Sessions #7 → #12: **Practice Problems & Solutions** *(*correct answer highlighted in red*)*

Session #7 – Reformulation (4)

- Which of the following is ***NOT*** an objective when reformulating the Statement of Cash Flows?
  1) To separate equity and debt financing cash flows
  2) To calculate the firm's free cash flow (FCF), and to show how it is both generated and used
  3) **To ensure that the firm has a positive free cash flow (FCF)**
  4) To separate items within the reported Cash Flows from Investing section into investments from/to operating assets from those from/to financial assets.

The objective of reformulating the SCF is not to ensure that the firm has a positive FCF – whether or not its FCF is positive will depend on how cash it generates from operations netted against how much cash it spends investing in operations; not on the reformulation process. The remaining three statements each express one of the objectives.

- Which of the following statements about a firm's free cash flow (FCF) is ***TRUE***?
  1) If a firm's free cash flow (FCF) is negative, it will have funds to invest in financial assets
  2) **Uses of free cash flow classified under the 'Debt financing cash flows' include the following: investments in financial cash, interest paid, and interest income.**
  3) If a firm's free cash flow (FCF) is negative, it has invested too much in long-term operating assets such as property, plant, and equipment.
  4) Uses of free cash flow (FCF) classified under the 'Equity financing cash flows' include each of the followi payment of dividends to preference sh

The three items listed ct. The remaining statements are incorrect for the following reasons: a negative FCF arises si ested more in operating assets during the year that it has generated from operating funds to invest in financial assets; similarly, a negative FCF simply means that the fi ncing in order to invest in l-t operating assets – it does not mean that the firm should much; and preference share dividends should appear under Financing and not Equity.

- The reformulated Income Statement for a company with a 30% tax rate is presented below.

Core Operating Income from Sales (before tax)	1,000
Core Other Operating Income (before tax)	400
Unusual Operating Income (before tax)	200
Net Financial Expenses (before tax)	(250)
Profit Before Tax	**1,350**
Income tax expense	450

Based on this information, what is the tax allocation to Core Operating Income from Sales?
1) **345**
2) 270
3) 195
4) 450

*Tax shield from NFE = 0.3 * 250 = 75*
*Tax on Unusual OI = 0.3 * 200 = 60*
Tax on Core Other OI = 0.3 400 = 120*
Tax on Core OI from Sales = 450 + 75 – 60 – 120 = 345

➢ Condensed versions of the reformulated 2020 and 2019 Balance Sheet and Income Statement for a company which pays no tax are presented below.

Balance Sheet	**2019**	**2020**		**2019**	**2020**
Operating Assets (OA)	250	275	Financial Assets (FA)	12	15
Operating Liabilities (OL)	(70)	(83)	Financial Obligations (FO)	(122)	(132)
			Net Financial Obligations (NFO)	110	117
Net Operating Assets (NOA)	**180**	**192**			
			Shareholders' Equity	**70**	**75**

Income Statement	**2019**	**2020**
Operating Income (after tax)	142	164
Net Financial Expenses (after tax)	(10)	(15)
Comprehensive Income (after tax)	132	149

Based on this information, what is company's free cash flow (FCF) for 2020?
1) 144
2) **152**
3) 176
4) 164

FCF = OI - △NOA = 16
Alternatively, FCF = CI = (75 – 70) – 149 = –144

Session #8 – Earnings Management (4)

➢ Which of the following is ***NOT*** a reason that CFO's e of failing to meet earnings benchmarks?
1) **It reduces information risk**
2) It creates uncertainty about the firm's future prospects
3) Management will have to take time away from managing the business to explain why the benchmarks were missed
4) Missing benchmarks may be suggestive of other previously unidentified problems

Reducing information risk is a stated reason for voluntarily communicating financial information; it is not a consequence of failing to meet an earnings benchmark. The remaining three statements describe identified consequences of failing to meet earnings benchmarks.

