

ACCT7106 – Session #9: Ratio Analysis

PART 1 – Background

overarching objective: **Assignment Project Exam Help**

to conduct the fundamental valuation exercise for the purpose of estimating the
‘intrinsic value’ of a firm’s common shares

→ requires an understanding of the firm’s ‘value drivers’

➔ need to accumulate a ‘tool kit’ as the basis for developing the *pro forma*
Financial Statements

\Rightarrow **projected** $\left\{ \begin{array}{l} \text{Balance Sheet (B/S)} \\ \text{Income Statement (I/S)} \\ \text{Statement of Cash Flows (SCF)} \end{array} \right\}$
 over the forecast horizon

\Rightarrow core inputs into the valuation model $\rightarrow x \quad g$
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$$V_0 = \sum_{t=1}^{\infty} \frac{x_t}{(1+k_t)^t} = \sum_{t=1}^n \frac{E(x_t)}{(1+k)^t} + \frac{E(x_n)(1+g)}{k-g} \frac{1}{(1+k)^n}$$

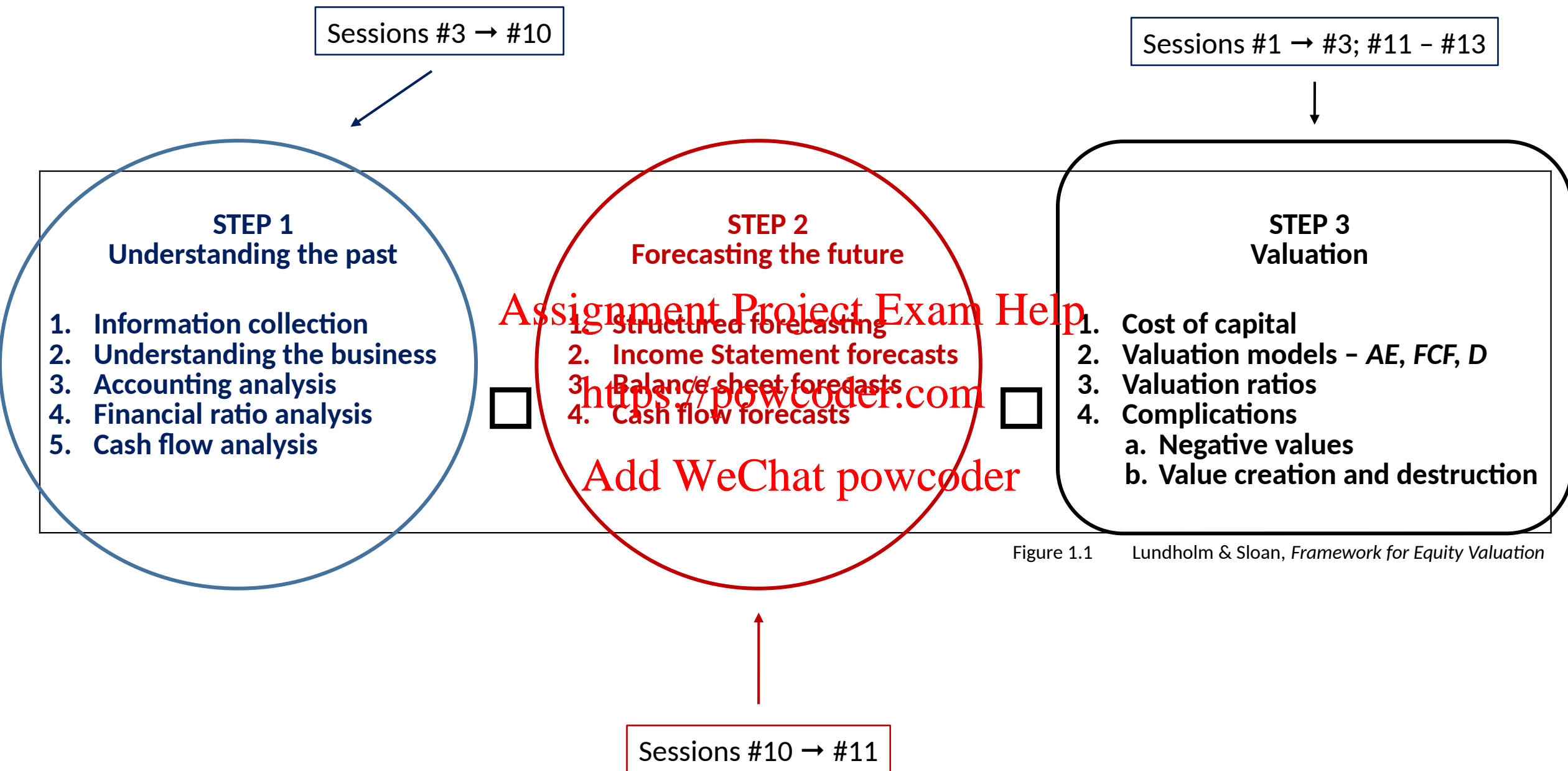


Figure 1.1 Lundholm & Sloan, *Framework for Equity Valuation*

➤ Financial Statements – AASB 101:

- Balance Sheet
- Income Statement *and/or* Statement of Comprehensive Income
- Statement of Changes in Equity
- Statement of Cash Flows
- Notes to the financial statements

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➤ building blocks → definitions specific to accounting

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➤ accounting principles → AASB / IFRS rules to guide accounting decisions/choices

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➤ recognition (item to F/S) *versus* disclosure (notes)

➤ ‘accountability’ & ‘stewardship’

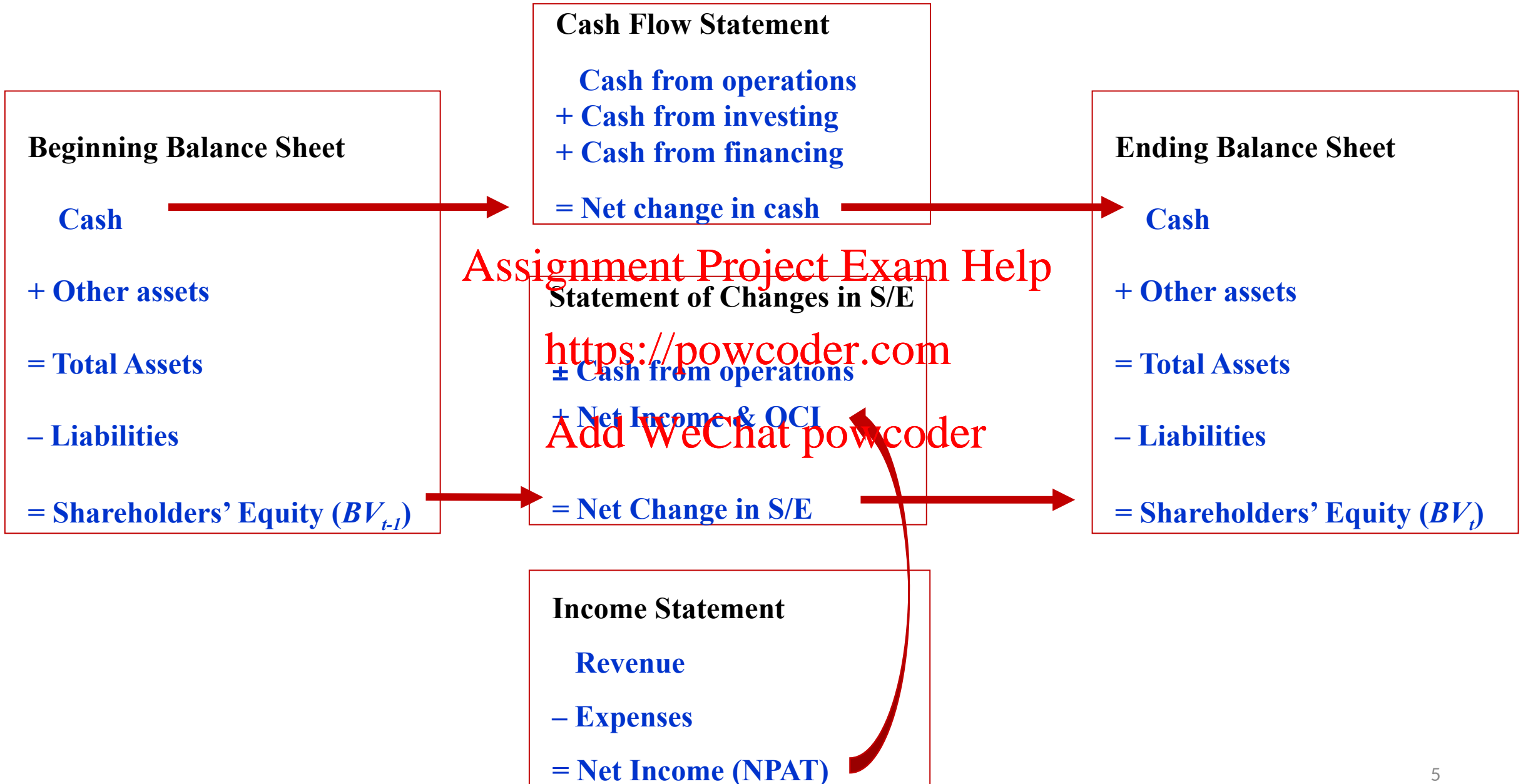
- ‘**accountability**’ → preservation by management of the resources entrusted to them
- ‘**stewardship**’ → efficient use by management of resources entrusted to them (earning a return)

