Book 3 – Financial Statement Analysis

FORMULAS

$$\text{free cash flow} = \text{operating cash flow} - \text{net capital expenditures}$$

$$\text{common-size income statement ratios} = \frac{\text{income statement account}}{\text{sales}}$$

$$\text{common-size balance-sheet ratios} = \frac{\text{balance sheet account}}{\text{total assets}}$$

$$\text{current ratio} = \frac{\text{current assets}}{\text{current liabilities}}$$

$$\text{quick ratio} = \frac{\text{cash} + \text{marketable securities} + \text{receivables}}{\text{current liabilities}}$$

$$\text{cash ratio} = \frac{\text{cash} + \text{marketable securities}}{\text{current liabilities}}$$

$$\text{receivables turnover} = \frac{\text{net annual sales}}{\text{average receivables}}$$

$$\text{average receivables collection period} = \frac{365}{\text{receivables turnover}}$$

$$\text{inventory turnover} = \frac{\text{cost of goods sold}}{\text{average inventory}}$$

$$\text{average inventory processing period} = \frac{365}{\text{inventory turnover}}$$

$$\text{payables turnover ratio} = \frac{\text{cost of goods sold}}{\text{average trade payables}}$$

$$\text{payables payment period} = \frac{365}{\text{payables turnover ratio}}$$

$$\begin{array}{c}\text{cash}\\ \text{conversion}\\ \text{cycle}\end{array} = \left(\begin{array}{c}\text{average receivables}\\ \text{collection period}\end{array}\right) + \left(\begin{array}{c}\text{average inventory}\\ \text{processing period}\end{array}\right) - \left(\begin{array}{c}\text{payables payment}\\ \text{period}\end{array}\right)$$

$$\text{total asset turnover} = \frac{\text{net sales}}{\text{average total net assets}}$$

Formulas

$$\text{fixed asset turnover} = \frac{\text{net sales}}{\text{average net fixed assets}}$$

$$\text{equity turnover} = \frac{\text{net sales}}{\text{average equity}}$$

$$\text{gross profit margin} = \frac{\text{gross profit}}{\text{net sales}}$$

$$\text{operating profit margin} = \frac{\text{operating profit}}{\text{net sales}} = \frac{\text{EBIT}}{\text{net sales}}$$

$$\text{net profit margin} = \frac{\text{net income}}{\text{net sales}}$$

$$\text{return on total capital} = \frac{\text{net income + interest expense}}{\text{average total capital}}$$

$$\text{return on total equity} = \frac{\text{net income}}{\text{average total equity}}$$

$$\text{return on common equity} = \frac{\text{net income} - \text{preferred dividends}}{\text{average common equity}} = \frac{\text{net income available to common}}{\text{average common equity}}$$

$$\text{business risk} = \frac{\sigma \text{ of operating income}}{\text{mean operating income}} = \frac{\text{std. deviation of EBIT}}{\text{mean EBIT}}$$

$$\text{debt-to-equity ratio} = \frac{\text{total long-term debt}}{\text{total equity}} = \frac{\text{long-term liabilities} + \text{deferred taxes} + \left(\begin{array}{l}\text{present value of}\\ \text{lease obligations}\end{array}\right)}{\text{common} + \text{preferred equity}}$$

$$\text{long-term debt-to-total long-term capital} = \frac{\text{total long-term debt}}{\text{total long-term capital}}$$

$$\text{total debt ratio} = \frac{\text{current liabilities + total long-term debt}}{\text{total debt + total equity}}$$

$$\text{interest coverage} = \frac{\text{earnings before interest and taxes}}{\text{interest expense}}$$

$$\text{fixed financial cost ratio} = \frac{\text{EBIT + ELIE}}{\text{gross interest expense + ELIE}}$$

$$\text{cash flow coverage of fixed financial costs} = \frac{\text{CFO} + \text{interest expense} + \text{ELIE}}{\text{interest expense} + \text{ELIE}}$$

$$\text{cash flow to long-term debt} = \frac{\text{CFO}}{\text{BV of long-term debt} + \text{PV of operating leases}}$$

$$\left(\begin{array}{c}\text{cash flow to}\\ \text{total interest-bearing debt}\end{array}\right) = \frac{\text{CFO}}{\text{total long-term debt} + \text{current interest-bearing liabilites}}$$

$$\text{original DuPont equation: ROE} = \left(\begin{array}{c}\text{net profit}\\ \text{margin}\end{array}\right)\left(\begin{array}{c}\text{asset}\\ \text{turnover}\end{array}\right)\left(\begin{array}{c}\text{equity}\\ \text{multiplier}\end{array}\right)$$

$$\text{extended DuPont equation: ROE} = \left[\left(\frac{\text{EBIT}}{\text{sales}}\right)\left(\frac{\text{sales}}{\text{assets}}\right) - \left(\frac{\text{interest expense}}{\text{assets}}\right)\right]\left(\frac{\text{assets}}{\text{equity}}\right)(1-t)$$

$$\text{basic EPS} = \frac{\text{net income} - \text{preferred dividends}}{\text{weighted average number of common shares outstanding}}$$

$$\begin{array}{c}\text{diluted}\\ \text{EPS}\end{array} = \frac{\left[\text{net income} - \begin{array}{c}\text{preferred}\\ \text{dividends}\end{array}\right] + \left[\begin{array}{c}\text{convertible}\\ \text{preferred}\\ \text{dividends}\end{array}\right] + \left(\begin{array}{c}\text{convertible}\\ \text{debt}\\ \text{interest}\end{array}\right)(1-t)}{\left(\begin{array}{c}\text{weighted}\\ \text{average}\\ \text{shares}\end{array}\right) + \left(\begin{array}{c}\text{shares from}\\ \text{conversion of}\\ \text{conv. pfd. shares}\end{array}\right) + \left(\begin{array}{c}\text{shares from}\\ \text{conversion of}\\ \text{conv. debt}\end{array}\right) + \left(\begin{array}{c}\text{shares}\\ \text{issuable from}\\ \text{stock options}\end{array}\right)}$$

ending inventory = beginning inventory + purchases – COGS

current cost of inventory (FIFO) = LIFO inventory + LIFO reserve

$\text{COGS}_{\text{FIFO}} = \text{COGS}_{\text{LIFO}} - (\text{ending LIFO reserve} - \text{beginning LIFO reserve})$

$$\text{straight-line depreciation} = \frac{\text{cost} - \text{salvage value}}{\text{useful life}}$$

$$\text{DDB depreciation} = \left(\frac{2}{\text{useful life}}\right)(\text{cost} - \text{accumulated depreciation})$$

$$\text{sum of the years' digits: depreciation in year x} = \frac{(\text{original cost} - \text{salvage value}) \times (n - x + 1)}{\text{SYD}}$$

$$\text{where SYD} = \frac{n(n+1)}{2}$$

Formulas

$$\text{average age in years} = \frac{\text{accumulated depreciation}}{\text{depreciation expense}}$$

$$\text{average age as a percentage} = \frac{\text{accumulated depreciation}}{\text{ending gross investment}}$$

$$\text{average depreciable life} = \frac{\text{ending gross investment}}{\text{depreciation expense}}$$

$$\text{income tax expense} = \text{taxes payable} + \Delta\text{DTL} - \Delta\text{DTA}$$

$$\text{interest expense} = \begin{pmatrix}\text{the market rate}\\ \text{at issue}\end{pmatrix} \times \begin{pmatrix}\text{the balance sheet value}\\ \text{of the liability at}\\ \text{the beginning of the period}\end{pmatrix}$$

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Notes