➢ Which of the following is ***NOT*** an example of an accounting-based earnings management (EM) strategy?
1) Unusually high (Level 3) fair value estimates
2) Unusually low warranty liability estimates
3) **Unusually low cash flow from operations**
4) Unusually low deferred revenues

Unusually low CFO is an indication that the firm has attempted increase sales and hence is an example of a real-activities-based EM strategy. The remaining three statements each describes a strategy that involves "adjusting" or altering an accounting estimate and hence represents an accounting-based EM strategy.

- Which of the following is ***NOT*** an example of a situation where earnings management (EM) is more likely?
  1) When the firm is 'in play' as a takeover target
  2) The firm has very low positive earnings
  3) When there has been a change in the firm's management
  4) **The firm conducts all of its business with unrelated parties**

  When the firm conducts all of its business with unrelated parties, its transactions are likely to be conducted at fair value and in good faith – thus, there should be a reduced likelihood that the transactions can be used to undertake EM. Each of the remaining three statements identify situations where EM has been identified as being more likely.

- Which of the following statements about earnings management is ***NOT*** true?
  1) If accruals are overstated by earnings management this year, they will be understated in some future period or periods
  2) **An unusual decrease in the provision for employee benefits is a red flag that the company might be overstating its operating assets to increase earnings**
  3) An unusual increase in inventories is a red flag that the company might be overstating its operating assets to increase earnings
  4) An unusual increase in net operating assets is a red flag that the company might be managing its operating accruals in order to increase earnings.

  The provision for employee benefits is an operating liability account, not an operating asset account. The remaining three statements are true.

Session #9 – Fina

- At the end of its fiscal year, a company has a quick rati tio of 0.8, and the balance of its current asset accounts is $3 million. Its $15 million and the associated cost of goods sold (COGS) is equal to 60 ompany's inventory turnover ratio based on average-of-year values, if its beginning inventory balance was $2 million?
  1) 4.50
  2) **6.55**
  3) 7.50
  4) 9.45

  From the CR, CL = 3 / 0.8 = $3.75 million
  From the quick ratio 0.60 = (3 –ending inventory) / 3.75 ending inventory = $0.75 million
  Inventory turnover ratio = COGS / ave inv = 9 / [(2 + 0.75)/2] = 6.55

- Your firm received a $1 million purchase order on the last day of its fiscal year, which it immediately filled with $600,000 of inventory. The customer paid $250,000 in cash and you firm invoiced the customer for the balance. Based on this information, which of the following statements is ***TRUE***?
  1) The firm's current ratio will remain unchanged
  2) **The firm's current ratio will increase**
  3) The firm's current ratio will decrease
  4) The firm's quick ratio will decrease

  CA increased by $400,000 (cash up 250; A/R up 750; and inventory down 600); CL unchanged CR increased

- Which of the following would <u>typically</u> lead to an increase in a firm's current ratio?
  1) **The sale of inventory**
  2) The purchase of additional inventory for cash
  3) Taking out a bank loan to pay suppliers
  4) A customer paying an outstanding bill

  Assuming that the inventory has been sold at a profit (which would typically be the case), the CA balance will increase while the CL balance will remain the same – thus, the CR will increase. The CR will not change under the remaining three alternatives: the purchase of inventory for cash means that there is an equal (offsetting) increase (inventory) and decrease (cash) in CA accounts; taking out the bank loan means that there is an equal increase (loan) and decrease in CL (accounts payable) accounts; and a customer paying a bill means that there is an equal increase (cash) and decrease (accounts receivable) in CA accounts

- The following financial information is drawn from General Mills reformulated 2010 financial statements:

Net Operating Assets (NOA)	11,632
Net Financial Obligations (NFO)	6,099
Operating Income (OI) (after tax)	1,177
Net Financial Expenses (NFE) (after tax)	251

  Based on this information and using end-of-year figures, what is General Mill's return on common equity (ROCE) for 2010?