‘**articulation**’ → Financial Statements constitute an ‘**integrated system**’

beginning stock

flows

ending stock



Reformulation

▪ Objectives:

- separate **operating** activities from **financing** activities
 - *Operations*: buying and selling goods and services
 - *Financing*: the company's use of debt and equity to finance its operations, as well as the company's investment in financial assets

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Why? industrial companies generate value from their operations, not from their financial activities

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- alter several accounting classifications
- for the Income Statement, separate revenues and expenses based on their driver (sales volume or other), and whether they are recurring or non-recurring
- for Statement of Cash Flows, separate operating from financing activities; determine free cash flows → operations-related cash flows split by operating versus investing; and separate equity and debt financing cash flows

Accounting Quality / Earnings Management

➤ definition: *earnings quality*

*a firm's reported earnings number is said to be of **high quality** if it accurately and reliably measures current economic value-added and is a good predictor of economic value likely to be added in the future*

➤ earnings management

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⇒ choices by management to influence earnings in a systematic direction

➤ mechanisms available to manage earnings:

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- *accounting-based* → selection and/or application of accounting principles
- *real activities management* → business strategy / operations

***** the identification of statements materially affected by earnings management activity is critical when deciding whether to rely on the Financial Statements as a basis for developing forecasts of the firm's future financial performance**

⇒ ongoing debate – ‘rules-based’ versus ‘principles-based’

rules-based

- ⇒ accounting standards prescribe in detail exactly how to account for various items and situations without providing discretion
 - more limited scope for earnings management type behaviour *BUT* also limited opportunity for management to use accounting policy choice as a means of communication

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principles-based

- ⇒ accounting standards provide guidance on how various items and situations should be accounted for, but also provide flexibility for management to exercise judgement within the spirit of the guidance
 - more opportunity for management to use accounting policy choice as a means of communication *BUT* also increased scope for earnings management type behaviour

→ debate about trade-offs between costs and benefits of allowing discretion

The 3 basic questions that frame the notion of “*power to detect*” are the following:

1. Where is it most “profitable” to look?

- under what set of circumstances is earnings management activity most likely to occur?
- which firms are the most suspicious (in the most suspicious circumstances)?
- what are management’s incentives? (earnings targets? contractual obligations? compensation?)
i.e., small positive earnings; small earnings increases; earnings volatility (smooth earnings)

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2. What should be examined?

- what should the search focus on? what “lever” is management most likely to utilize to accomplish the earnings management?
i.e., accounting (accruals); real activities

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3. How should the investigation be conducted? → technique(s)?

****** our focus – accounting statements (especially Income Statement) → accruals ******

e 18.2 – Diagnostics to Detect Manipulation of Operating Income

investigate the quality of sales revenue
investigate the quality of core expenses
investigate unusual items

note – much of the investigation will involve ratios (value of one account(s) relative to value of another account(s))

Step #1

To detect manipulated sales

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Net sales/Cash from sales

Net sales/Net accounts receivable

Net sales/Unearned revenue

Net sales/Warranty liabilities

Compare percentage change in sales to percentage change in net receivables, unearned revenue, and warranty liabilities

Bad debt and warranty expense ratios

Step #2

To detect manipulated core expenses

- Apply a normalized asset turnover
 - Normalized operating income/Operating income
- Investigate changes in ATO
 - Watch for declines in ATO
 - Investigate changes in individual ATOs
- Challenge depreciation and amortization
 - Adjusted ebitda
 - Depreciation/Capital expenditures
- Challenge all accruals
 - Cash from operations/Operating income
 - Cash from operations/NOA
 - Accruals/Change in sales
- Challenge expenses that are sensitive to estimates
 - Pension expense/SG&A
 - Other employment expense/SG&A
- Challenge tax expense
 - Effective tax rate on operating income
 - Deferred tax components
 - Valuation allowances
- Challenge the balance sheet
 - Carrying values above market value
 - Carrying values sensitive to estimates
 - Estimated liabilities
 - Off-balance-sheet liabilities
- Challenge other core income

Step #3

To detect manipulated unusual items

- Challenge restructuring charges
- Challenge merger charges

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PART 2 – Financial Statement Analysis (in general)

- intended to shed light on how well a company is doing in achieving its objectives
 - ✓ earning a satisfactory return on investment
 - ✓ maintaining a sound financial position i.e., owners want capital protected from more than normal amount of risk

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- structure of analysis – an examination of the relationships between items in the F/S
 - ⇒ in absolute terms
 - changes over a period of time
 - relative to other firms (in same industry)

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- three basic techniques for analysing the Financial Statements
 - ratio analysis
 - common-size financial statements
 - trend (indexed) financial statements

1) *Financial Ratios* → 5 basic categories of commonly used ratios (some overlap)

- a) **liquidity ratios** ⇒ access to cash to pay bills
- b) **leverage ratios** ⇒ dependency on debt financing & ability to make interest payments
- c) **profitability ratios** ⇒ earnings relative to sales, S/E, assets, etc.
- d) **activity ratios** ⇒ emphasis on productivity of assets
- e) **market ratios** ⇒ based on market value information (e.g., price-earnings (P/E), market-to book ratio (M/B))

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2) *Common Size Financial Statements* <https://powcoder.com>

- express accounts on the B/S as a % of total assets
 - express accounts on the I/S as a % of sales (total revenue)
- ⇒ can compare relative weights of various accounts across firms or with industry norm

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3) *Trend (Index) Analysis*

- establish a bench-mark year and set all accounts (or ratios) to 100 in that year
 - in subsequent years, express accounts relative to the base year
- ⇒ can identify relative (percentage) changes over time

Financial Ratios:

a) **liquidity ratios** \Rightarrow access to cash to pay bills

e.g., current ratio = CA/CL (*ignores quality and liquidity of assets)

quick ratio = $(CA - \text{inventory})/CL$

inventory turnover = $COGS/\text{inventory}$

receivables turnover = sales/AR

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notes: **liquidity** refers to company's ability to pay its current liabilities when due

solvency refers to company's ability to repay its long-term obligations as well
relates to idea of financial flexibility \Rightarrow company's ability to alter its capital
structure to take advantage of new investment opportunities or deal with
economic change

b) leverage ratios \Rightarrow dependency on debt financing & ability to make interest payments

e.g., debt to equity = $(CL + L-T \text{ debt}) / \text{shareholders' equity}$

times interest earned = $(PBT + \text{interest}) / \text{interest}$

c) profitability ratios \Rightarrow earnings relative to sales, S/E, assets, etc.

e.g., profit margin = NI / rev

ROA = $EBIT / \text{total assets}$ (or earnings after tax / total assets)

ROE = $NI / (S/E)$

d) activity ratios \Rightarrow emphasis on productivity of assets

e.g., inventory turnover

receivables turnover

asset turnover = $\text{sales} / (\text{tot assets})$

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Coles Income Statement		2020	2019
	Sales Revenue	37,408	38,176
	Other operating revenue	<u>376</u>	<u>288</u>
	Total operating revenue	37,784	38,464
	Cost of sales	<u>(28,043)</u>	<u>(29,253)</u>
	Gross Profit	9,741	9,211
	Other income	108	428
	Administrative expenses	<u>(8,081)</u>	<u>(8,031)</u>
	Other expenses	---	<u>(146)</u>
	Share – equity investments	<u>(6)</u>	<u>5</u>
	EBIT	1,762	1,467
	Financing costs	<u>(443)</u>	<u>(42)</u>
	PBT	1,319	1,425
	Income tax expense	<u>(341)</u>	<u>(347)</u>
	Profit from continuing operations	978	1,078
	Profit from discontinued operations (after tax)	---	357
	Profit (NPAT)	978	1,425
	OCI	(12)	(1)
	Total Comprehensive Income	966	1,434

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Coles Balance Sheet	2020	2019
Assets		
<i>Current Assets</i>		
cash & cash equivalents	992	940
receivables	434	360
inventories	2,166	1,965
income tax receivable	42	---
assets held for resale	75	94
other assets	<u>70</u>	<u>47</u>
<i>Total current assets</i>	3,779	3,406
<i>Non-current Assets</i>		
property, plant and equipment	4,127	4,119
right-of-use assets	7,660	---
intangible assets	1,597	1,541
deferred tax assets	849	365
equity accounted investments	217	212
other assets	<u>120</u>	<u>134</u>
<i>Total non-current assets</i>	14,570	6,371
Total Assets	18,349	9,777

Liabilities	2020	2019
<i>Current Liabilities</i>		
payables	3,737	3,380
provisions	861	743
lease liabilities	885	---
other	<u>198</u>	<u>168</u>
<i>Total Current Liabilities</i>	5,681	4,291
<i>Non-current Liabilities</i>		
interest-bearing liabilities	1,354	1,460
provisions	472	598
lease liabilities	8,198	---
other	<u>29</u>	<u>71</u>
<i>Total non-current liabilities</i>	10,053	2,129
Total Liabilities	15,734	6,420
Net Assets	2,615	3,357
Shareholders' Equity		
contributed equity	1,611	1,628
reserves	43	42
retained earnings	<u>961</u>	<u>1,687</u>
Total Equity	2,615	3,357

