - 7.50(1-.36)) = 24.95%

Expected Growth in EBIT And Fundamentals

- Reinvestment Rate and Return on Capital

  g_{EBIT} = (Net Capital Expenditures + Change in WC)/EBIT(1-t) * ROC
  = Reinvestment Rate * ROC

- Proposition 2: No firm can expect its operating income to grow over time without reinvesting some of the operating income in net capital expenditures and/or working capital.
- Proposition 3: The net capital expenditure needs of a firm, for a given growth rate, should be inversely proportional to the quality of its investments.

Estimating Growth in EBIT: Disney

Actual reinvestment rate in 1996 = (Net Cap Ex+ Chg in WC)/ EBIT (1-t)

- Net Cap Ex in 1996 = (1745-1134)
- Change in Working Capital = 617
- EBIT (1- tax rate) = 5559(1-.36)
- Reinvestment Rate = (1745-1134+617)/(5559*.64)= 34.5%

- Forecasted Reinvestment Rate = 50%
- Return on Capital =20% (Higher than this year's 18.69%)
- Expected Growth in EBIT =.5(20%) = 10%
- The forecasted reinvestment rate is much higher than the actual reinvestment rate in 1996, because it includes projected acquisition. Between 1992 and 1996, adding in the Capital Cities acquisition to all capital expenditures would have yielded a reinvestment rate of roughly 50%.

Application Test: Estimating Expected Growth

- Estimate the following:
  - The reinvestment rate for your firm
  - The after-tax return on capital
  - The expected growth in operating income, based upon these inputs

IV. 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:

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

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

- 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.
- While companies can maintain high growth rates for extended periods, they will all approach "stable growth" at some point in time.
- When they do approach stable growth, the valuation formula above can be used to estimate the "terminal value" of all cash flows beyond.

Growth Patterns

- 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)

Length of High Growth Period

- Assume that you are analyzing two firms, both of which are enjoying high growth. The first firm is Earthlink Network, an internet service provider, which operates in an environment with few barriers to entry and extraordinary competition. The second firm is Biogen, a bio-technology firm which is enjoying growth from two drugs to which it owns patents for the next decade. Assuming that both firms are well managed, which of the two firms would you expect to have a longer high growth period?
  - Earthlink Network
  - Biogen
  - Both are well managed and should have the same high growth period

Choosing a Growth Pattern: Examples

Company	Valuation in	Growth Period	Stable Growth
Disney	Nominal U.S. $ Firm	10 years (3-stage)	5%(long term nominal growth rate in the U.S. economy
Aracruz	Real BR Equity: FCFE	5 years (2-stage)	5%: based upon expected long term real growth rate for Brazilian economy
Deutsche Bank	Nominal DM Equity: Dividends	0 years	5%: set equal to nominal growth rate in the world economy

Firm Characteristics as Growth Changes

Variable	High Growth Firms tend to	Stable Growth Firms tend to
Risk	be above-average risk	be average risk
Dividend Payout	pay little or no dividends	pay high dividends
Net Cap Ex	have high net cap ex	have low net cap ex
Return on Capital	earn high ROC (excess return)	earn ROC closer to WACC
Leverage	have little or no debt	higher leverage

Estimating Stable Growth Inputs

- Start with the fundamentals:
  - Profitability measures such as return on equity and capital, in stable growth, can be estimated by looking at
    - industry averages for these measure, in which case we assume that this firm in stable growth will look like the average firm in the industry
    - cost of equity and capital, in which case we assume that the firm will stop earning excess returns on its projects as a result of competition.
  - Leverage is a tougher call. While industry averages can be used here as well, it depends upon how entrenched current management is and whether they are stubborn about their policy on leverage (If they are, use current leverage; if they are not; use industry averages)
- Use the relationship between growth and fundamentals to estimate payout and net capital expenditures.