  1) 0.213
  2) 0.101
  3) **0.167**
  4) 0.041

  ROCE = RNOA + FLEV(RNOA – NBC) = 0.1012 + 1.1023(0.1012 – 0.0412) = 0.1674
  S/E = NOA – NFO = 11,632 – 6,099 = 5,533
  RNOA = OI / NOA = 1,177 / 11,632 = 0.1012
  FLEV = NFO / S/E = 6,099 / 5,533 = 1.1023 *NBC = NFE / NFO = 25 [illegible] 0.0412*

- GL Ltd. is a manufacturer of small appliances. Following is a condensed AASB/IFRS Income Statement for the most recently completed fiscal period:

Sales	$1,500,000
Cost of Goods Sold	<u>(600,000)</u>
Gross Profit	900,000
Rental Income	50,000
Interest Expense	(125,000)
Depreciation	<u>(275,000)</u>
Net Profit before Tax	550,000
Income Tax Expense (30%)	<u>(165,000)</u>
Net Profit After Tax (NPAT)	385,000

  Based on this information, what is GL's times-interest-earned ratio and its operating profit margin (after tax)?
  1) Its times-interest-earned ratio is 4.400 and its operating profit margin is 0.315
  2) Its times-interest-earned ratio is 4.400 and its operating profit margin is 0.450
  3) Its times-interest-earned ratio is 5.400 and its operating profit margin is 0.450
  4) **Its times-interest-earned ratio is 5.400 and its operating profit margin is 0.315**

  times-interest-earned ratio = (900,000 + 50,000 – 275,000) /125,000 = 5.400

operating profit margin (after tax) = [(900,000 + 50,000 – 275,000) – 202,500] / 1,500,000 = 0.315
tax shield on NFE = 0.30(125,00) = 37,500 → tax expense on Operating Income = 165,000 + 37,500 = 202,500

- The following turnover ratios for individual operating assets and operating liabilities have been calculated using end-of-year figures based on Trail Inc.'s reported 2020 Balance Sheet:

Cash turnover	6.0
Accounts receivable turnover	4.0
Inventory turnover	3.0
Property, plant & equipment turnover	2.0
Accounts payable turnover	7.5
Provisions turnover	3.0

Based on this information, what is Trail's asset turnover ratio (= sales / NOA)?
1) 25.500
2) 1.277
3) 0.583
4) 0.800

$$\frac{1}{asset\ turnover} = \frac{NOA}{sales} = \frac{cash}{sales} + \frac{rec}{sales} + \frac{inv}{sales} + \frac{ppe}{sales} - \frac{A/P}{sales} - \frac{prov}{sales}$$
$$= \frac{1}{cash\ turn} + \frac{1}{Acc\ Rec\ turn} + \frac{1}{inv\ turn} + \frac{1}{ppe\ turn} - \frac{1}{AP\ turn} - \frac{1}{prov\ turn}$$
$$= \frac{1}{6} + \frac{1}{4} + \frac{1}{3} + \frac{1}{2} - \frac{1}{7.5} - \frac{1}{3} = 0.7833 \rightarrow asset\ turnover = 1/0.7833 = 1.2766$$

- The following fin[illegible]ormulated 2019 financial statements:

Operating As[illegible]	10,000
Operating Liabilities (OL)	7,000
Operating Income (OI) (after tax)	1,800
Net Financial Expenses (NFE) (after tax)	150
Stated short-term borrowing rate	6%
Tax rate	30%

Based on this information and using end-of-year figures, what is General Mill's return on net operating assets (RNOA) for 2010?
1) 0.209
2) 0.698
3) 0.600
4) 0.042

RNOA = ROOA + OLLEV(ROOA – STBC) =0.2094 + 2.3333(0.2094 – 0.042) = 0.600
OLLEV = OL / NOA = 7,000 / 3,000 = 2.3333 *STBC = 0.06(1 – 0.3) = 0.042*
*ROOA = (OI + implicit interest) / OA = (1,800 + 0.042*7,000) / 10,000 = 0.2094*

Session #10 – Financial Statement Analysis; Forecasting (5)

- Which of the following ratios is ***NOT*** in the 'DuPont System'?
1) Operating profit margin
2) Asset turnover
3) Current ratio
4) Financial Leverage

The 'DuPont System' relates to the decomposition of ROCE as displayed through the 'financial leverage equation'. The components are the operating profit margin, asset turnover, and financial leverage. The current ratio is a measure of liquidity; it is not a part of the 'financial leverage equation'.