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Liquidity ratios	2020	2019
current ratio = CA / CL	0.665	0.794
quick ratio = (CA – inv) / CL	0.284	0.336
inventory turnover = COGS / inventory	12.947	14.887
days inventory = 365 / inventory turnover	29.192	24.518
receivables turnover = revenue / receivables	87.060	106.844
average collection period = 365 / receivables turnover	4.193	3.416
Leverage ratios		
debt-to-equity = total liabilities / total equity	6.017	1.912
debt-to-assets = total liabilities / total assets	0.857	0.657
times interest earned = EBIT / interest	3.977	34.929

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Profitability ratios	2020	2019
gross profit margin = gross profit / revenue	0.258	0.239
profit margin = NPAT / revenue	0.026	0.037
return on assets (ROA) = EBIT / total assets	0.096	0.150
return on equity (ROE) = NPAT / (S/E)	0.374	0.424
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Activity ratios		
inventory turnover = COGS / inventory	12.947	14.887
receivables turnover = revenue / receivables	87.060	106.844
asset turnover = revenue / total assets	2.059	3.934

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Notes:

- 2019 and 2020 figures for Coles are largely non-comparable because of the changed treatment of leases (AASB 16) – perhaps the more appropriate comparison is with Woolworth's 2020 figures, or against industry averages (but this assumes that they use the same accounting methods and format)
- the calculations above are based on year-end B/S figures. More typically, they are based on 'average' balances (i.e., the average of 2019 and 2020 reported figures **BUT** there is no 'right way' or 'wrong way' – it is important to understand how the calculations have been done)
to illustrate $\text{inv turn}_{2020} = \text{COGS}_{2020} / [(\text{inv}_{2019} + \text{inv}_{2020})/2] = 28,043 / [(2,166 + 1,965)/2] = 13.577 \text{ (vs 12.947)}$
- the profitability ratios have been based on NPAT rather than Comprehensive Income (CI), although the latter is likely more defensible
- more critically ('concerning'), the profitability ratios have been calculated based on the reported figures – in contrast, we have argued that 'reformulated' figures are more defensible and insightful

Ratios	Coles 2020	Woolies 2020
current ratio = CA / CL	0.665	0.616
quick ratio = (CA - inv) / CL	0.284	0.280
debt-to-equity = total liabilities / total equity	6.017	3.260
debt-to-assets = total liabilities / total assets	0.857	0.765
times interest earned = EBIT / interest	3.977	3.117
gross profit margin = gross profit / revenue	0.258	0.292
profit margin = NPAT / revenue	0.026	0.019
return on assets (ROA) = EBIT / total assets	0.096	0.068
return on equity (ROE) = NPAT / (S/E)	0.374	0.134
inventory turnover = COGS / inventory	12.947	10.173
days inventory = 365 / inventory turnover	29.192	35.881
receivables turnover = revenue / receivables	87.060	86.047
average collection period = 365 / receivables turnover	4.193	4.242
asset turnover = revenue / total assets	2.059	1.655

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Finally

while trend and common size statements are relatively uninformative given the changed treatment of leases through the adoption of AASB16, their construction is illustrated in the next set of slides

Common-size statement → all B/S items expressed as a % of total assets

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all I/S items expressed as a % of revenue

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Trend (indexed) statements → all B/S and I/S items expressed as a % of their values in a base year (to display trends / growth over time)

Common-size Income Statement	W - 2020	C - 2020	C - 2019
Sales Revenue	---	0.990	0.993
Other operating revenue	---	0.010	0.009
Total operating revenue	1	1	1
Cost of sales	0.708	0.742	0.761
Gross Profit	0.292	0.258	0.239
Other income	0.003	0.003	0.011
Administrative & Other expenses	0.253	0.214	0.213
EBIT	0.041	0.047	0.038
Financing costs	0.013	0.012	0.001
PBT	0.028	0.035	0.037
Income tax expense	0.009	0.009	0.009
Profit from continuing operations	0.019	0.026	0.028
Profit from discontinued operations (after tax)	---	---	0.009
Profit (NPAT)	0.019	0.026	0.037
Total Comprehensive Income	0.018	0.026	0.037

Common-size Balance Sheet	W - 2020	C - 2020	C - 2019
<i>Current Assets</i>			
cash & cash equivalents	0.054	0.054	0.096
receivables	0.019	0.024	0.037
inventories	0.115	0.118	0.201
income tax receivable	---	0.002	---
assets held for resale	0.009	0.004	0.010
other assets	0.014	0.004	0.005
<i>Total current assets</i>	0.211	0.206	0.348
<i>Non-current Assets</i>			
property, plant and equipment	0.227	0.225	0.421
right-of-use (lease) assets	0.314	0.417	---
intangible assets	0.201	0.087	0.158
deferred tax assets	0.034	0.046	0.037
equity accounted investments	0.004	0.012	0.022
other assets	0.005	0.007	0.014
<i>Total non-current assets</i>	0.789	0.794	0.652
Total Assets	1	1	1

Common-size Balance Sheet	W - 2020	C - 2020	C - 2019
<i>Current Liabilities</i>			
payables	0.195	0.204	0.346
provisions	0.049	0.047	0.076
lease liabilities	0.039	0.048	---
other	0.058	0.011	0.017
<i>Total Current Liabilities</i>	0.343	0.310	0.439
<i>Non-current Liabilities</i>			
interest-bearing liabilities	0.050	0.074	0.149
provisions	0.024	0.026	0.061
lease liabilities	0.342	0.447	---
other	0.007	0.002	0.007
<i>Total non-current liabilities</i>	0.422	0.548	0.218
Total Liabilities	0.765	0.857	0.657
Shareholders' Equity			
contributed equity	0.157	0.088	0.167
reserves	0.010	0.002	0.004
retained earnings	0.061	0.052	0.173
Total Equity	0.235	0.143	0.343

Trend (Indexed) Income Statement	C - 2020	C - 2019
Sales Revenue	0.980	1
Other operating revenue	1.306	1
Total operating revenue	0.982	1
Cost of sales	0.959	1
Gross Profit	1.058	1
Other income	0.252	1
Administrative & Other expenses	0.988	1
EBIT	1.201	1
Financing costs	10.548	1
PBT	0.926	1
Income tax expense	0.983	1
Profit from continuing operations	0.907	1
Profit (NPAT)	0.686	1
Total Comprehensive Income	0.674	1

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Common-size Balance Sheet	C - 2020		C - 2020
<i>Current Assets</i>		<i>Current Liabilities</i>	
cash & cash equivalents	1.055	payables	1.106
receivables	1.206	provisions	1.159
inventories	1.102	lease liabilities	---
income tax receivable	---	other	1.179
assets held for resale	0.798	<i>Total Current Liabilities</i>	1.324
other assets	1.489	<i>Non-current Liabilities</i>	
<i>Total current assets</i>	1.110	interest-bearing liabilities	0.927
<i>Non-current Assets</i>		provisions	0.789
property, plant and equipment	1.002	lease liabilities	---
right-of-use (lease) assets	---	other	0.408
intangible assets	1.036	<i>Total non-current liabilities</i>	4.722
deferred tax assets	2.326	Total Liabilities	2.451
equity accounted investments	1.024	Shareholders' Equity	
other assets	0.896	contributed equity	0.990
<i>Total non-current assets</i>	2.287	reserves	1.024
Total Assets	1.877	retained earnings	0.570
		Total Equity	0.779

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PART 3 – Reformulated F/S & Profitability

▪ Objectives of 'Reformulation':

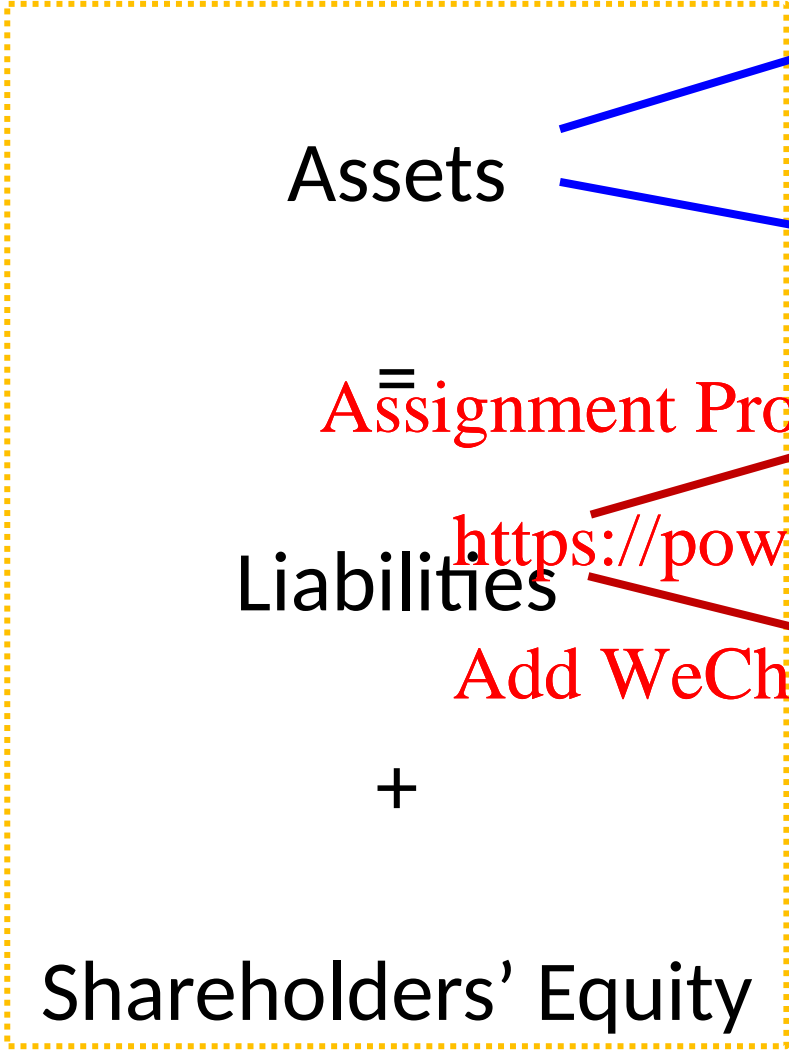
- separate **operating** activities from **financing** activities
- alter several accounting classifications (largely around equity)
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- for Statement of Cash Flows, separate operating from financing activities; determine free cash flows → operations-related cash flows split by operating versus investing; and separate equity and debt financing cash flows