Estimating Stable Period Net Cap Ex

g_{EBIT} = (Net Capital Expenditures + Change in WC)/EBIT(1-t) * ROC
= Reinvestment Rate * ROC

- Moving terms around,

Reinvestment Rate = g_{EBIT} / Return on Capital

- For instance, assume that Disney in stable growth will grow 5% and that its return on capital in stable growth will be 16%. The reinvestment rate will then be:

Reinvestment Rate for Disney in Stable Growth = 5/16 = 31.25%

- In other words,
  - the net capital expenditures and working capital investment each year during the stable growth period will be 31.25% of after-tax operating income.

Valuation: Deutsche Bank

- Sustainable growth at Deutsche Bank = ROE * Retention Ratio
  = 14% (.45) = 6.30% { I used the normalized numbers for this]
- Cost of equity = 7.5% + 0.94 (5.5%) = 12.67%.
- Current Dividends per share = 2.61 DM
- Model Used:
  - Stable Growth (Large firm; Growth is close to stable growth already)
  - Dividend Discount Model (FCFE is tough to estimate)
- Valuation
  - Expected Dividends per Share next year = 2.61 DM (1.063) = 2.73 DM
  - Value per Share = 2.73 DM / (.1267 - .063) = 42.89 DM
- Deutsche Bank was trading for 119 DM on the day of this analysis.

What does the valuation tell us?

- Stock is tremendously overvalued: 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. TheFCFE could have been significantly higher than the dividends paid.
- Estimates of growth and risk are wrong: It is also possible that we have underestimated growth or overestimated risk in the model, thus reducing our estimate of value.

Valuation: Aracruz Cellulose

- The current earnings per share for Aracruz Cellulose is 0.044 BR.
- These earnings are abnormally low. To normalize earnings, we use the average earnings per share between 1994 and 1996 of 0.204 BR per share as a measure of the normalized earnings per share.
- Model Used:
  - Real valuation (since inflation is still in double digits)
  - 2-Stage Growth (Firm is still growing in a high growth economy)
  - FCFE Discount Model (Dividends are lower than FCFE: See Dividend section)

Aracruz Cellulose: Inputs for Valuation

	High Growth Phase	*Stable Growth Phase*
Length	5 years	Forever, after year 5
Expected Growth	Retention Ratio * ROE = 0.65 * 13.91%= 8.18%	5% (Real Growth Rate in Brazil)
Cost of Equity	5% + 0.71 (7.5%) = 10.33% (Beta =0.71; R_f=5%)	5% + 1(7.5%) = 12.5% (Assumes beta moves to 1)
Net Capital Expenditures	Net capital ex grows at same rate as earnings. Next year, capital ex will be 0.24 BR and deprec'n will be 0.18 BR.	Capital expenditures are assumed to be 120% of depreciation
Working Capital	32.15% of Revenues;	32.15% of Revenues;
	Revenues grow at same rate as earnings in both periods.	
Debt Ratio	39.01% of net capital ex and working capital investments come from debt.	

Aracruz: Estimating FCFE for next 5 years

	1	2	3	4	5	Terminal
Earnings	BR 0.222	BR 0.243	BR 0.264	BR 0.288	BR 0.314	BR 0.330
- (CapEx-Depreciation)*(1-DR)	BR 0.042	BR 0.046	BR 0.050	BR 0.055	BR 0.060	BR 0.052
-Chg. Working Capital*(1-DR)	BR 0.010	BR 0.011	BR 0.012	BR 0.013	BR 0.014	BR 0.008
Free Cashflow to Equity	BR 0.170	BR 0.186	BR 0.202	BR 0.221	BR 0.241	BR 0.269
Present Value	BR 0.154	BR 0.152	BR 0.150	BR 0.149	BR 0.147	

The present value is computed by discounting the FCFE at the current cost of equity of 10.33%.