- Which of the following changes will lead to an ***increase*** in ROCE for a profitable company?
  1) An increase in Shareholders' Equity (S/E), all else remaining unchanged
  2) A decrease in the amount of long-term debt outstanding, all else remaining unchanged
  3) **A decrease in the corporate tax rate, all else remaining unchanged**
  4) A decrease in operating income (after tax), all else remaining unchanged

A decrease in the corporate tax rate with all else remaining unchanged results in an increase in OI and thereby an increase in CI. Since ROCE = CI ÷ S/E, this will result in an increase in ROCE. All other changes lead to a decrease in ROCE for the following reasons: an increase in S/E with no change in CI leads to a decrease because ROCE = CI ÷ S/E; a decrease in the amount of L-T debt means that NFO is smaller and hence FLEV is lower – from the financial leverage equation, a lower FLEV with all else unchanged means that ROCE will decrease; and a decrease in OI with no other change means that CI will decrease and hence ROCE will decrease.

- Which of the following calculations is correct if sales are $5,600, operating profit after tax is $2,090, the tax rate is 30%, there are no 'other comprehensive income' items, net financial obligations (NFO) are $30,900 and shareholders' equity (S/E) is $16,500?
  1) operating profit margin = 0.358
  2) asset turnover = 0.156
  3) financial leverage = 1.572
  4) **ROCE = 0.127**

Operating profit mar $\frac{5,600}{,900+16,500} = 0.1181$

$FLEV = \frac{NFO}{SE} = \frac{30,900}{16,500} = 1.8727$ $ROCE = \frac{}{SE} = \frac{}{16,500} = 0.1267$

- Which of the statements about the forecasting exerci
  1) **The appropriate forecast horizon will typically mature industry than for a firm in an emerging industry sector**
  2) The 'regression to the mean' phenomenon confirms that poor performing firms will not survive in the longer term
  3) When a company has reached its 'steady state' growth rate, its operating profit margin will grow at the terminal growth rate
  4) The sustainable growth rate, g*, is the growth rate in sales that the firm can achieve if it is able to issue new debt and/or new equity.

Given the stability of a mature industry, the appropriate forecast horizon will typically be relatively short whereas for an emerging industry sector, its initial growth rates will tend to be relatively high and hence the time horizon until steady state is reached is likely to be longer. The remaining statements are incorrect for the following reasons: the 'regression to the mean' phenomenon indicates that firms with above average performance will experience a decline in performance and companies with below average performance will experience an improvement, not that the latter will cease to operate; when a company reaches a steady state growth rate, its margin will remain constant rather than growing; and the sustainable growth rate is the growth rate that the firm can support through internally generated funds without accessing the capital markets.

- Which of the statements arising from a 'third level' break down of ROCE is ***NOT*** true?
  1) An increase in Accounts Receivable turnover will result in an increase in ROCE, assuming all else remains unchanged

2) **A reduction in the Accounts Payable balance will result in an increase in ROCE, assuming all else remains unchanged**
3) A reduction in production costs will result in an increase in ROCE, assuming all else remains unchanged
4) A decrease in the inventory balance will lead to an increase in ROCE, assuming all else remains unchanged.

A reduction in the A/P balance will result in a higher A/P turnover and hence a lower total asset turnover. This effect can be seen by considering the inverse of the A/P turnover which will be smaller; since the inverse of the asset turnover is increased when the inverse of an expense item is decreased, the asset turnover will be lower. With a lower asset turnover and all else unchanged, ROCE will decrease, not increase. All remaining statements are true.

