Firm Valuation Models …
Focus on FCF Approach

Ram Kumar Kakani
LBSNAA Mussoorie

FCFE Model

- FCFE = Current EPS – ((Capital Spending – Depreciation) X (1 – Debt ratio) – (Δ Working Capital) X (1 – Debt ratio)
- The Constant Growth FCFE Model
- To be used for: stable firms (say, Dhandapani Finance)

FCFE Model

- If there is no change in number of equity shares, then
- FCFE = Current EPS – ((Capital Spending – Depreciation) X (1 – Debt ratio) – (Δ Working Capital) X (1 – Debt ratio)
- **Constant Growth FCFE Model**
- Used for: stable firms say, Dhandapani Finance in 2006
- Modifications made:
- We reject the computed beta of less than 0.67 for the firm
- We took a beta of 0.73 (average of comparable non-banking finance firms)
- We took the risk free rate of return as 8.1%
- We took the market rate of return as 13.65%
- Cost of Equity 12.15%

Constant Growth FCFE Model

- FCFE = Net Income – ((Capital Spending – Depreciation) X (1 – Debt ratio) – (Δ Working Capital) X (1 – Debt ratio)

Dhandapani Finance Limited	2006	2005	2004
Net Income	5	5	5
Capital Spending - Depreciation	0.2	(0.5)	(0.6)
Change in Working Capital	20.9	23.5	28.1
Debt Ratio	80%	79%	79%
FCFE	1.0	0.8	(0.6)
Past Growth (based on Sales CAGR from 2003)	2.58%		
Past Growth (based on Total Assets CAGR from 2003)	16.97%		
Estimated Future Growth Rate	7.50%		
Cost of Equity	12.15%		
Value of Stock Using FCFE	24.0		

Dhandapani Finance … any cues …

- Can we use this on 2007 figures (taking beta of peer firms of about 0.74)

Dhandapani Finance Limited (Scenario 1)	2007	2006	2005	2004	
Estimated Sales (in a scenario replicating industry)	34				First Leasing Company
Estimated Net Margin (replicating industry scenario)	19%				First Leasing Company
Net Income	6.4	5.2	5.4	5.0	
Capital Spending - Depreciation	0.4	(0.6)	0.2	(0.7)	Removing Reval FA
Change in Working Capital	26.2	22.0	22.5	28.0	
Debt Ratio	81%	80%	80%	79%	
FCFE	1.4	0.9	0.7	(0.7)	
Past Growth (based on Sales CAGR from 2003)	8.22%				
Past Growth (based on Total Assets CAGR from 2003)	13.72%				Removing Reval FA
Estimated Future Growth Rate (fundamental)	7.50%	risk free	market premia		
Cost of Equity	12.07%	8.00%	5.50%	0.74	
Value of Stock Using FCFE	34.0				
Value of Stock Using Liquidation (on Book Figures)	49.5				

Dhandapani Finance …

Dhandapani Finance Limited (Scenario 2)	2007	2006	2005	2004
Estimated Sales (in a scenario replicating leaders)	44			
Estimated Net Margin (replicating industry scenario)	16%			
Net Income	7.1	5.2	5.4	5.0
Capital Spending - Depreciation	0.4	(0.6)	0.2	(0.7)
Change in Working Capital	26.2	22.0	22.5	28.0
Debt Ratio	81%	80%	80%	79%
FCFE	2.1	0.9	0.7	(0.7)
Projected Extraordinary Growth Rate and Period	15.00%	5 years		
Estimated Future Growth Rate (fundamental)	7.50%	risk free	market premia	
Cost of Equity	12.07%	8.00%	5.50%	0.74
Value of Stock Using FCFE	48.8			
Value of Stock Using Liquidation (on Book Figures)	49.5			
Value of Stock Using 5 yr Extraordinary Growth	62.6			

- The two-stage FCFE Model
- One needs to adjust the capital spending and depreciation for the stable period
- To be used for: companies having temporary edge over others (say, Pioneer Distilleries Limited)

- There can be a strong argument for using two-stage model for Hindustan Unilever instead of constant growth model
- The two-stage FCFE Model
- One needs to adjust the capital spending and depreciation for the stable period
- To be used for: companies having temporary edge over others
- Say, Ethanol Manufacturers (for example, Pioneer Distilleries)

Financials Rs (in Crores)	Pioneer Distilleries			
For the year	703	603	503	403
Operating Income	48.4	40.4	41.1	25.1
Net Profit	5.3	1.4	0.9	-5.3
Net Worth	13.6	8.7	7.7	5.8
No. of Shares (in crore)	1.1	1.0	1.0	0.8
Adjusted EPS (Rs)	4.6	1.4	0.9	-6.2
Book value per Share (Rs)	13.7	9.6	8.5	7.0
Dvdnd per Share (Rs)	1.0	0.0	0.0	0.0
Lt Debt Equity	3.0	3.7	3.7	4.7
Return on Equity (%)	39.9%	15.1%	12.1%	
Dividend Payout Ratio	21.6%	0.0%	0.0%	
Computed Retention Ratio	78.4%	100.0%	100.0%	

