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Basics
Assets = Debt(Liabilities) + Equity \qquad \Longleftrightarrow \quad A = D + E
Income = Revenue - Expenses
CashFlow(Assets) = CashFlow(Creditors) + CashFlow(Stockholders) \\ \cdots \\ \Leftrightarrow CF(A) = CF(B) + CF(S)
Operating Cashflow = (Net Income) + Depreciation + (\Delta NWC) ...... \iff OCF = EBIT + Depreciation - Taxes
Liquidity Ratios
Quick\ Ratio = (Current\ Assets\ -\ Inventory)/(Current\ Liabilities)\ \cdots \cdots \longleftrightarrow \ CR = (CA\ -\ Inv)/CL
Cash \ Ratio = Cash/(Current \ Liabilities) \\ \longleftrightarrow Cash/CL
Leverage Ratios
Total Debt Ratio = (Assets - Equity)/Assets ..... \iff TDR = (A - E)/A
Debt/Equity Ratio = Debt/Equity ..... \Leftrightarrow D/E
Coverage Ratios
Times Interest Earned = (Earnings Before Interest and Taxes)/Interst ...... 

TIE = EBIT/Interest
Cash\ Coverage = (EBIT + Depreciation + Amortization)/Interest
Ratio Analysis
Days' Sales in Inventory = 365/(Inventory\ Turnover) \iff DSI = 365/IT
Receivables Ratios
Receivables \ Turnover = Sales/(Accounts \ Receivable) \ \cdots \\ \Longleftrightarrow \ RT = S/AR
Days' Sales in Receivables = 365/(\text{Receivables Turnover}) \iff DSR = 365/\text{RT}
Total Asset Turnover = Sales/(Total Assets) \longleftrightarrow TAT = S/A
Profitability Ratios
Profit Margin = (Net Income)/Sales ····· \Leftrightarrow PM = NI/S
Return \ on \ Equity = (Net \ Income)/(Total \ Equity) \ \cdots \\ \iff ROE = NI/E
Market Value Measures
Earnings Per Share = (Net Income)/(Shares Outstanding) \iff EPS = NI/SO
 Price-to-Earnings \ Ratio = (Price \ per \ Share)/(Earnings \ per \ Share) \ \cdots \\  \longrightarrow \ PE \ Ratio = PPS/EPS 
Market Capitalization = (PPS) \cdot (Shares Outstanding)
Dividend Ratios
Dividend Payout Ratio = (Dividends Paid)/Net Income = d
Retention Ratio = 1 - (Dividends Paid)/Net Income \longleftrightarrow b = 1 - d
Du-Pont Identity
ROE = \frac{NI}{S} \cdot \frac{S}{A} \cdot \frac{A}{E} PM \cdot TAT \cdot EM
Pro Forma Income Statement for year n
(Projected) Sales<sub>n</sub> = Sales<sub>n-1</sub>·(1 + Growth Rate)
(Projected) (Cost of Goods Sold)<sub>n</sub> = (Cost of Goods Sold)<sub>n-1</sub> \cdot (1 + Growth Rate)
(Projected) (Taxable Income)<sub>n</sub> = Sales<sub>n</sub> - Costs<sub>n</sub> - Interest<sub>n</sub>
(Projected) Interest<sub>n</sub> = Interest<sub>n-1</sub> + (Interest Rate)·D
(Projected) Taxes_n = (Tax Rate) \cdot (Taxable Income)_n
(Projected) (Net Income)<sub>n</sub> = (Taxable Income<sub>n</sub>) - Taxes<sub>n</sub>
(Projected) Dividends<sub>n</sub> = (Net Income)<sub>n</sub>·(Dividend Payout Ratio)
(Projected) (Addition to Retained Earnings)<sub>n</sub> = (Net Income<sub>n</sub>) - Dividends<sub>n</sub> = (\DeltaRetained Earnings)
Pro Forma Balance Sheet for year n
(Projected) Cash_n = Cash_{n-1} \cdot (1 + Growth Rate)
(Projected) (Accounts Receivable)<sub>n</sub> = (Accounts Receivable)<sub>n-1</sub>·(1 + Growth Rate)
(Projected) Inventory<sub>n</sub> = Inventory<sub>n-1</sub>·(1 + Growth Rate)
(Projected) (Net Fixed Assets)<sub>n</sub> = (Net Fixed Assets)<sub>n-1</sub>·(1 + Growth Rate)
(Projected) (Accounts Payable)<sub>n</sub> = (Accounts Payable)<sub>n-1</sub>·(1 + Growth Rate)
(Projected) (Notes Payable)<sub>n</sub> = (Notes Payable)<sub>n-1</sub> + D
(Projected) (Long Term Debt)<sub>n</sub> = (Long Term Debt)<sub>n-1</sub> + D
(Projected) (Stock)_n = (Stock)_{n-1} - (Buy Backs)
(Projected) (Retained Earnings)<sub>n</sub> = (Retained Earnings)<sub>n-1</sub> + \DeltaRetained Earnings
Solve for D by setting Total Assets = Total Liabilities
The example in the pro forma worksheet said to assume that NWC stays the same
External Financing Needed (EFN)
EFN = (Projected Total Assets) - (Spontaneous \Delta Liabilities) - (\Delta Retained Earnings)
EFN > 0? "External financing needed": "Company has excess funds"
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A: Assets, D: Debt, E: Equity, NWC: Net Working Capital, R: Revenue