Session #11 – Forecasting and Valuation (5)

- Which of the following statements about the process of forecasting a firm's pro forma Financial Statements is ***NOT*** true?
  1) The focus of the forecasting process should be on the firm's sustainable (core) earnings
  2) **A firm's core sales profit margin relates its operating income to the level of its investment in net operating assets**
  3) The extent to which a firm's operating costs are fixed helps to determine its core sales profit margin
  4) A firm's core sales profit margin captures its ability to generate operating profits from sales

A firm's core sales pr ... ts 'core operating from sales', to its investment in N ... ements are true.

- Which of the following factors does ***NOT*** influence t ... holders' Equity (S/E) grows?
  1) The growth rate in the firm's sales
  2) A change in the firm's degree of financial leverage
  3) A change in the firm's investment in net operating assets (NOA)
  4) **A change in the cost of the firm's financial obligations (net borrowing cost)**

While a change in the firm's NBC will affect its profitability as measured by RNOA, it does not directly affect the extent to which S/E changes. $\triangle S/E = \triangle NOA - \triangle NFO$ *where* $NOA = sales \times \frac{1}{ATO}$ *thus* $\boldsymbol{\triangle S/E = \triangle(sales \times \frac{1}{ATO}) - \triangle NFO}$

- You have been provided the following actual financial information from the reformulated 2020 financial statements of Castlegar Ltd. and forecasts of the same figures for 2021

	2020 Actual	**2021 E**
Sales revenue	37,408	38,776
Operating Income (OI) (after tax)	1,288	1,362
Net Operating Assets (NOA)	12,205	13,102

Based on these actual and forecasted values, which of the following statements is ***TRUE***?
1) Both the firm's operating profit margin and its asset turnover are forecasted to increase
2) Both the firm's operating profit margin and its asset turnover are forecasted to decrease
3) **The firm's operating profit margin is forecasted to increase and its asset turnover to decrease**
4) The firm's operating profit margin is forecasted to decrease and its asset turnover to increase

Operating profit margin: 2020 1,288 / 37,408 = 0.0344 2021 1,362 / 38,776 = 0.0351
Asset turnover 2020 37,408 / 12,205 = 3.065 2021 38,776 / 13,102 = 2.960

- Based on the reformulated financial statements for its most recently completed fiscal year (2020), a firm has net operating assets (NOA) of $250,000 and net financial obligations (NFO) of $175,000.

  As an analyst, you have already forecasted a 8% growth in the firm's shareholders' equity. You are now trying to decide how to forecast the firm's net financial obligations (NFO) and then its net financing expenses (NFE) for 2021. While you are comfortable with your forecast of the firm's net borrowing costs (NBC) of 4% after tax, you are uncertain about how best to forecast the firm's net financial obligations (NFO).

  One approach you are considering is to forecast an increase in net financial obligations equal to your forecast of the growth in the firm's property, plant & equipment (p,p&e) of 2.5% because these assets are leased and the lease obligation will be recorded as a NFO. Thus, from this perspective, NFOs should grow at the same rate as p,p&e.

  The other possible approach that you are considering is to base your forecast of the firm's net financial obligations on your forecast of the firm's degree of financial leverage (FLEV). Here, you believe that the firm is at its optimal capital structure and as such, FLEV will remain constant.

  Based on this information, which approach to forecasting net financial obligations (NFO) will lead to a higher net financing expense (NFE), the approach based on the growth rate in p,p&e of 2.5%, or the approach based on the assumption that FLEV will remain constant?

