Exam 4 Formula Sheet

Long term debt ratio = \( \frac{\text{long term debt}}{\text{long term debt + equity}} \)

Long - term Debt equity ratio = \( \frac{\text{long term debt}}{\text{equity}} \)

Total debt ratio = \( \frac{\text{total liabilities}}{\text{total assets}} \)

Times interest earned = \( \frac{\text{EBIT}}{\text{interest payments}} \)

Cash coverage ratio = \( \frac{\text{EBIT} + \text{depreciation}}{\text{interest payments}} \)

Net working capital to total assets ratio = \( \frac{\text{Net working capital}}{\text{Total assets}} \)

Current ratio = \( \frac{\text{current assets}}{\text{current liabilities}} \)

Quick ratio = \( \frac{\text{cash + marketable securities + receivables}}{\text{current liabilities}} \)

Cash ratio = \( \frac{\text{cash + marketable securities}}{\text{current liabilities}} \)

Asset turnover ratio = \( \frac{\text{Sales}}{\text{Average total assets}} \)

NWC turnover = \( \frac{\text{sales}}{\text{average net working capital}} \)
Average collection period = \( \frac{\text{average receivables}}{\text{average daily sales}} \)

Inventory turnover ratio = \( \frac{\text{cost of goods sold}}{\text{average inventory}} \)

Days' sales in inventory = \( \frac{\text{average inventory}}{\text{cost of goods sold/365}} \)

Net profit margin = \( \frac{\text{net income}}{\text{sales}} \)

Operating profit margin = \( \frac{\text{net income} + \text{interest}}{\text{sales}} \)

Return on assets = \( \frac{\text{Net Income} + \text{Interest}}{\text{average total assets}} \)

Return on equity = \( \frac{\text{net income}}{\text{average equity}} \)

Payout ratio = \( \frac{\text{dividends}}{\text{earnings}} \)

Plowback ratio = \( \frac{\text{earnings} - \text{dividends}}{\text{earnings}} = 1 - \text{payout ratio} \)

Growth in equity from plowback = \( \frac{\text{earnings} - \text{dividends}}{\text{earnings}} \times \text{ROE} \)

\( \text{ROA} = \frac{\text{sales}}{\text{assets}} \times \frac{\text{Net Income} + \text{interest}}{\text{sales}} \)

\( \text{ROE} = \frac{\text{assets}}{\text{equity}} \times \frac{\text{sales}}{\text{assets}} \times \frac{\text{Net Income} + \text{interest}}{\text{sales}} \times \frac{\text{Net Income}}{\text{Net Income} + \text{interest}} \)
Required External Financing (or EFN) = Proj. Inc. in Net Assets - Proj Retained Earnings
= Net Assets x growth rate in sales - projected retained earnings

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\text{Internal growth rate} = \frac{\text{retained earnings}}{\text{assets}} = \frac{\text{retained earnings}}{\text{net income}} \times \frac{\text{net income}}{\text{equity}} \times \frac{\text{equity}}{\text{assets}}
\]

Sustainable growth rate = plowback ratio \times \text{ROE}

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r_{\text{assets}} = (r_{\text{debt}} \times \text{D/V}) + (r_{\text{equity}} \times \text{E/V})
\]

\[
r_{\text{equity}} = r_{\text{assets}} + \frac{\text{D}/\text{E}}{r_{\text{assets}} - r_{\text{debt}}}
\]

Value of levered firm = value of all-equity financed firm + PV of debt tax shield
= value of all-equity firm + [(D \times r_D \times T_C)/D]

\[
\text{WACC} = (1-T_C)r_{\text{debt}}(D/(D+E)) + r_{\text{equity}}(E/(D+E))
\]

Overall Market Value = value of all-equity firm + PV of debt tax shield – PV cost of financial distress