Aracruz: Estimating Terminal Price and Value per share

- The terminal value at the end of year 5 is estimated using the FCFE in the terminal year.
  - The FCFE in year 6 reflects the drop in net capital expenditures after year 5.
  - Terminal Value = 0.269/(.125-.05) = 3.59 BR
  - Value per Share = $0.154 + 0.152 + 0.150 + 0.149 + 0.147 + 3.59/1.1033^5$ = 2.94 BR
- The stock was trading at 2.40 BR in September 1997.
- The value per share is based upon normalized earnings. To the extent that it will take some time to get to normal earnings, discount this value per share back to the present at the cost of equity of 10.33%.

Disney Valuation

- Model Used:
  - Cash Flow: FCFF (since I think leverage will change over time)
  - Growth Pattern: 3-stage Model (even though growth in operating income is only 10%, there are substantial barriers to entry)

Disney: Inputs to Valuation

	High Growth Phase	*Transition Phase*	*Stable Growth Phase*
Length of Period	5 years	5 years	Forever after 10 years
Revenues	Current Revenues: $ 18,739; Expected to grow at same rate a operating earnings	Continues to grow at same rate as operating earnings	Grows at stable growth rate
Pre-tax Operating Margin	29.67% of revenues, based upon 1996 EBIT of $ 5,559 million.	Increases gradually to 32% of revenues, due to economies of scale.	Stable margin is assumed to be 32%.
Tax Rate	36%	36%	36%
Return on Capital	20% (approximately 1996 level)	Declines linearly to 16%	Stable ROC of 16%
Working Capital	5% of Revenues	5% of Revenues	5% of Revenues
Reinvestment Rate (Net Cap Ex + Working Capital Investments/EBIT)	50% of after-tax operating income; Depreciation in 1996 is $ 1,134 million, and is assumed to grow at same rate as earnings	Declines to 31.25% as ROC and growth rates drop: Reinvestment Rate = g/ROC	31.25% of after-tax operating income; this is estimated from the growth rate of 5% Reinvestment rate = g/ROC
Expected Growth Rate in EBIT	ROC * Reinvestment Rate = 20% * .5 = 10%	Linear decline to Stable Growth Rate	5%, based upon overall nominal economic growth
Debt/Capital Ratio	18%	Increases linearly to 30%	Stable debt ratio of 30%
Risk Parameters	Beta = 1.25, k_e = 13.88% Cost of Debt = 7.5% (Long Term Bond Rate = 7%)	Beta decreases linearly to 1.00; Cost of debt stays at 7.5%	Stable beta is 1.00. Cost of debt stays at 7.5%

Disney: FCFF Estimates

	Base	*1*	*2*	*3*	*4*	*5*	*6*	*7*	*8*	*9*	*10*
Expected Growth		10%	10%	10%	10%	10%	9%	8%	7%	6%	5%
Revenues	$ 18,739	$ 20,613	$ 22,674	$ 24,942	$ 27,436	$ 30,179	$ 32,895	$ 35,527	$ 38,014	$ 40,295	$ 42,310
Oper. Margin	29.67%	29.67%	29.67%	29.67%	29.67%	29.67%	30.13%	30.60%	31.07%	31.53%	32.00%
EBIT	$ 5,559	$ 6,115	$ 6,726	$ 7,399	$ 8,139	$ 8,953	$ 9,912	$ 10,871	$ 11,809	$ 12,706	$ 13,539
EBIT (1-t)	$ 3,558	$ 3,914	$ 4,305	$ 4,735	$ 5,209	$ 5,730	$ 6,344	$ 6,957	$ 7,558	$ 8,132	$ 8,665
+ Depreciation	$ 1,134	$ 1,247	$ 1,372	$ 1,509	$ 1,660	$ 1,826	$ 2,009	$ 2,210	$ 2,431	$ 2,674	$ 2,941
- Capital Exp.	$ 1,754	$ 3,101	$ 3,411	$ 3,752	$ 4,128	$ 4,540	$ 4,847	$ 5,103	$ 5,313	$ 5,464	$ 5,548
- Change in WC	$ 94	$ 94	$ 103	$ 113	$ 125	$ 137	$ 136	$ 132	$ 124	$ 114	$ 101
= FCFF	$ 1,779	$ 1,966	$ 2,163	$ 2,379	$ 2,617	$ 2,879	$ 3,370	$ 3,932	$ 4,552	$ 5,228	$ 5,957
ROC	20%	20%	20%	20%	20%	20%	19.2%	18.4%	17.6%	16.8%	16%
Reinv. Rate		50%	50%	50%	50%	50%	46.875%	43.48%	39.77%	35.71%	31.25%