Growth Rate

Internal Groth Rate = $(ROA \cdot b)/(1 - ROA \cdot b) = IGR$ Sustainable Groth Rate = $(ROE \cdot b)/(1 - ROE \cdot b) = SGR$

Assuming a constant growth in Sales and COGS of 25% (i), $d = \frac{1}{3} (\implies b = \frac{2}{3})$, and a constant NWC (ii), we get:

Pro Forma Income Statement	2013	% of Sales	2014 (Projected)
Sales	1000	80%	$1000 \cdot 1.25 = 1250^*$
Costs	800	80%	$800 \cdot 1.25 = 1000^*$
Taxable Income	200	20%	$1250 - 1000 - 0 = 250^{\gamma}$
Taxes(34%)	68	6.8%	$0.34 \cdot 250 = 85^{\gamma}$
Net Income	132	13.2%	$250 - 85 = 165^{\gamma}$
Dividends	44	4.4%	$165 \cdot \frac{1}{3} = 55^{\gamma}$
Additions to Retained Earnings	88	8.8%	$165 - 55 = 110^{\gamma}$

Pro Forma Balance Sheet

Assets

	2013	% of	2014
		Sales	$(\mathbf{Projected})$
Current Assets			
Cash	160	16%	$160 \cdot 1.25 = 200^*$
Accounts Receivable	440	44%	$440 \cdot 1.25 = 550^*$
Inventory	600	60%	$600 \cdot 1.25 = 750^*$
Total Current Assets	1200	120%	$1200 \cdot 1.25 = 1500^*$
Net Fixed Assets	1800	180%	$1800 \cdot 1.25 = 2250^*$
Total Assets	3000	300%	$3000 \cdot 1.25 = 3750^*$

Liabilities

Liabilities				
	2013	% of	1^{st}	2014
		Sales	\mathbf{Step}	(Projected)
Current Liabilities				
Accounts Payable	300	30%	$300 \cdot 1.25 = 375^*$	$300 \cdot 1.25 = 375^*$
Notes Payable	100	n/a	100	325^{α}
Total Current Liabilities	1200	120%	1500	700^{α}
Long-Term Debt	800	n/a	800	1140^{β}
Owners' Equity				
Stock	800	n/a	800	800^{γ}
Retained Earnings	1000	n/a	1000 + 110 = 1110	$1000 + 110 = 1110^{\gamma}$
Total Liabilities and O.E.	3000	n/a	3185^{δ}	3750

^{*:} By (i), we have that (Growth Rate) = $0.25 \implies (*)_{2014} = *\cdot 1.25$.

Definitions and Et Cetera

Capital Budgeting: Evaluating and selecting long-term investments.

Capital Structure Mix of debt and equity to finance operations.

Net Working Capital: Reflects short-term financial health. NWC > 0? Usually good: Usually bad.

Internal Growth Rate: Maximum growth rate without EFN.

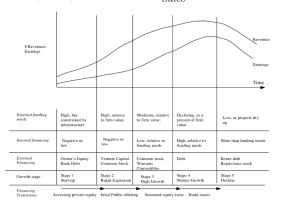
Sustainable Growth Rate: Maximum growth rate without EFN and maintaining a constant debt/equity ratio.

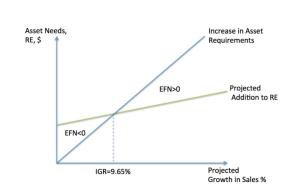
 $SGR < IGR \implies$ The company has some shit internal growth management. Change dividend policy, \uparrow efficiency, \uparrow profitability. No EFN.

SGR = IGR \implies The company is able to finance its growth solely through retained earnings and doesn't need EFN.

 $SGR > IGR \implies$ The company can grow faster than internal financing alone. We can use EFN.

 $EFN (again) = \frac{Assets - (Spontaneous Liabilities)}{Sales} \cdot \Delta Sales - ([Profit Margin] \cdot [Projected Sales]) \cdot (1 - d)$





 $[\]alpha$: By (ii), we get $1200 - 400 = 800 \implies 1500 - CL_{2014} = 800 \implies CL_{2014} = 700$ and (Notes Payable) = 700 - 375 = 325.

 $[\]beta$: We have that (Total Assets)₂₀₁₄ = 3750 \implies 3750 = $CL_{2014} + LTD_{2014} + OE_{2014} \implies LTD_{2014} = 3750 - 700 - 1910 = 1140$.

 $[\]gamma$: The rest of the entries in the table are filled out using the equations from **Pro Forma * for year** n.

 $[\]gamma$: 3185 \implies EFN = 3750 - 3185 = 565...