More data taken from Cash Flow Statement					
For the year	**703**	**603**	**503**	**403**	
Capex	**16.8**	**9.8**	**6.4**	**0.5**	
Depreciation	**2.5**	**2.1**	**1.8**	**2.7**	
Change in Working Capital	**-1.5**	**0.1**	**6.0**	**1.0**	
FCFE	**31.5**	**22.6**	**29.7**	**-9.9**	
Pioneer Distilleries	**Current**	**1**	**2**	**3**	**4**
Reinvestment rate (assumed)		78.4%	78.4%	78.4%	78.4%
Return on Equity (%) (assumed)	39.9%	39.9%	39.9%	39.9%	39.9%
Expected Growth Rate		31.3%	31.3%	31.3%	31.3%
Free Cash Flow to Equity (FCFE)	31.5	41.3	54.2	71.2	93.4
Cost of Equity (taking Beta = 2)		19.0%			
Pioneer Distilleries (Stable Growth Phase)	**5**				
Cost of Equity (taking Beta = 1.1)	14.1%	**Stable Period Growth (assume**			7.0%
Stable Period ROE (assumed)	14.1%	**Expected Net Income Year 5**			18.4
Stable Period Equity Reinvestment rate	49.8%				
Expected FCFE in Year 5	9.2				
Terminal Value of Equity in Year 4	130.9				
Pioneer Distilleries	**1**	**2**	**3**	**4**	
Free Cash Flow to Equity (FCFE)	41.3	54.2	71.2	224.3	
Value of Equity	227.1	No. of Equity Shares		1.3	
Value of Equity per Share	178.8				

the computations will change significantly, if we change the debt-equity ratio (and such scenarios)

Pioneer Distilleries	2007ttm				
BV of Equity	19.2				
BV of Debt	58.4				
Net Income	8.2				
Dividend payout ratio	20.0%				
D/E Ratio	3.0				
Interest Coverage Ratio (estimated)	2.8	Rating should be BB / B+			
Interest Expense (approx)	11.8%				
Tax Rate	20.0%				
Return on Capital Employed	15.5%				
D/E Scenarios ==>	0.5	1.5	2.5	3.0	3.5
Estimated Growth Rate (using ROCE)	14.9%	19.8%	24.7%	27.1%	29.6%

A large portion of the Private Equity and LBO game depends on this one …

- The E Model – A three stage FCFE Model
- A high growth phase, a transition phase, and a stable growth phase
- Caution – (a) capital spending vis-à-vis depreciation (b) risk
- To be used for: firms with very high current growth rates
- Let us try it on Hexaware Technologies
- High growth phase 40% (5 year); transition phase declining (6 year); stable growth phase rate 6%
- Current EPS = 38
- Current Capital Spending per share = 12
- Current Depreciation per share = 9
- Current Change in Working Capital per share = 26
- Debt ratio = 1%
- Current beta = ? Future beta = ?
- Assume capex = depreciation in the terminal year

Value of a Firm

- While, one can use the 'DCF' method to get the value of Operating Assets
- We also need to add the value of non-operating assets
  - Add back the value of non-operating assets in cash and marketable securities
  - Add back the value of long-term investments and minority holdings in other companies
  - Any other idle and unutilized assets
- Consider non-equity claims against the company (say, Jet Airways OR Shaw Wallace)
  - Unfunded obligations
  - Expected litigation payouts

Hindustan Unilever Limited

- FCFE = Current EPS – ((Capital Spending – Depreciation) X (1 – Debt ratio) – (Δ Working Capital) X (1 – Debt ratio)

Financial Rs (in Crores)	Hindustan Unilever Limited					
For the year	612	512	412	312		
No. of Shares (in crore)	220.7	220.1	220.1	220.1		
Adjusted EPS (Rs)	6.8	5.8	5.3	7.8		
Book value per Share (Rs)	12.3	10.5	9.5	9.7	87.7%	Ploughl
Dvdnd per Share (Rs)	6.0	5.0	5.0	5.5	12.0%	Ke
Lt Debt Equity	0.0	0.0	0.6	0.6	7.4%	G
Return on Equity (%)	60.0%	58.5%	54.7%		138.1	IV

FCFE Vs DDM

A few points to be noted

- For small investors – prefer using DDM
- Prefer FCFE over DDM when
  - The cash dividends are very high or very low (i.e., unrealistic)
  - Firms with a predicted change in corporate control
  - When there are large non-cash dividend benefits from owning the firm (say, salary, network, etc.)
- Firm’s having operating losses could avoid using DDM and FCFE