Disney: Costs of Capital

Year	1	2	3	4	5	6	7	8	9	10
Cost of Equity	13.88%	13.88%	13.88%	13.88%	13.88%	13.60%	13.33%	13.05%	12.78%	12.50%
Cost of Debt	4.80%	4.80%	4.80%	4.80%	4.80%	4.80%	4.80%	4.80%	4.80%	4.80%
Debt Ratio	18.00%	18.00%	18.00%	18.00%	18.00%	20.40%	22.80%	25.20%	27.60%	30.00%
Cost of Capital	12.24%	12.24%	12.24%	12.24%	12.24%	11.80%	11.38%	10.97%	10.57%	10.19%

Disney: Terminal Value

- The terminal value at the end of year 10 is estimated based upon the free cash flows to the firm in year 11 and the cost of capital in year 11.
- $FCFF_{11}$ = EBIT (1-t) - EBIT (1-t) Reinvestment Rate
  = $ 13,539 (1.05) (1-.36) - $ 13,539 (1.05) (1-.36) (.3125)
  = $ 6,255 million
- Note that the reinvestment rate is estimated from the cost of capital of 16% and the expected growth rate of 5%.
- Cost of Capital in terminal year = 10.19%
- Terminal Value = $ 6,255/(.1019 - .05) = $ 120,521 million

Disney: Present Value

Year	1	2	3	4	5	6	7	8	9	10
FCFF	$ 1,966	$ 2,163	$ 2,379	$ 2,617	$ 2,879	$ 3,370	$ 3,932	$ 4,552	$ 5,228	$ 5,957
Term Value										120,521
Present Value	$ 1,752	$ 1,717	$ 1,682	$1,649	$1,616	$ 1,692	$1,773	$ 1,849	$ 1,920	42,167
Cost of Capital	12.24%	12.24%	12.24%	12.24%	12.24%	11.80%	11.38%	10.97%	10.57%	10.19%