  1) The approach based on the 2.5% growth rate in p,p&e will lead to a higher NFE
  2) **The approach b FE**
  3) The two approa NFE
  4) It is not possible to her NFE based on the information provided

Given NOA = 250,0000 and NFO = 175,000 S/E = 75,000 and FLEV = 175,000/75,000 = 2.333

2021 NFO based on 2.5% growth NFO = 1.025 (175,000) = 179,375

*based on constant FLEV 2020 NFO / SE = 2.333 NFO = 2.333 * S/E*
2021 S/E = 1.08(250,000 – 175,000) = 81,000 NFO = 2.333(81) = 189,000*

- You have been provided the following actual financial information from the reformulated financial statements of Mission Beach Ltd. for the years 2019 and 2020, and then a set of forecasted financial information for the three period, 2021 – 2023.

	2020 Actual	2019 Actual
Net Operating Assets (NOA)	7,750	7,500
Net Financial Obligations (NFO)	1,750	1,750

	2021 E	2022 E	2023 E
Sales forecasts	10,000	10,500	11,000
Operating profit margin (after tax)	0.20	0.20	0.20
Asset turnover	1.25	1.25	1.25
Net Financing Expenses (after tax)	175	175	175

Using the Abnormal Earnings (Residual Income) valuation model, what is the intrinsic value of a common share of Mission Beach Ltd. based on the forecasts above if the appropriate cost of equity capital is 7.5%, net financial obligations (NFO) remain unchanged from their value in 2020, there are no Other Comprehensive Income (OCI) items, Mission Beach has 1,000 common shares outstanding, and abnormal earnings are forecasted to grow at 2% after 2023?

1) $26.55
2) **$32.55**
3) $33.32
4) $34.23

Sample calculations:

2021E *Operation profit = 0.2 * 10,000 = 2,000* *CI = 2,000 – 175 = 1,825*
NOA = 10,000 / 1.25 = 8,000 *S/E = 8,000 – 1,750 = 6,250*
*ReCI = 1,825 – 0..075 * 6,000 = 1,375*

$$V_0 = 6{,}000 + \frac{1{,}375.00}{(1.075)} + \frac{1{,}456.25}{(1.075)^2} + \frac{1{,}526.25}{(1.075)^3} + \frac{1{,}526.25(1.02)}{(0.075 - 0.02)}\left(\frac{1}{(1.075)^3}\right) = 32{,}552.19$$

$$P_0 = 32{,}552.19 / 1{,}000 = \$32.55$$

Note: calculations are facilitated by developing an Excel spreadsheet along the following lines:

	2020 A	2021 E	2022 E	2023 E		
sales		10,000.00	10,500.00	11,000.00		
PM		0.20	0.20	0.20		
Operating profit		2,000.00	2,100.00	2,200.00		
NFE		175.00	175.00	175.00		
CI		1,825.00	1,925.00	2,025.00		
Asset turnover		1.25	1.25	1.25		
NOA	7,750	8000	8400	8800		
NFO	1,750	1750	1750	1750		
S/E	6,000	6250	6650	7050	V	
ReCI						
discount rate	0.0750	1.0750	1.1556	1.2423	1.2423	V
PV		1,279.07	1,260.14	1,228.57	22,784.41	26,552.19
						6,000.00
						32,552.19
						32.55

Session #12 – Forecasting and Valuation (5)

- Based on its reformulated Financial Statements for the fiscal year 2020, WaveJumper (WJ) Inc. had net operating assets (NOA) of $100,000, net financial obligations (NFO) of $25,000, and sales revenue of $200,000. An analyst has recently made the following forecasts for the 3-year period 2021 – 2023:

	2021 E	2022 E	2023 E
Sales growth forecasts	5%	5%	5%
Operating profit margin (after tax)	0.25	0.25	0.25
Asset turnover	2.0	2.0	2.0

Based on these forecasts and using the Abnormal Earnings (Residual Income) valuation model, the analyst then valued WJ's 200,000 common shares using a weighted average cost of capital (WACC) of 6% and assuming that residual operating income would grow at 3% after 2023.

You have now had the chance to examine the analyst's forecasts and agree with all of them except the operating profit margin forecasts which you believe should be 20% and not 25%. Based on this one difference in forecasts, how much would your estimate of the intrinsic value of a common share of WJ differ from the analyst's estimate?