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accounting
equation



Assets

Operating Assets (OA)

Financial Assets (FA)

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Liabilities

Operating Liabilities (OL)

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Financial Obligations (FL)

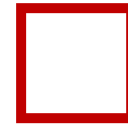
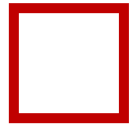
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Shareholders' Equity

AASB / IFRS Balance Sheet

Assets		Liabilities & Equity	
Operating Assets	OA	Operating Liabilities	OL
Financial Assets	FA	Financial Obligations	FO
		Shareholders' Equity	S/E
Total Assets	OA + FA	Total Claims	OL + FO + S/E

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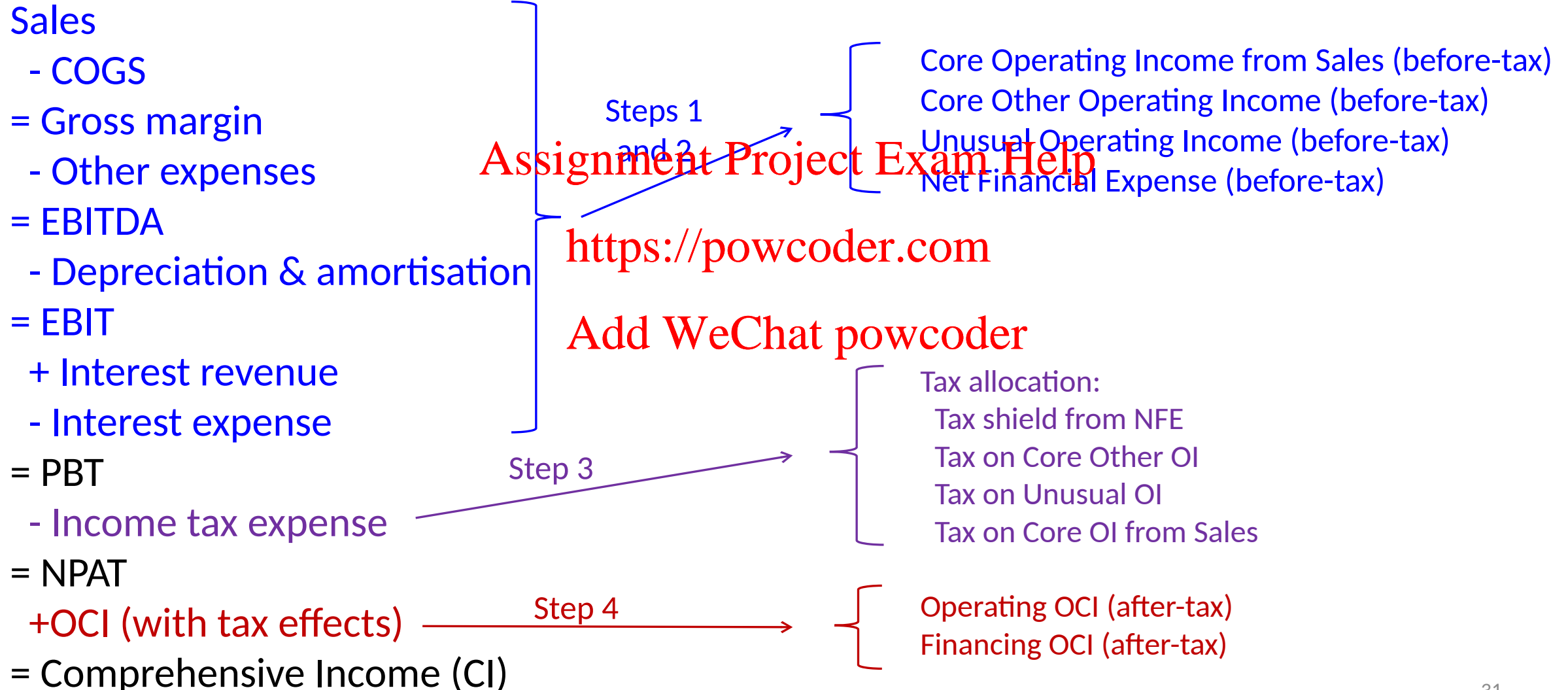
Reformulated Balance Sheet

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Net Operating Assets		Financial Obligations & Shareholder's Equity	
Operating Assets	OA	Financial Obligations	FO
Operating Liabilities	OL	Financial Assets	(FA)
		Net Financial Obligations	NFO
		Shareholders' Equity	S/E
Total	OA - OL	Total	NFO + S/E

AASB/IFRS Income Statement & Statement of Comprehensive Income

Reformulated Income Statement



Reformulated Statement of Cash Flows

Adjusted Cash flow from operations

C

Adjusted Cash investment in operating assets

I

Free Cash Flow (FCF)

$C + I$

Generation of FCF
from operating
activities

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Equity financing flows

dividends & share repurchases

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share issuances

(XX)

E

Debt financing flows

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net purchase of financial assets

(XX)

interest on financial assets (after tax)

XX

net issue of debt

XX

interest on debt (after tax)

(XX)

F

Total Financing cash flows

$E + F$

'Uses' of FCF in
financing activities

Reformulated Statement of Changes in Shareholders' Equity

Beginning Book Value of Common Equity

BV_{t-1}

+ Net effect of Transactions with Common Shareholders

+ capital contributions (share issues)

– share repurchases

– cash dividends to common shareholders

= Net cash contributions

+ Effect of operations and non-equity financing

+ Net Income (from the I/S)

+ Other Comprehensive Income (OCI)

– preferred share dividends

= Comprehensive income available to common shareholders

Ending Book Value of Common Equity

BV_t

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Penman - E10.6 & E12.3

- Prepare a reformulated B/S and I/S
- Calculate FCF for 2012
- Calculate operating profit margin, asset turnover, and return on NOA for 2012
- Calculate individual asset turnovers and show that they aggregate to the total asset turnover
- Show that the financing leverage equation holds:
$$ROCE = RNOA + (FLEV \times \text{operating spread})$$
- Calculate the after-tax net borrowing cost. If this borrowing cost were to be sustained in the future, what would the ROCE be if RNOA fell to 6% and FLEV decreased to 0.8?
- The implicit cost of credit on A/P and accrued liabilities is 3%. Show that the following leverage equation holds:
$$RNOA = ROOA + [OLLEV \times (ROOA - 3\%)]$$

The following financial statements were reported for a firm for fiscal year 2012 (in millions of dollars):

Balance Sheet					
	2012	2011		2012	2011
Operating cash	60	50	Accounts payable	1,200	1,040
Short-term investments (at market)	550	500	Accrued liabilities	390	450
Accounts receivable	940	790	Long-term debt	1,840	1,970
Inventory	910	840	Common equity	1,870	1,430
Property and plant	2,840	2,710			
	<u>5,300</u>	<u>4,890</u>		<u>5,300</u>	<u>4,890</u>

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Statement of Shareholders' Equity	
Balance, end of fiscal year 2011	1,430
Share issues	822
Repurchase of 24 million shares	(720)
Cash dividend	(180)
Unrealized gain on debt investments	50
Net income	468
Balance, end of fiscal year 2012	1,870

The firm's income tax rate is 35%. The firm reported \$15 million in interest income and \$98 million in interest expense for 2012. Sales revenue was \$3,726 million.

a) Reformulated Balance Sheet

$$S/E = NOA - NFO$$

Net Operating Assets (NOA)	2012	2011	Net Financial Obligations (NFO)	2012	2011
Operating Assets (OA)			Financial Assets (FA)		
operating cash	60	50	short-term investments	550	500
accounts receivable	940	790			
inventory	710	840	Financial Obligations (FO)		
property & plant	<u>2,840</u>	<u>2,710</u>	long-term debt	<u>1,840</u>	<u>1,970</u>
Total Operating Assets	4,750	4,390			
Operating Liabilities (OL)			Net Financial Obligations (NFO)	1,290	1,470
accounts payable	1,200	1,040			
accrued liabilities	<u>390</u>	<u>450</u>	Shareholders' Equity (S/E)	1,870	1,430
Total Operating Liabilities	1,590	1,490			
Net Operating Assets (NOA)	3,160	2,900			

Reformulated Statement of S/E

Beginning S/E (BV_{t-1})	1,430
Net transactions with Shareholders	
share issues	822
share repurchases	(720)
dividends	(180)
	(78)
Comprehensive Income	
NPAT	468
OCI	<u>50</u>
Comprehensive Income (CI)	518
Ending S/E (BV_t)	1,870

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Reformulated Income Statement (to extent possible)

