Chapter 17

Financial Statement Analysis

Topics Covered

- Financial Ratios
- DuPont System
- Using Financial ratios
- Measuring Company Performance
- The Role of Financial Ratios

Financial Ratios

- Five types of financial ratios:
  1. **Leverage ratios** show how heavily the company is in debt
  2. **Liquidity ratios** measure how easily the firm can lay its hands on cash
  3. **Efficiency or turnover ratios** measure how productively the firm is using its assets
  4. **Profitability ratios** are used to measure the firm’s return on its investment
  5. **Market value ratios** are ratios with respect to stock market price

Leverage Ratios

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

$$\text{Debt equity ratio} = \frac{\text{long term debt}}{\text{equity}}$$

Leverage Ratios

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

$$\text{Times interest earned} = \frac{\text{EBIT}}{\text{interest payments}}$$

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

Liquidity Ratios

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

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

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

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

Efficiency Ratios

$$\text{Asset Turnover Ratio} = \frac{\text{Sales}}{\text{Average total assets}}$$

$$\text{Average Collection Period} = \frac{\text{average receivables}}{\text{average daily sales}}$$

$$\text{Inventory Turnover Ratio} = \frac{\text{cost of goods sold}}{\text{average inventory}}$$

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

Profitability Ratios

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

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

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

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

Profitability Ratios

$$\text{Payout ratio} = \frac{\text{dividends}}{\text{earnings}}$$

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

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

Market Value Ratios

$$\text{PE Ratio} = \frac{\text{stock price}}{\text{earnings per share}}$$

$$\text{Forecasted PE ratio} = \frac{P_0}{\text{avg EPS}_1} = \frac{\text{Div}_1}{\text{EPS}_1} \times \frac{1}{r - g}$$

$$\text{Dividend yield} = \frac{\text{dividend per share}}{\text{stock price}}$$

Market Value Ratios

$$\text{Price per share} = P_0 = \frac{Div_1}{r - g}$$

$$\text{Market to book ratio} = \frac{\text{stock price}}{\text{book value per share}}$$

$$\text{Tobins Q} = \frac{\text{market value of assets}}{\text{estimated replcement cost}}$$

The DuPont System

- A breakdown of ROE and ROA into component ratios

$$\text{ROA} = \frac{\text{Net Income} + \text{interest}}{\text{assets}}$$

$$\text{ROE} = \frac{\text{earnings available for common stock}}{\text{equity}}$$

The DuPont System

$$ROA = \frac{\text{sales}}{\text{assets}} \text{ x } \frac{\text{Net Income} + \text{interest}}{\text{sales}}$$

asset
turnover

Operating profit
margin

The DuPont System

$$ROE = \frac{\text{assets}}{\text{equity}} \times \frac{\text{sales}}{\text{assets}} \times \frac{\text{Net Income} + \text{interest}}{\text{sales}} \times \frac{\text{Net Income}}{\text{Net Income} + \text{interest}}$$

leverage ratio

asset turnover

Operating profit margin

debt burden

Using Financial Ratios

Financial ratios for selected industry groups, 4th quarter, 2001					
		All Manufacturing	Food	Retail Trade	Pharma
LT Debt ratio		0.48	0.55	0.46	0.46
Total debt ratio		0.61	0.67	0.62	0.63
NWC/Assets		0.06	0.08	0.15	0.02
Current ratio		1.22	1.3	1.48	1.06
Cash ratio		0.24	0.19	0.18	0.29
Asset turnover		0.88	1.44	2.29	0.72
Net profit margin		3.0%	1.9%	4.2%	22.7%
ROA		0.7%	0.7%	2.4%	4.1%
ROE		0.2%	0.2%	3.7%	7.6%

Using Financial Ratios

Financial ratios for selected industry groups, 4th quarter, 2001				
		All Manufacturing	Petroleum	Aerospace
LT Debt ratio		0.48	0.41	0.52
Total debt ratio		0.61	0.51	0.69
NWC/Assets		0.06	0.01	0.05
Current ratio		1.22	1.04	1.14
Cash ratio		0.24	0.21	0.05
Asset turnover		0.88	0.9	0.98
Net profit margin		3.0%	1.5%	2.5%
ROA		0.7%	0.3%	0.6%
ROE		0.2%	0.5%	1.5%

MVA & Economic Profit

Market Value Added = The difference between the market value of common stock and its book value

Economic Profit = capital invested multiplied by the spread between return on investment and the cost of capital.

$$EP = \text{Economic Profit}$$
$$= (ROI - r) \times \text{Capital Invested}$$

Residual Income & EVA

Residual Income or EVA = Net Dollar return after deducting the cost of capital

$$
\begin{aligned}
EVA &= \text{Residual Income} \\
&= \text{Income Earned} - \text{income required} \\
&= \text{Income Earned} - \left[\text{Cost of Capital} \times \text{Investment}\right]
\end{aligned}
$$

Measuring Performance

Measures of Company Performance (ranked by MVA)				
	Market to book ratio	MVA ($bil)	Return on assets (%)	EVA ($bil)
GE	6.6	426.6	20.4	5.9
Microsoft	8.8	217.2	39.1	5.9
Wal-Mart Stores	4.4	206.2	12.8	1.6
Merck & Co.	7.1	203.7	24.0	4.8
Phillip Morris	2.1	72.0	17.4	6.1
ExonMobil	1.9	155.9	10.5	5.4
Viacom	1.3	22.6	2.0	-4.4
General Motors	0.7	-29.2	5.7	-1.1
WorldCom	0.7	-31.8	6.3	-5.4
AT&T	0.6	-87.2	4.5	-10.0