1) **lower by $1.82 ($6.60 versus $8.42)**
2) lower by $0.20
3) higher by $1.82
4) the estimates will be the same

Analyst's forecasts

		2021 E	2022 E	2023 E	TV	V
sales growth		0.0500	0.0500	0.0500		
sales	200,000	210,000.00	220,500.00	231,525.00		
PM		0.25	0.25	0.25		
Operating Profit		52,500.00	55,125.00	57,881.25		
Asset turnover		2	2	2		
NOA	100,000	105000	110250	115762.5		
ReOI		46500	48825	51266.25	1760141.25	
discount rate	0.0600	1.0600	1.1236	1.1910	1.1910	
PV		43,867.92	43,454.08	43,044.13	1,477,848.53	1,608,214.67
					+ NOA_{2020}	100,000.00
Value of the Firm						1,708,214.67
					- NFO_{2020}	-25,000
Total value of equity						1,683,214.67
Price						**8.42**

Your forecasts (chang *=6.60*

➢ Which of the following factors typically will ***NOT*** i f the price-earnings (P/E) ratio?

1) **a permanent change in earnings**
2) the firm's business risk
3) the anticipated growth in the firm's future earnings
4) the firm's choice of accounting policy

In an efficient market, a permanent change in earnings should affect both the earnings figure and the share price in the same direction and proportionately. As such, the P/E should not be affected (assuming all else held constant). The remaining factors each influence the firm's P/E: higher risk results in a lower P/E, higher growth results in a higher P/E, and choice of a more conservative accounting policy results in a higher P/E ratio.

➢ Which of the following statements about the price-earnings (P/E) and market-to-book (M/B) ratios is ***TRUE***?

1) If a firm has a high (above normal) P/E and a high (above normal) M/B, its future abnormal earnings are expected to be constant
2) If a firm has a high (above normal) P/E and a low (below normal) M/B, its abnormal earnings are expected to decrease
3) If a firm has a low (below normal) P/E and a high (above normal) M/B, its future abnormal earnings are expected to be constant
4) **If a firm has a high (above normal) P/E and a low (below normal) M/B, its future abnormal earnings are expected to increase**

A high M/B ratio indicates positive abnormal earnings while a high P/E ratio indicates positive growth in abnormal earnings (AE are increasing, not remaining constant). Conversely, a low M/B ratio indicates low or even negative AE and a low P/E ratio indicates that the firm's AE are decreasing (not remaining constant).

➢ An analyst has provided you with the following actual and forecasted financial information for Ferny Ltd.:

	2020 Actual	2021 E	2022 E
Sales	\$500,000	\$550,000,000	\$575,000,000
Operating profit margin (after tax)	20%	20%	20%
Net Operating Assets (NOA)	200,000	220,000	230,000
Asset turnover	2.5	2.5	2.5
Net Financial Obligations (NFO)	125,000	130,000	135,000

The analyst has also provided the following additional information:

- the forecasted growth rate in residual comprehensive income (CI) after 2022 is 2%
- the firm's net borrowing cost (NBC) after tax is 3%
- the firm's cost of equity capital is 6%
- the firm has no other comprehensive income (OCI) items

Having received the analyst's report, you are now trying to determine whether the estimate of the intrinsic value of Ferny's common equity is more sensitive to a 0.5% decrease in the terminal growth rate to 1.5% or a 1% decrease in the operating profit margin to 19%. Based on the information provided, which of the following statements is ***TRUE***?