Kilburn Chemicals Ltd., for individual investor

Year	2007	2006				
DPS	2.00	2.00				
EPS	9.10	10.00				
BV/Share	44.60	37.00				
ROE	**22.30%**	**27.03%**				
Payout Ratio	21.98%	20.00%				
High Growth Rate	**17.40%**					
Stable Growth Rate	**7%**					
Dividends	**2**					
Cost of Equity (High Growth, beta 1.15)	**14.33%**	0.08	0.14			
Cost of Equity (Stable Growth, beta 1.05)	**13.78%**					
ROE in Stable Period	**13.78%**					
Estimated Retention Ratio in Stable Phase	**50.82%**					
Estimated EPS in 2013	22.04					
Estimated Dividend in 2013	10.84					

Kilburn Chemicals Limited	***2008***	***2009***	***2010***	***2011***	***2012***	***2013***
Estimated Dividend	2.35	2.76	3.24	3.80	4.46	10.84
Estimated Terminal Value					160.01	
Estimated DDM	2.35	2.76	3.24	3.80	164.47	
Share Price (Intrinsic)	$92.76					

FCFF

- FCFE and FCFF primarily defer due to the existence of financial leverage (and changes in financial leverage)
- FCFF Models
- Stable growth firm (use WACC instead of K_e)
  - Best use: firms with high leverage or changing leverage
- Please note that the debt has to be fairly valued
- Two stage growth model
  - Let us try this on Wockhardt

Wockhardt Limited

Wockhardt Limited	2006	2005	2004	2003
Operating Income (1- tax rate)	223	255	222	143
Capex	109	202	159	69
Depreciation	35	24	18	16
Change in Non Cash Working Capital	124	(62)	147	1
FCFF	25	140	(66)	89

Expected Growth rate = (Reinvestment rate) X (Return on Capital Employed) = 18.9%

Cost of Equity = R_f + B (R_m – R_f) = 11.96% (taking 8%, 13.5%, .72)

Wockhardt Limited

- Given a synthetic bond rating of AAA and a default spread of 35-50 bps.
- We take the pretax cost of debt for Wockhardt for the next five years is 8.5%
- MVE is Rs 4344 crores and MVD is 700 gives a market-based debt ratio of 0.163

Wockhardt Limited	Rf	Rm-Rf	Beta	Ke	
Cost of Equity (now)	8.0%	5.5%	0.72	11.96%	
	tax rate	mve	mvd	Kd	Kc
Cost of Capital (now)	20.0%	4,344	700	6.80%	10.41%
After five year	Beta	Rm-Rf	Beta	Ke	
Cost of Equity (stable phase))	8.0%	5.5%	0.85	12.68%	
	tax rate	mve	mvd	Kd	Kc
Cost of Capital (stable phase)	30.0%	4,344	700	5.95%	11.02%
Stable Phase Growth Predicted	7.00%				
Stable Phase ROCE Predicted	11.52%				
Reinvestment rate in stable growth	60.76%				

	2006	2005	2004	2003	
Non-cash CA	682	516	541	338	310
CL	316	274	237	181	154
non-cash NWC	365	242	304	157	156
non cash NWC-to-Sales Ratio	34%	26%	34%	20%	19%
non cash NWC-to-Assets Ratio	18%	12%	18%	16%	26%

Year	Current	1	2	3	4	5
Reinvestment rate		100.9%	100.9%	100.9%	100.9%	100.9%
EBIT X (1 - Tax rate)	223	265	315	374	445	529
Less (Capex - Depreciation)	74	88	104	124	148	175
Less Change in Working Capital (use % rev)	124	57	67	80	95	113
FCFF	25	120	143	170	202	240

Year	Current	1	2	3	4	5
Reinvestment rate		100.9%	100.9%	100.9%	100.9%	100.9%
EBIT X (1 - Tax rate)	223	265	315	374	445	529
Less (Capex - Depreciation)	74	88	104	124	148	175
Less Change in Working Capital (use % rev)	124	57	67	80	95	113
FCFF	25	120	143	170	202	240
Cost of Capital	10.41%					
Present Value for first phase	635					
Stable Phase computations	EBIT (1-t)	458	(1-RR)	39.24%		
Cash flow one year after terminal year	180					
Terminal Value (at the end of year 5)	4,468					

Year	1	2	3	4	5
FCFF (clubbing both phases)	120	143	170	202	4,709
Present Value of Operating Assets	3,358				
Add Cash and Marketable Securities	839				
Less Debt and nonoperating assets	700				
Value of Equity of the Firm	3,497				
Value of Equity Per Share	320				

What are the possible sources of gap?