① AASB I/S NPAT ± OCI = CI

from Statement of Shareholders' Equity

Net Income (NPAT)	468
Other Comprehensive Income (OCI) (unrealized gain on debt investment)	<u>50</u>
Comprehensive Income (CI)	518

② Core Net Financing Expenses

from additional information

interest income	15
interest expense	98
net core NFE (before tax)	(83)
tax shield = 83 @ 35%	<u>29</u>
Core NFE (after tax)	(54)

③ Reformulated I/S OI - NFE = CI

from ① & ② above

Operating Income (after tax)	???
Net Financial Expenses (after tax)	
core NFE	(54)
financial OCI (unrealized gain)	<u>50</u>
Comprehensive Income (CI)	518

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→ $OI - 4 = 518 \Rightarrow OI = 522$

Reformulated Income Statement (to extent possible)

Sales	3,726	
Operating Expenses	?	
Operating Income (before tax)	?	
Core NFE (before tax)		
interest expense	(98)	
interest income	<u>15</u>	<u>83</u>
Tax Allocation (split)		
income tax expense	?	
tax shield (83 @ 0.35)	<u>29</u>	
tax on operating income	?	
Operating Income (after tax)	522	
Core NFE (after tax)	(54)	
NPAT	468	
Financing OCI (after tax)	50	
Comprehensive Income (CI)	518	

b) Free Cash Flow (FCF)

(Slide 56, Session #7)

$$\begin{aligned}\text{FCF} &= \text{OI (after tax)} - \Delta \text{NOA} \\ &= 522 - (3,160 - 2,900) \\ &= 262\end{aligned}$$

$$\begin{aligned}\text{or } \text{FCF} &= \text{NFE} - \Delta \text{NFO} + E \\ &= 4 - (1,290 - 1,470) + 78 \\ &= 262\end{aligned}$$

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** based on reformulated statements !!

c)

$$\text{profit margin} = \text{OI} / \text{Sales} = 522 / 3,726 = 0.1401 \rightarrow 14.01\%$$

$$\text{asset turnover} = \text{Sales} / \text{average NOA} = 3,726 / [(3,160 + 2,900)/2] = 1.2297$$

$$\text{RNOA} = \text{OI} / \text{average NOA} = 522 / [(3,160 + 2,900)/2] = 0.1723 \rightarrow 17.23\%$$

note: $\text{RNOA} = \text{profit margin} \times \text{asset turnover}$

$$= 0.1401 \times 1.2297 = 0.1723$$

d) Further disaggregation of 'total asset turnover'

$$\text{NOA} = \{\text{operating cash} + \text{receivables} + \text{inventory} + \text{property \& plant}\} \\ - [\text{accounts payable} + \text{accrued liabilities}]$$

asset turnover = \Rightarrow **Assignment Project Exam Help**

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$\Rightarrow + + + - -$

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$$= + + + - - = 0.8132$$

\Rightarrow asset turnover =

e) 'financial leverage equation'

return on NOA *less* cost of financing



$$\text{ROCE} = \text{RNOA} + (\text{FLEV} \times \text{operating spread}) = \text{RNOA} + \text{FLEV} \times (\text{RNOA} - \text{NBC})$$

$$\text{ROCE} = \quad = \quad = 0.3139 \quad \rightarrow \quad 31.39\%$$

$$\text{RNOA} = 0.1723 \quad \rightarrow \quad 17.23\%$$

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$$\text{FLEV} = 0.8364$$

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$$\text{net borrowing cost (NBC)} = 0.0029$$

$$\Rightarrow \text{ROCE} = 0.1723 + 0.8364(0.1723 - 0.0029) = 0.3139$$

f) modified

given $RNOA = 6\%$ $FLEV = 0.80$

net borrowing cost (NBC) = 0.0029

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$$\Rightarrow ROCE = 0.0600 + 0.80(0.0600 - 0.0029) = 0.1057 \rightarrow 10.57\%$$

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g) 'operating liability leverage equation' $RNOA = ROOA + [OLLEV \times (ROOA - 3\%)]$

$$RNOA = 0.1723$$

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$$\text{implicit interest} = 0.03 \times \text{average OL} = 0.03[(1,590 + 1,490)/2] = 46.2$$

$$ROOA = 0.1243$$

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$$\text{operating liability leverage (OLLEV)} = 0.5083$$

$$\Rightarrow RNOA = 0.1243 + 0.5083(0.1243 - 0.03) = 0.1723 \rightarrow 17.23\%$$

PART 4 – ‘Conceptual Foundation’

So why does this all “work”? \Rightarrow ‘conceptual foundation’

ROCE = =

\Rightarrow return on S/E after removing implications of debt financing

\rightarrow **levered** measure of profitability
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RNOA = = profit margin asset turnover

\Rightarrow return on net operating assets before considering sources of financing

\rightarrow **unlevered** measure of profitability

→ at this stage, the difference between ROCE and RNOA appears to simply be whether consideration is given to (an adjustment made for) the implications of debt financing

net borrowing cost (NBC) = \Rightarrow “borrowing rate” for financing NOA

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FLEV = \Rightarrow measure of financial leverage (essentially a debt-to-equity ratio)

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now consider the following algebraic manipulation of the ROCE formula, starting with

ROCE = =

ROCE = =

=

=

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= + {

⇒ ROCE = RNOA + FLEV { RNOA NBC}

In summary

ROCE is the return to the common shareholder after making the required payments to debtholders (interest expense)

RNOA is the return on the company's operations (before separating that required to satisfy debtholders and the remainder available to shareholders)

RNOA – NBC (i.e., the *spread*) is difference between the return the company can earn on its operations and its cost of borrowing

⇒ if *spread* > 0, the company can increase its ROCE from increasing FLEV

→ for a profitable company, the extent of FLEV explains the difference between ROCE and RNOA, with **ROCE > RNOA**

For **Coles** (from Session #7 after adjusting for the implications of AASB16, leases, in 2019)

Reformulated I/S 2020 OI = 1,288.1
 NFE = 322.1
 CI = 966

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Reformulated (and adjusted) B/S		https://powcoder.com		
		2020	2019	→ ave
NOA		12,205	13,102	12,653.5
NFO		9,590	10,576	10,083.0
S/E		2,615	2,526	2,570.5

$$\text{ROCE} = 0.3758$$

$$\text{RNOA} = 0.1018$$

$$\text{FLEV} = 3.9226$$

$$\text{NBC} = 319 \rightarrow \text{spread} = (0.1018 - 0.0319) = 0.0699$$

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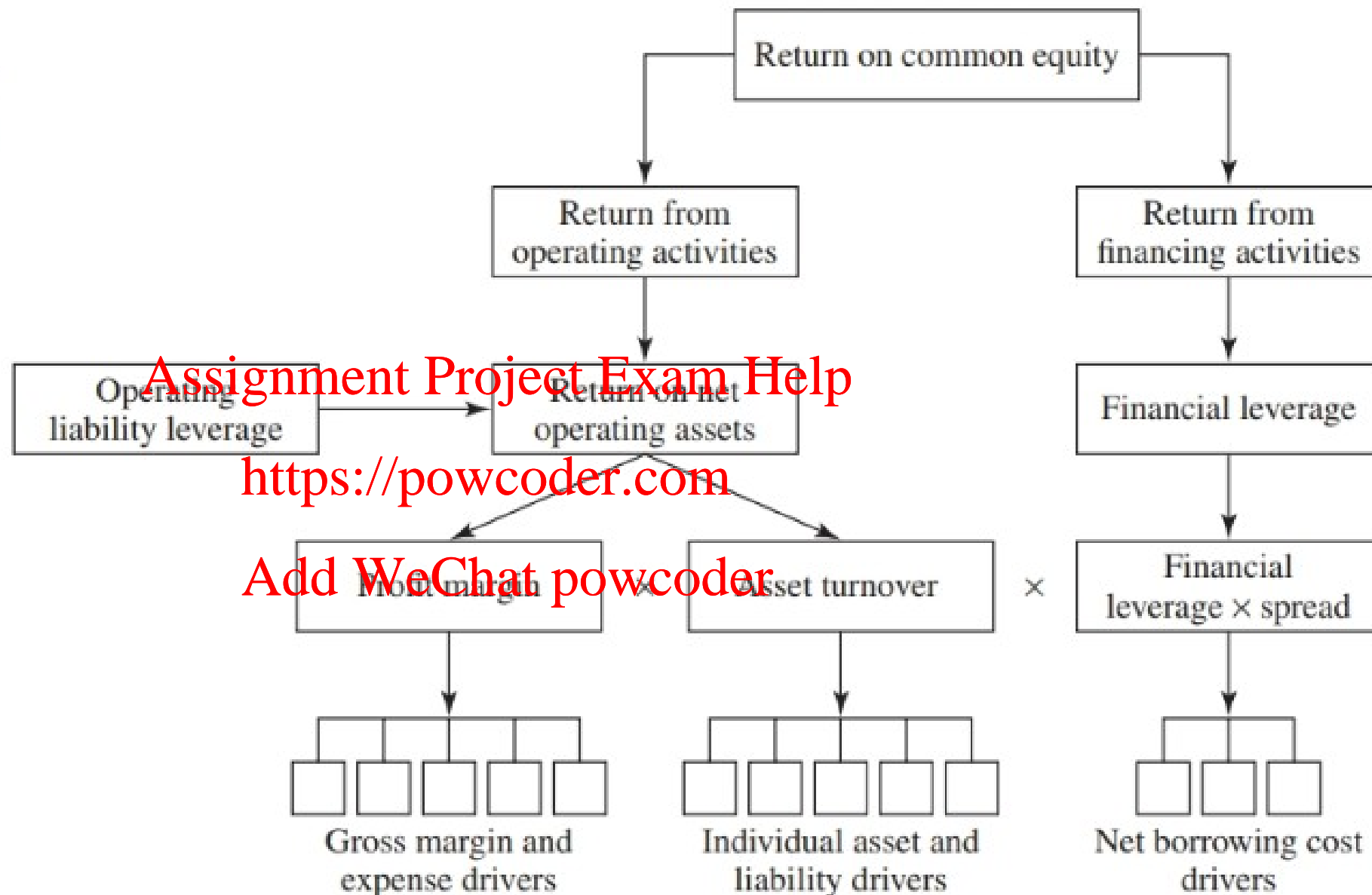
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$$\text{ROCE} = \text{RNOA} + \text{FLEV} \{ \text{RNOA} - \text{NBC} \}$$

$$= 0.1018 + 3.9226 \{ 0.1019 - 0.0319 \} = 0.3758$$

FIGURE 12.1 The Analysis of Profitability

The breakdown of return on common equity (ROCE) into its drivers.



