MBA in Food & Agribusiness

Financial Management

Valuation Exercises

Question 1

CASE : DELL Inc.

Dell Inc. is a multinational company based in Round Rock, Texas which develops, manufactures, sells, and supports personal computers, servers, data storage devices, network switches, software, televisions, computer peripherals, and other technology-related products with more than 95,000 employees worldwide.

Dell grew during the 1980s and 1990s to become (for a time) the largest seller of PCs and servers. In 2006, Fortune magazine ranked Dell as the 25th-largest company in the Fortune 500 list, 8th on its annual Top 20 list of the most-admired companies in the United States. A 2006 publication also identified Dell as one of 38 high-performance companies in the S&P 500 which had consistently out-performed the market over the previous 15 years.

John Karter is in equity research and needs to prepare his upcoming report for Dell. He has also been asked to investigate potential acquisition prospects.

Required

(a) Using the analysts' estimates of future average net income in Exhibit 1, calculate the intrinsic value of an equity share in Dell **as at 1 January, 2006** using **only** the **abnormal earnings (residual income) valuation method**. Use the following assumptions:

1. Net income rises by 25% in the year ended 31 December, 2008.
2. Dell plans to pay dividends of $22 million in the year ended 31 December, 2006 and $24 million in the year ended 31 December, 2007. No dividends are proposed in future years.
3. Dell plans to repurchase ordinary shares for $20 million in the year ended 31 December 2006 and for $15 million in the year ended 31 December, 2007. No further repurchases are planned in future years.
4. Items 2 and 3 above and the change in net income each year account for all changes in the book value of shareholders' equity each year.
5. Beyond 31 December, 2008, abnormal earnings are expected to grow at 3% per year indefinitely.
6. The equity beta for Dell on 1 January, 2006 is 0.84.
7. The market risk premium on 1 January, 2006 is 6% and the risk free rate is 2% on the same date.
8. Opening Book Value of Equity in 2006 is $ 180.722 million and number of outstanding shares is 16.528 million

Note: Make all your calculations in **thousands** of dollars

Required (cont.)

(b) One of the key assumptions underpinning the abnormal earnings (residual income) valuation method is that the ‘clean-surplus relation’ holds. Explain what is meant by the ‘clean surplus relation’.

(c) Give two reasons why an analyst would use the Abnormal Earnings (Residual Income) valuation model instead of directly taking book value of equity from the balance sheet as a measure of value?

Exhibit 1: Analyst Estimates of Future Net Income (in $thousands) for Dell

	Year ended December 31, 2006	Year ended December 31, 2007
Average Net Income estimate	85,678	99,876
Number of analysts	12	12
Low Net Income estimate	82,425	94,356
High Net Income estimate	89,056	104,567

Answers

QUESTION 3 (Also see: Tutorial13,14_Valuation_Question1_Solution.xls)

(a)

$ THOUSANDS	Y/E 31/12/06	Y/E 31/12/07	Y/E 31/12/08	Terminal year
Opening book value of equity	180.722	224.400	285.276	
Net income	85.678	99.876	124.845	
Dividends paid	22.000	24.000	0	
Shares repurchased	20.000	15.000	0	
Closing book value of equity	224.400	285.276	410.121	
Net income	85.678,00	99.876,00	124.845,00	
Required return	12.722,83	15.797,76	20.083,43	
Abnormal earnings	72.955,17	84.078,24	104.761,57	
Discount factor	1,07	1,15	1,23	
Discounted abnormal earnings	68.156,92	73.382,32	85.420,81	
Undiscounted Abnormal earnings in terminal year				107904,42

Cost of equity	0,07
Growth rate in terminal yea	0,03

PV finite horizon abnormal earnings	226.960,05
Terminal value=(AE/(r-g))/(PV factor)	2.177.807,83
Present value of AE incl terminal value	2.404.767,88
Adjust as if received thru year	2.487.976,15
Book value at valuation date	180.722,00
Book value + PV of future Abnormal Earnings	2.668.698,15
Number of shares	16.528,00
Value per share	161,47

Cost of equity = 7.04%

Growth rate = 3%

Answers (cont.)

(b)

Changes in the Book Values of Equity as a result of :

- Annual Profit
- Dividends Paid Out and
- Capital Transactions with Shareholders
- There will be a violation of the CSR if there are changes in “dirty” surplus items (accumulated other comprehensive income) in the BS.
- This is usually the case.