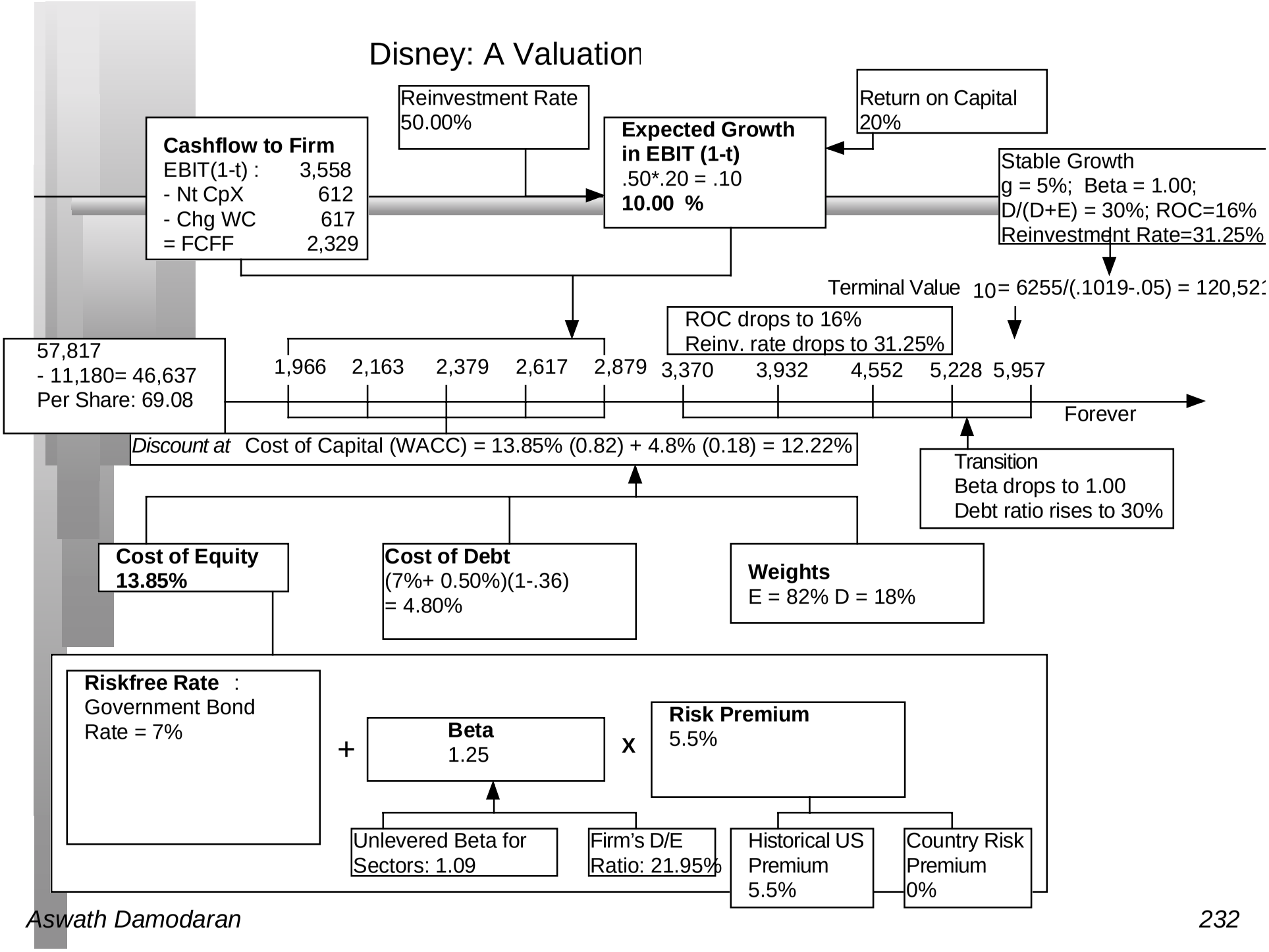
Present Value Check

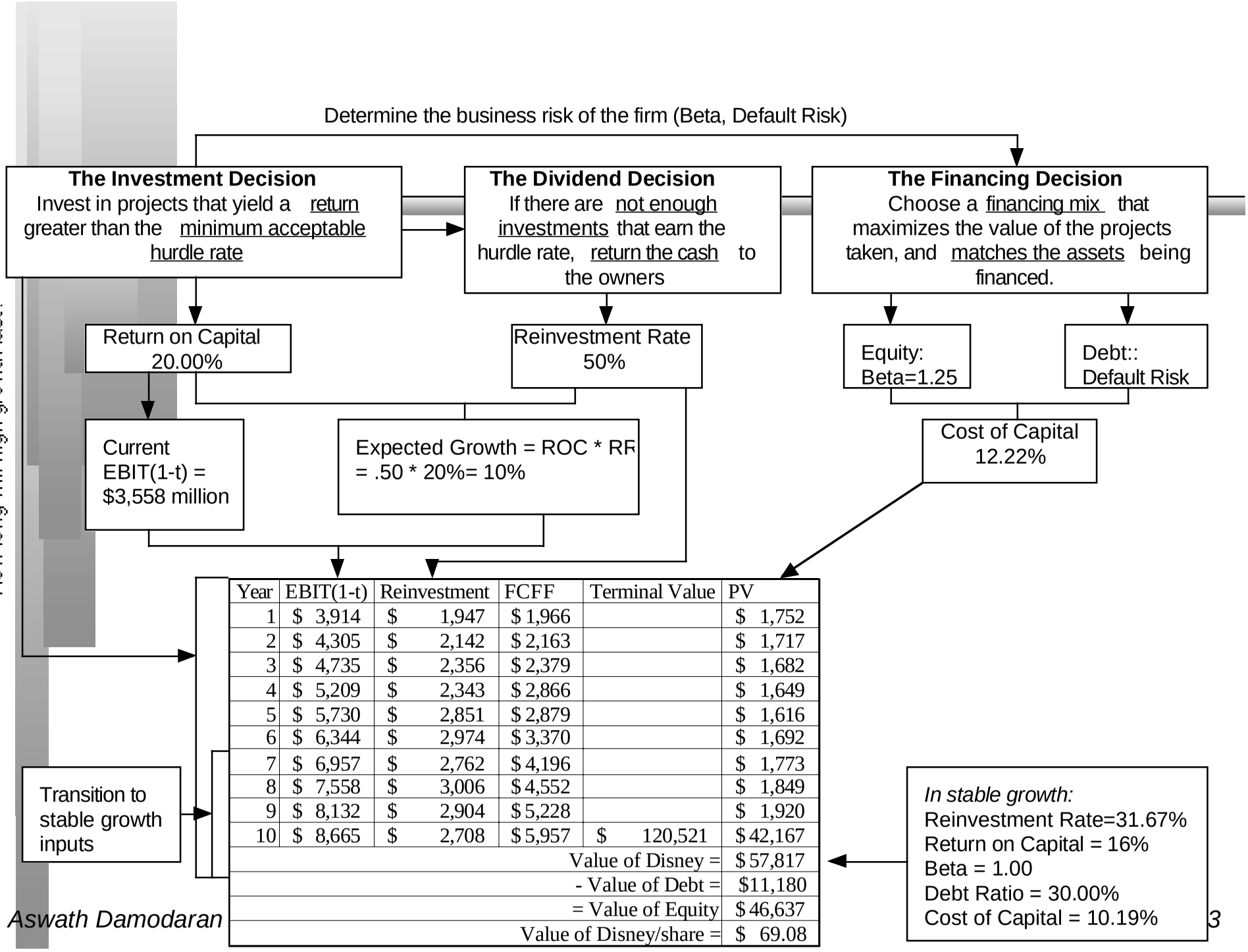
- The FCFF and costs of capital are provided for all 10 years. Confirm the present value of the FCFF in year 7.

Disney: Value Per Share

Value of the Firm =	$ 57,817 million
+ Value of Cash =	$ 0 (almost no non-operating cash)
- Value of Debt =	$ 11,180 million
= Value of Equity =	$ 46,637 million
/ Number of Shares	675.13
Value Per Share =	$ 69.08

Disney: A Valuation





Year	EBIT(1-t)	Reinvestment	FCFF	Terminal Value	PV
1	$ 3,914	$ 1,947	$ 1,966		$ 1,752
2	$ 4,305	$ 2,142	$ 2,163		$ 1,717
3	$ 4,735	$ 2,356	$ 2,379		$ 1,682
4	$ 5,209	$ 2,343	$ 2,866		$ 1,649
5	$ 5,730	$ 2,851	$ 2,879		$ 1,616
6	$ 6,344	$ 2,974	$ 3,370		$ 1,692
7	$ 6,957	$ 2,762	$ 4,196		$ 1,773
8	$ 7,558	$ 3,006	$ 4,552		$ 1,849
9	$ 8,132	$ 2,904	$ 5,228		$ 1,920
10	$ 8,665	$ 2,708	$ 5,957	$ 120,521	$ 42,167
				Value of Disney =	$ 57,817
				- Value of Debt =	$11,180
				= Value of Equity	$ 46,637
				Value of Disney/share =	$ 69.08