$$\text{ROCE} = \text{RNOA} + \text{FLEV} \{ \text{RNOA} \text{ NBC} \}$$

'first-level' break down of ROCE

asset turnover

given

RNOA = = profit margin

$$\text{ROCE} = \{ \text{profit margin} \downarrow \text{asset turnover} \} + \{ \text{FLEV} \downarrow \text{spread} \}$$

'second-level' break down of ROCE

operations

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financing

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Clearly there are number of ways in which each of Ol, profit margin, asset turnover, and leverage can be further broken down – there further breakdowns provide additional insights into how / why each of these measures or ratios have changed

We will consider some possible further dis-aggregations in Session #10

PART 5 – Penman: E10.10 & E12.9

E12.9. Financial Statement Reformulation and Profitability Analysis for Starbucks Corporation (Medium)

Refer to the financial statements for Starbucks, the coffee vendor, in Exercise E10.10 in Chapter 10. Be sure to read the notes under the financial statements.

- Prepare a reformulated income statement for fiscal year 2007 and reformulated balance sheets for 2007 and 2006 in a way that distinguishes operating and financing activities and identifies taxes applicable to various components of income.
- For fiscal year 2007, calculate the following: return on common equity (ROCE), return on net operating assets (RNOA), and net borrowing cost (NBC). Use beginning-of-year balance sheet amounts in denominators.
- Calculate the financing leverage ratio (FLEV) at the beginning of the year and show that the following leverage equation for 2007 is satisfied:

$$\text{ROCE} = \text{RNOA} + [\text{FLEV} \times (\text{RNOA} - \text{NBC})]$$

- Calculate the operating profit margin ratio (PM) and the asset turnover (ATO). Also calculate the operating profit margin ratio from sales.
- Calculate the operating liability leverage ratio at the beginning of 2007.
- The firm's borrowing cost on its short-term commercial paper is 5.5 percent, or 3.6 percent after tax. Show how operating liability leverage levers up the return of net operating assets.

STARBUCKS CORPORATION
Consolidated Statements of Earnings
(in thousands of dollars, except earnings per share)

	Fiscal Year Ended	
	September 30, 2007	October 1, 2006
Net revenues:		
Company-operated retail	\$7,998,265	\$6,583,098
Specialty:		
Licensing	1,026,338	860,676
Food service and other	186,894	343,168
Total specialty	1,413,232	1,203,844
Total net revenues	9,411,497	7,786,942
Cost of sales including occupancy costs	3,999,124	3,178,791
Store operating expenses	3,215,889	2,687,815
Other operating expenses	294,136	253,724
Depreciation and amortization expenses	467,160	387,211
General and administrative expenses	489,249	479,386
Total operating expenses	8,465,558	6,986,927
Income from equity investees	108,006	93,937
Operating income	1,053,945	893,952
Net interest and other income	2,419	12,291
Earnings before income taxes	1,056,364	906,243
Income taxes	383,726	324,770
Earnings before cumulative effect of change in accounting principle	672,638	581,473
Cumulative effect of accounting change for FIN 47, net of taxes		17,214
Net earnings	\$ 672,638	\$ 564,259

Consolidated Balance Sheets
(in thousands of dollars, except share data)

	Fiscal Year Ended	
	September 30, 2007	October 1, 2006
Assets		
Current assets:		
Cash and cash equivalents	\$ 281,261	\$ 312,606
Short-term investments—available-for-sale securities	83,845	87,542
Short-term investments—trading securities	73,588	13,496
Accounts receivable, net	287,925	224,271
Inventories	691,658	636,222
Prepaid expenses and other current assets	148,757	26,874
Deferred income taxes, net	129,453	88,777
Total current assets	1,696,487	1,529,788
Long-term investments—available-for-sale securities	21,022	5,811
Equity and other investments	258,846	219,093
Property, plant, and equipment, net	2,890,433	2,287,899
Other assets	219,422	186,917
Other intangible assets	42,043	37,955
Goodwill	215,625	161,478
Total Assets	\$5,343,878	\$4,428,941

Liabilities and Shareholders' Equity

Current liabilities:		
Commercial paper and short-term borrowings	\$ 710,248	\$ 700,000
Accounts payable	390,836	340,937
Accrued compensation and related costs	332,331	288,963
Accrued occupancy costs	74,591	54,868
Accrued taxes	92,516	94,010
Other accrued expenses	257,369	224,154
Deferred revenue	296,900	231,926
Current portion of long-term debt	775	762
Total current liabilities	2,155,566	1,935,620
Long-term debt	550,121	1,958
Other long-term liabilities	354,074	262,857
Total liabilities	3,059,761	2,200,435
Shareholders' equity:		
Common stock (\$0.001 par value)—authorized, 1,200,000,000 shares; issued and outstanding, 738,285,285 and 756,602,071 shares, respectively, (includes 3,420,448 common stock units in both periods)	738	756
Other additional paid-in-capital	39,393	39,393
Retained earnings	2,189,366	2,151,084
Accumulated other comprehensive income	54,620	37,273
Total shareholders' equity	2,284,117	2,228,506
Total liabilities and shareholders' equity	\$5,343,878	\$4,428,941

Consolidated Statements of Shareholders' Equity
(in thousands of dollars, except share data)

	Common Stock		Additional	Other	Additional	Retained	Accumulated	
	Shares	Amount	Paid-in		Paid-in	Earnings	Other	Total
			Capital		Capital		Comprehensive	
							Income/(Loss)	
Balance, October 1, 2006	<u>756,602,071</u>	<u>\$756</u>	<u>\$</u>		<u>\$39,393</u>	<u>\$2,151,084</u>	<u>\$37,273</u>	<u>\$2,228,506</u>
Net earnings						672,638		672,638
Unrealized holding loss, net							(20,380)	(20,380)
Translation adjustment, net of tax							37,727	37,727
Comprehensive income								<u>689,985</u>
Stock-based compensation expense					106,373			106,373
Exercise of stock options, including tax benefit of \$95,276	12,744,226	13	225,233					225,246
Sale of common stock, including tax provision of \$139	1,908,407	2	46,826					46,828
Repurchase of common stock	<u>(32,969,419)</u>	<u>(33)</u>	<u>(378,432)</u>			<u>(634,356)</u>		<u>(1,012,821)</u>
Balance, September 30, 2007	<u><u>738,285,285</u></u>	<u><u>\$738</u></u>	<u><u>\$ 0</u></u>		<u><u>\$39,393</u></u>	<u><u>\$2,189,366</u></u>	<u><u>\$54,620</u></u>	<u><u>\$2,284,117</u></u>

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Notes:

1. Short-term and long-term investments, available for sale, are debt securities.
2. Short-term investments listed as trading securities are investments in equity mutual funds as part of a defined contribution plan for employees. The corresponding deferred compensation liability (\$86,400 thousand in 2007) is included in accrued compensation and related costs.
3. \$40,000 thousand of cash and cash equivalents in both 2007 and 2006 is working cash used in operations.
4. Net interest and other income in the 2007 income statement includes the following (in thousands of dollars):

Interest income	\$ 19,700
Interest expense	(38,200)
Realized gain on available-for-sale investments	3,800
Gain on assets sales	26,032
Other operating charges	(8,913)
	<u>\$ 2,419</u>

5. Income from equity investees is reported after tax.
6. The firm's combined state and federal statutory tax rate is 38.4 percent.
7. Unrealized holding losses in comprehensive income refer to losses on available-for-sale debt securities.

a) Reformulated Balance Sheet

Operating Assets (OA)	2007	2006	Operating Liabilities (OL)	2007	2006
Operating cash	40,000	40,000	Accounts payable	390,836	340,937
S-T invest - trading securities	73,588	53,496	Accrued compensation	332,331	288,963
Accounts receivable	287,925	224,271	Accrued occupancy costs	74,591	54,868
Inventories	691,658	636,222	Accrued taxes	92,516	94,010
Prepaid expenses/other CA	148,757	126,874	Other accrued expenses	257,369	224,154
DTA	129,453	88,777	Deferred revenue	296,900	231,926
Equity-accounted investments	258,846	219,093	Other long-term liabilities	354,074	262,857
property, plant & equipment	2,890,433	2,287,899	Total OL	1,798,617	1,497,715
Other assets	219,422	186,917			
Other intangible assets	42,043	37,955	Net Operating Assets (NOA)	3,199,133	2,565,267
Goodwill	<u>215,625</u>	<u>161,478</u>			
Total OA	4,997,750	4,062,982			