(c)

Conservative accounting:

- BVE not a correct measure of value because of historical costs, balance sheet items not all measured at fair market value.
- Book value of equity does not reflect future growth prospects. RIVM does by using earnings expectations. If present value of abnormal earnings stream into future is negative, value could be lower than book value.

Question 2

The following information may be gleaned from the end of 2006 Income Statement and Balance Sheet for Proctor and Gamble.

Sales Revenue	\$68,000 m
Net operating profit before tax	\$13,000 m
Net operating profit after tax	\$ 9,000 m
Net operating assets	\$100,000 m
Net operating profit margin ratio	(NOPM)
(\$9,000 / \$68,000)	13.2%
Net operating asset turnover ratio	(NOAT)
(\$68,000 / \$100,000)	0.68

Assume:

- Expected sales growth rate of 4.4% for 2007, 2008 and 2009.
- NOPM and NOAT expected to remain unchanged for 2007, 2008 and 2009.
- Expected growth in abnormal NOPAT of 4% after 2009.
- Bloomberg expected cost of capital for operations (i.e., WACC) is 7%.

Required:

Determine the intrinsic **value of the shares** Proctor and Gamble at the beginning of 2007. Proctor and Gamble had 3,200 m shares outstanding. The value of Proctor and Gamble's debt was \$36,000 m.

Answer

(Also see: Tutorial13,14_Valuation_Question2_Solution.xls)

1: Forecasting

	2006	2007	2008	2009	
Sales revenue	$ 68,000.00	$ 70,992.00	$ 74,115.65	$ 77,376.74	$sales_{t} = sales_{t-1} \times (1 + 0.044)$
NOPAT	$ 9,000.00	$ 9,396.00	$ 9,809.42	$ 10,241.04	$NOPAT_{margin}$ (0.132) = NOPAT / Sales => NOPAT = $NOPAT_{margin}$ x Sales
Net operating assets	$100,000.00	$104,400.00	$108,993.60	$113,789.32	NOA_{margin} (0.68) = Sales / NOA => NOA = Sales / NOA_{margin}
Net operating profit margin NOPM	13.2%	13.2%	13.2%	13.2%	Given
Net operating asset turnover ratio NOAT	0.680	0.680	0.680	0.680	Given

Expected sales growth rate	4.40%	Given
WACC	7.00%	Given
Expected growth abnormal NOPAT	4.00%	Given
Shares outstanding	3200	Given
Value of debt	$ 36,000.00	Given

2: Calculation of expected abnormal profits

		2007	2008	2009	
Beginning of the year net operating assets		$100,000.00	$104,400.00	$108,993.60	From before
Abnormal NOPAT		$ 2,396.00	$ 2,501.42	$ 2,611.49	$NOPAT_{abnormal}$ = NOPAT (for the year) - WACC (0.07) x BVA (Beginning of the year NOA)
Growth in abnormal NOPAT			4.40%	4.40%	Calculated here and it tracks the sales (as expected - why?)
Discount factor		1.07	1.14	1.23	$(1 + WACC)^{t}$
Discounted abnormal NOPAT		$ 2,239.25	$ 2,184.84	$ 2,131.75	$NOPAT_{abnormal}$ / Discount Factor
Sum of discounted expected abnormal NOPATs	$ 6,555.84				
Terminal Value	$ 73,900.70				$NOPAT_{abnormal(2009)} \times (1 + 0.04) / (0.07 - 0.04) \times 1.23$
Sum of PV & TV	$ 80,456.55				
Add: continuity correction	$ 83,272.52				Sum(PV + TV) x (1 + 0.05 x 0.07) <u>or</u> Sum (PV + TV) x $(1 + 0.07)^{1/2}$
Beginning of the year net operating assets	$100,000.00				From before
Intrinsic value of the firm' assets	$183,272.52				Sum (Beg.NOA + Continuity Correction)
Intrinsic value of equity	$147,272.52				Intrinsic Value of the firm's Assets - Value of Debt (36,000)
Equity value per share	$ 46.02				Intrinsic Value of Equity / Number of Shares Outstanding (3200)
Share price on market Jan 1, 2007	$ 55.60				How does it compare with estimated value?