Relative Valuation

- In relative valuation, the value of an asset is derived from the pricing of 'comparable' assets, standardized using a common variable such as earnings, cashflows, book value or revenues. Examples include --
  - Price/Earnings (P/E) ratios
    - and variants (EBIT multiples, EBITDA multiples, Cash Flow multiples)
  - Price/Book (P/BV) ratios
    - and variants (Tobin's Q)
  - Price/Sales ratios

Multiples and Fundamenals

- Gordon Growth Model: $P_0 = \frac{DPS_1}{r - g_n}$
- Dividing both sides by the earnings,

$$\frac{P_0}{EPS_0} = PE = \frac{\text{Payout Ratio} * (1 + g_n)}{r - g_n}$$

- Dividing both sides by the book value of equity,

$$\frac{P_0}{BV_0} = PBV = \frac{ROE * \text{Payout Ratio} * (1 + g_n)}{r - g_n}$$

- If the return on equity is written in terms of the retention ratio and the expected growth rate

$$\frac{P_0}{BV_0} = PBV = \frac{ROE - g_n}{r - g_n}$$

- Dividing by the Sales per share,

$$\frac{P_0}{Sales_0} = PS = \frac{\text{Profit Margin} * \text{Payout Ratio} * (1 + g_n)}{r - g_n}$$

Disney: Relative Valuation

Company	*PE*	*Expected Growth*	*PEG*
King World Productions	10.4	7.00%	1.49
Aztar	11.9	12.00%	0.99
Viacom	12.1	18.00%	0.67
All American Communications	15.8	20.00%	0.79
GC Companies	20.2	15.00%	1.35
Circus Circus Enterprises	20.8	17.00%	1.22
Polygram NV ADR	22.6	13.00%	1.74
Regal Cinemas	25.8	23.00%	1.12
Walt Disney	27.9	18.00%	1.55
AMC Entertainment	29.5	20.00%	1.48
Premier Parks	32.9	28.00%	1.18
Family Golf Centers	33.1	36.00%	0.92
CINAR Films	48.4	25.00%	1.94
Average	**22.19**	**18.56%**	**1.20**

Is Disney fairly valued?

- Based upon the PE ratio, is Disney under, over or correctly valued?
  - Under Valued
  - Over Valued
  - Correctly Valued
- Based upon the PEG ratio, is Disney under valued?
  - Under Valued
  - Over Valued
  - Correctly Valued
- Will this valuation give you a higher or lower valuation than the discounted CF valutaion?
  - Higher
  - Lower

Relative Valuation Assumptions

- Assume that you are reading an equity research report where a buy recommendation for a company is being based upon the fact that its PE ratio is lower than the average for the industry. Implicitly, what is the underlying assumption or assumptions being made by this analyst?
  - The sector itself is, on average, fairly priced
  - The earnings of the firms in the group are being measured consistently
  - The firms in the group are all of equivalent risk
  - The firms in the group are all at the same stage in the growth cycle
  - The firms in the group are of equivalent risk and have similar cash flow patterns
  - All of the above

First Principles

- Invest in projects that yield a return greater than the minimum acceptable hurdle rate.
  - The hurdle rate should be higher for riskier projects and reflect the financing mix used - owners' funds (equity) or borrowed money (debt)
  - Returns on projects should be measured based on cash flows generated and the timing of these cash flows; they should also consider both positive and negative side effects of these projects.
- Choose a financing mix that minimizes the hurdle rate and matches the assets being financed.
- If there are not enough investments that earn the hurdle rate, return the cash to stockholders.
  - The form of returns - dividends and stock buybacks - will depend upon the stockholders' characteristics.

Objective: Maximize the Value of the Firm