Reformulated Balance Sheet (cont)

Financial Assets (FA)	2007	2006	Shareholders' Equity (S/E)	2007	2006
financial cash	241,261	272,606	contributed capital	738	756
available for sale securities	<u>104,867</u>	<u>93,353</u>	other paid-in capital	39,393	39,393
	346,128	365,959	retained earnings (R/E)	2,189,366	2,151,084
			accumulated OCI	54,620	37,273
Financial Obligations (FO)			Total S/E	2,284,117	2,228,506
commercial paper	710,248	700,000			
long-term debt	<u>550,896</u>	<u>2,720</u>	Total NFO + S/E = NOA	3,199,133	2,565,267
	1,261,144	702,700			
Net Financial Obligation (NFO)	915,016	336,761			

Reformulated Income Statement ① before tax

Core OI from Sales (before tax)		Unusual OI (before tax)	
revenue	9,411,497	gain on asset sales	<u>26,032</u>
COGS	(3,999,124)		
Gross Margin	5,412,373	Total OI before tax	1,138,392
Other Operating Expenses			
store operating expenses	(3,215,889)	Net Financial Expense (NFE) (before tax)	
other operating expenses	(294,136)	interest income	19,700
depreciation & amortisation expense	(467,160)	interest expense	(38,200)
general & administrative expense	(489,249)	realised gain on avail-for-sale investment	<u>3,800</u>
Core OI from Sales (before tax)	945,939	NFE (before tax)	(14,700)
Core Other OI (before tax)			
profit equity-accounted investments	175,334	Profit Before Tax (PBT)	1,123,692
other operating charges	(8,913)		
Core Other OI (before tax)	166,421		

Reformulated Income Statement ② tax allocation

Core OI from Sales (before tax)	945,939
Core Other OI (before tax)	166,421
Unusual OI (before tax)	<u>26,032</u>
Total OI (before tax)	1,138,392
NFE (before tax)	(14,700)
Profit Before Tax (PBT)	1,123,692

Tax to be allocated	
reported tax expense	383,726
tax on equity-accounted investments**	<u>67,328</u>
Total	451,054
** 2007 I/S income from equity investees = 108,006 after tax (note 5) → before tax amount = $108,006 / (1 - 0.384) = 175,334$ → tax = $175,334 - 108,006 = 67,328$	

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Tax Allocation (456,699 in total)	
NFE (14,700 @ 0.384)	5,645
Tax on Unusual OI (26,032 @ 0.384)	9,996
Tax on Core Other OI (166,421 @ 0.384)	63,906
Tax on Core OI from Sales (balance) = $451,054 + 5,645 - 9,996 - 63,906$	382,797

Reformulated Income Statement ③ after tax amount

After-tax Amounts	
Core OI from Sales (after tax) = $945,939 - 382,797$	563,142
Core Other OI (after tax) = $166,421 - 63,906$	102,515
Unusual OI (after tax) = $26,032 - 9,996$	16,036
NFE (after tax) = $(14,700) + 5,645$	<u>(9,055)</u>
Net Profit After Tax (NPAT)	672,638
Other Comprehensive Income (OCI)	
Operating OCI (after tax)	
translation adjustment	37,727
Financing OCI (after tax)	
unrealised holding loss	(20,380)

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Reformulated Income Statement ④ final form

Operating Income (after tax)	
Core OI from Sales (after tax)	563,142
Core Other OI (after tax)	102,515
Unusual OI (after tax)	<u>16,036</u>
	681,693
Operating OCI (after tax)	<u>37,727</u>
Total Operating Income (OI) (after tax)	719,420
Net Financing Expenses	
NFE (after tax)	(9,055)
Financing OCI (after tax)	<u>(20,380)</u>
Total Financing Expenses	(29,435)
Comprehensive Income	689,985

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b) $ROCE = \frac{RNOA + FLEV \times (RNOA - NBC)}{RNOA + FLEV} = 0.3096 \rightarrow 30.96\%$

$RNOA = 0.2805 \rightarrow 28.05\%$

$\text{net borrowing cost (NBC)} = 0.0874$

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c) $FLEV = 0.1511$

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$ROCE = RNOA + (FLEV \times \text{operating spread}) = RNOA + FLEV \times (RNOA - NBC)$

$\Rightarrow ROCE = 0.2805 + 0.1511(0.2805 - 0.0874) = 0.3097$

(difference due to rounding to 4 decimal places only)

d) profit margin = = = 0.0764 → 7.64%

asset turnover = 3.6688

RNOA = = profit margin asset turnover

= 0.0764 3.6688 = 0.2803 (difference due to rounding to 4 decimal places only)

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profit margin from sales = 0.0598 → 5.98%

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e) $OLLEV = 0.5838$

f) Implicit interest on OL = 1,497,715 @ 0.036 = 53,918

ROOA = 0.1903

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$$RNOA = ROOA + (OLLEV \times OL \text{ spread}) = ROOA + OLLEV \times (ROOA - STBC)$$

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$$= 0.1903 + 0.5838 (0.1903 - 0.036) = 0.2804$$

PART 6 – Profitability & Leverage: Further Examples

financial leverage → use of debt financing with fixed 'interest' payments

$$\text{ROCE} = \text{RNOA} + \text{FLEV} \times (\text{RNOA} - \text{NBC})$$

operating spread

RNOA  ROCE

financial leverage


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operating leverage → use of operating liabilities (OL) to finance OA

$$\text{RNOA} = \text{ROOA} + \text{OLLEV} \times (\text{ROOA} - \text{STBC})$$

OL spread

ROOA  RNOA

operating leverage

→ leverage, both financial (FLEV) and operating (OLLEV), magnifies profit (& loss) available to the common shareholder

Example 9-1 (typical firm → profitable, RNOA > NBC)

Net operating assets (NOA)	28,000
Net financial obligations (NFO)	<u>15,000</u>
Shareholders' Equity (S/E)	13,000
Operating income (OI)	2,000
Net Financial Expense (NFE)	<u>(500)</u>
Comprehensive Income (CI)	1,500

$$\text{ROCE} = \frac{\text{CI}}{\text{S/E}} = 0.1154$$

$$\text{RNOA} = \frac{\text{OI}}{\text{NOA}} = 0.0714$$

$$\text{FLEV} = \frac{\text{NFO}}{\text{S/E}} = \text{NBC} = 0.0333$$

$$\text{ROCE} = \text{RNOA} + \text{FLEV} \times (\text{RNOA} - \text{NBC}) = 0.0714 + 1.1538(0.0714 - 0.0333) = 0.1154$$

→ use of debt financing (FLEV) magnifies ROCE relative to RNOA

Example 9-2 (loss firm A)

Net operating assets (NOA)	28,000
Net financial obligations (NFO)	<u>15,000</u>
Shareholders' Equity (S/E)	13,000
Operating income (OI)	(1,000)
Net Financial Expense (NFE)	(500)
Comprehensive Income (CI)	(1,500)

$$\text{ROCE} = \frac{\text{CI}}{\text{S/E}} = 0.1154$$

$$\text{RNOA} = \frac{\text{OI}}{\text{NOA}} = 0.0357$$

$$\text{FLEV} = \frac{\text{NFO}}{\text{S/E}} = 0.0333$$

$$\text{ROCE} = \text{RNOA} + \text{FLEV} \times (\text{RNOA} - \text{NBC}) = 0.0357 + 1.1538(0.0357 - 0.0333) =$$

→ use of debt financing (FLEV) magnifies negative loss to common shareholders

Example 9-3 ('loss firm' B)

Net operating assets (NOA)	28,000
Net financial obligations (NFO)	<u>15,000</u>
Shareholders' Equity (S/E)	13,000
Operating income (OI)	1,000
Net Financial Expense (NFE)	<u>(1,500)</u>
Comprehensive Income (CI)	(500)

$$\text{ROCE} = \frac{\text{OI}}{\text{S/E}} = 0.0385$$

$$\text{RNOA} = \frac{\text{OI}}{\text{NOA}} = 0.0357$$

$$\text{FLEV} = \frac{\text{NFO}}{\text{S/E}} = 0.1000$$

$$\text{ROCE} = \text{RNOA} + \text{FLEV} \times (\text{RNOA} - \text{NBC}) = 0.0357 + 1.1538(0.0357 - 0.1000) = 0.0385$$

→ use of debt financing (FLEV) can even drive ROCE down into a loss from a positive RNOA

Example 9-4 (borrowing cost > earnings return)

Net operating assets (NOA)	28,000
Net financial obligations (NFO)	<u>15,000</u>
Shareholders' Equity (S/E)	13,000
Operating income (OI)	2,000
Net Financial Expense (NFE)	<u>(1,500)</u>
Comprehensive Income (CI)	500