1) **The estima the decre n the terminal growth than to the d**
2) The estimated int operating profit margin than to the de
3) There is no difference in the sensitivity of the estim the changes in the terminal growth rate and the operating profit ma
4) The estimated intrinsic value is not sensitive to cha nal growth rate or the operating profit margin

Based on the forecasted figures, the intrinsic value of Ferny's common equity is \$2,660,240 (see below)
If the terminal growth rate is reduced to 1.5% (all else held constant), the intrinsic value drops to \$2,383,640
If alternatively the operating profit margin is reduced to 19% (all else held constant), value drops to \$2,519,430
Thus, the estimated intrinsic value is more sensitive to a decrease in g than a decrease in PM

		2021 E	2022 E	TV	V
sales growth		0	0		
sales	500.00	550.00	575.00		
PM	0.20	0.20	0.20		
Operating Profit	100.00	110.00	115.00		
NFE	3.75	3.90	4.05		
CI	96.25	106.10	110.95		
Asset turnover	2.5	2.5	2.5		
NOA	200	220	230		
NFO	125	130	135		
S/E	75	90	95		
ReCI		101.6	105.55	2691.53	
discount rate	0.0600	1.0600	1.1236	1.1236	
PV		95.85	93.94	2,395.45	2,585.24
					75.00
					2,660.24

➢ An analyst has provided you with the following actual and forecasted financial information for White Rock Inc.:

	2020 Actual	**2021 E**	**2022 E**
Sales	$25,000,000	$30,000,000	$35,000,000
Operating profit margin (after tax)	20%	20%	20%
Asset turnover	2.0	2.0	2.0
Net Operating Assets (NOA)	12,500,000	15,000,000	17,500,000

As confirmed by their forecasts, while the analyst believes that the firm's sales will grow, they also believe that its operating profit margin and asset turnover will remain constant.

Having received the analyst's report, you have now conducted your own investigation into the financial prospects of White Rock Inc. While you agree with the analyst's forecast for a terminal growth rate in residual operating income of 4% after 2022 and that the required rate of return on the firm's operations is 8%, you do not agree with either their forecasted operating profit margin or asset turnover figures. Based on your own investigation, you believe that White Rock's operating profit margin will be slightly higher at 21% in both 2021 and 2022, but that its asset turnover will be somewhat lower at 1.8 in both years. Given this information, which of the following statements is ***TRUE***?

1) Your estimate of the intrinsic value of White Rock's common shares will be lower than the analyst's estimate
2) Your estimate of the intrinsic value of White Rock's common shares will be the same as the analyst's estimate
3) **Your estimate of the intrinsic value of White Rock's common shares will be higher than the analyst's**
4) Based on the info... hether your estimate or the analyst's ... n shares will be higher

Based on the Excel spreadsheet below, based on their forecast ... he intrinsic value of the firm to be $151,388,889. When the analyst's forecasts for the o... ATO are replaced with your estimates, the intrinsic value of the firm is higher at $15... alue of the firm's equity is determined by subtracting off the value of the firm's 2020 actual NFO, both you and the analyst will make the same adjustment and hence your estimate of intrinsic value of White Rock's common shares will also be higher than the analyst's estimate. The increase in profit margin more than offsets the decrease in the asset turnover.

Analyst's estimate of the firm's intrinsic value

		2021 E	2022 E		
sales growth		0	0		
sales	25,000.00	30,000.00	35,000.00		
PM	0.20	0.20	0.20		
Operating Profit	5,000.00	6,000.00	7,000.00		
Asset turnover	2	2	2		
NOA	12,500	15000	17500		
ReOI		5000	5800	150800.00	
discount rate	0.0800	1.0800	1.1664	1.1664	V
PV		4,629.63	4,972.57	129,286.69	138,888.89
					12,500.00
					151,388.89

Your estimate of the firm's intrinsic value

		2021 E	2022 E		
sales growth		0	0		
sales	25,000.00	30,000.00	35,000.00		
PM	0.20	0.21	0.21		
Operating Profit	5,000.00	6,300.00	7,350.00		
Asset turnover	2	1.8	1.8		
NOA	12,500	16666.6667	19444.4444		
ReOI		5300	6016.66667	156433.33	
discount rate	0.0800	1.0800	1.1664	1.1664	V
PV		4,907.41	5,158.32	134,116.37	144,182.10
					12,500.00
					156,682.10