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$$\text{ROCE} = \frac{500}{13,000} = 0.0385$$

$$\text{RNOA} = \frac{2,000}{28,000} = 0.0714$$

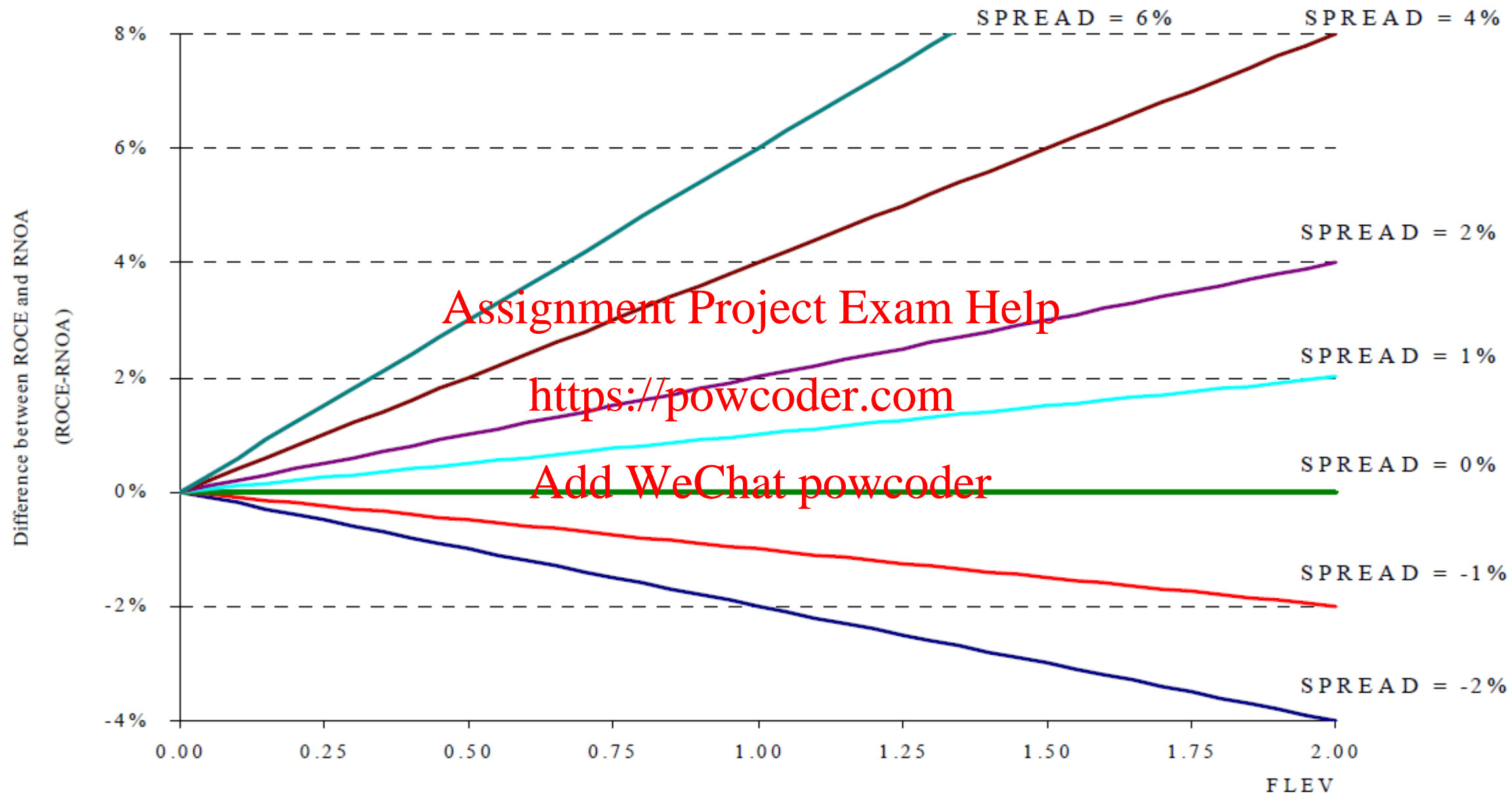
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$$\text{FLEV} = 1.1538$$

$$\text{NBC} = 0.1000$$

$$\text{ROCE} = \text{RNOA} + \text{FLEV} \times (\text{RNOA} - \text{NBC}) = 0.0714 + 1.1538(0.0714 - 0.1000) = 0.0384$$

→ NBC > RNOA means that the use of FLEV drives ROCE down relative to RNOA



$$ROCE = RNOA + [FLEV \times SPREAD]$$

Example 9-5 (net financial assets)

Net operating assets (NOA)	28,000	
Net financial obligations (NFO)	<u>-15,000</u>	<i>i.e., net financial assets (NFA)</i>
Shareholders' Equity (S/E)	43,000	
Operating income (OI)		2,000
Net Financial Income (NFI)	<u>500</u>	<i>i.e., not an expense (NFE)</i>
Comprehensive Income (CI)	2,500	

$$\text{ROCE} = \frac{2,500}{43,000} = 0.0581$$

$$\text{RNOA} = \frac{2,000}{28,000} = 0.0714$$

$$\text{FLEV} = \frac{-15,000}{43,000} = -0.3488$$

$$\text{RNFA} = \frac{-15,000}{43,000} = -0.3488$$

$$\text{ROCE} = \text{RNOA} + \text{FLEV} \times (\text{RNOA} - \text{RNFA}) = 0.0714 - 0.3488(0.0714 - 0.0333) = 0.0581$$

→ lower return on NFA (3.33% versus 7.14% on NOA) drives ROCE down relative to RNOA

$$ROCE = RNOA + FLEV \times (RNOA - NBC)$$

Summary –

- **if** profitable & $RNOA > NBC$ $ROCE > RNOA$ i.e., FLEV magnifies profit (*example #9-1*)
- **if** unprofitable $ROCE < RNOA$ i.e., FLEV magnifies (creates) loss (*examples #9-2 & #9-3*)
- **if** $NBC > RNOA$ $ROCE < RNOA$ i.e., FLEV hurts if cost of borrowing is higher than return on investment in NOA (*example #9-4*)
- **if** net financial assets (i.e., negative borrowing) $RCOE < RNOA$ since return on financial assets (NFA) is typically lower than RNOA (*example #9-5*)

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Example 9-6 (typical firm → profitable, ROOA > STBC)

Net operating assets (NOA)	28,000	OA = 40,000	OL = 12,000
Net financial obligations (NFO)	<u>15,000</u>	FA = 2,000	FO = 17,000
Shareholders' Equity (S/E)	13,000		
Operating income (OI)		2,000	
Net Financial Expense (NFE)		<u>(500)</u>	
Comprehensive Income (CI)		1,500	

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OLLEV = *assume* STBC = $0.07(1 - 0.3) = 0.049$
→ implicit interest on OL = $12,000 * 0.049 = 588$

ROOA = 0.0647

RNOA = ROOA + OLLEV(ROOA - STBC) = $0.0647 + 0.4286(0.0647 - 0.049) = 0.0714$

Example 9-7 (loss firm A)

Net operating assets (NOA)	28,000	OA = 40,000	OL = 12,000
Net financial obligations (NFO)	<u>15,000</u>	FA = 2,000	FO = 17,000
Shareholders' Equity (S/E)	13,000		
Operating income (OI)	(1,000)		
Net Financial Expense (NFE)	<u>(500)</u>		
Comprehensive Income (CI)	(1,500)		

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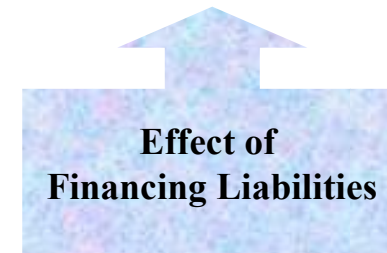
OLLEV = *assume* STBC = $0.07(1 - 0.3) = 0.049$
→ implicit interest on OL = $12,000 * 0.049 = 588$

ROOA = - 0.0103

RNOA = ROOA + OLLEV(ROOA - STBC) = $-0.0103 + 0.4286(-0.0103 - 0.049) = - 0.0357$

Summing Financial Leverage and Operating Liability Leverage Effects on ROCE

$$\text{ROCE} = \text{ROOA} + (\text{RNOA} - \text{ROOA}) + (\text{ROCE} - \text{RNOA})$$



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profitable firm (examples #9-1 & #9-6)

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$$0.1154 = 0.0647 + (0.0714 - 0.0647) + (0.1154 - 0.0714)$$

loss firm (examples #9-2 & #9-7)

$$-0.1154 = -0.0103 + (-0.0357 - 0.0103) + (-0.1154 - 0.0357)$$

PART 7 – Summary

overarching objective:

to conduct fundamental value for the purpose of estimating the ‘intrinsic value’ of a firm’s common shares

→ requires an understanding of the firm’s ‘value drivers’

→ need to accumulate a ‘tool kit’ as the basis for developing the *pro forma Financial Statements*

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STEP 1 Understanding the past

1. Information collection
2. Understanding the business
3. Accounting analysis
4. Financial ratio analysis
5. Cash flow analysis



STEP 2 Forecasting the future

1. Structured forecasting
2. Income Statement forecasts
3. Balance sheet forecasts
4. Cash flow forecasts



STEP 3 Valuation

1. Cost of capital
2. Valuation models – AE, FCF, D
3. Valuation ratios
4. Complications
 - a. Negative values
 - b. Value creation and destruction

external environment

- economic prospects
- macroeconomic factors
- socio-cultural forces
- political / regulatory

Analysis of Financial Statements

- understanding current F/S ✓
- re-formulating the F/S ✓
- accounting quality ✓
- ratio analysis ** Sessions #9 & #10

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Industry dynamics

→ Porter's five forces

(suppliers, buyers, new entrants, substitutes, rivalry)

- analysts' reports
- management forecasts
- financial press
- ???