A firm with 30% total debt ratio, total assets of $10 million, and an ROE of 14% has been paying out 60% of earnings to shareholders in the form of dividends. Sales are expected to increase by 10% this year, a faster growth rate than usual. Will external funding be required under these conditions? Will the debt-equity ratio remain constant?

Answer: Yes, external funds will be required in this case. A growth rate of only 3.92% — much less than the forecast 10% growth — could be achieved without external funds. Further, if the plowback ratio were increased to 100% then only 9.8% internal growth could be achieved without external funds. Thus, even with increasing the plowback to 100% the debt ratio will be forced to increase to achieve the 10% forecast change in sales.

Internal growth rate = plowback × ROE × \( \frac{\text{equity}}{\text{assets}} \)

\[ = .4 \times .14 \times .7 \]

\[ = 3.92\% \]

What are the annual sales for a firm with $400,000 in debt, a total debt ratio of .4, and an asset turnover of 3.0?

Total Dept Ratio= \( \frac{\text{Debt}}{\text{Assets}} = 0.4 = \frac{\$400,000}{\text{assets}} \)

Assets = $1,000,000,

Then, Asset Turnover Ratio= \( \frac{\text{Sales}}{\text{Assets}} = \frac{\text{Sales}}{\$1,000,000} = 3, \)

sales = $3,000,000

A firm reports a net profit margin of 10.0% on sales of $3 million when ignoring the effects of financing. If taxes are $200,000, how much is EBIT?

Net profit margin = \( \frac{\text{net income}}{\text{sales}} = \frac{\text{EBIT - taxes}}{\text{sales}} = .10 \)

\[ \frac{\text{EBIT} - 200,000}{3,000,000} = .10 \]

\[ \text{EBIT} - 200,000 = 300,000 \]

\[ \text{EBIT} = 500,000 \]

Jay's Jams Inc. was just established with an investment of $5 million into stereo equipment. Jay expects his company to generate $800,000 a year for the next 10 years, followed by $1 million a year
for the following 10 years. If Jay's cost of capital is 15%, find the market value and book value of his company.

\[
\text{Book Value} = \$5 \text{ million} \\
\text{Market Value} = \$800,000 \times (10 \text{ year annuity factor}) \\
+ \frac{1}{1.15^{10}} \times \$1\text{ million} \times (10 \text{ year annuity factor}) \\
= 800,000 \times (5.02) + \frac{1}{1.15^{10}} \times \$1\text{ million} \times (5.02) \\
= 4,016,000 + 5,020,000 / 4.05 \\
= \$5.3 \text{ million}
\]

What is the net value of common equity for a firm with 3 million shares issued, 1 million shares outstanding, $4 million of retained earnings, $2 million of treasury stock at cost, $1 million in additional paid-in capital, and a $1 par value per share?

| common shares ($1 par value per share) | $3 million |
| additional paid in capital | 1 million |
| retained earnings | 4 million |
| treasury stock at cost | (2 million) |
| total | $6 million |

Apex Corp. has current liabilities of $2 million, a current ratio of 3.0, a quick ratio of 2.0, and a cash ratio of .75. Given this information, answer the following about the firm's liquidity:

a. What is the value of inventory?

b. What is the value of receivables?

c. What will happen to each of the three ratios if $1 million in current liabilities is refunded with long-term debt?

Answer:
a. \[ \text{current ratio} = \frac{\text{current assets}}{\text{current liabilities}} \]
\[ 3 = \frac{\text{current assets}}{\$2 \text{ million}} \]
\[ \$6 \text{ million} = \text{current assets}, \]

and quick ratio = \[ \frac{\text{current assets} - \text{inventory}}{\text{current liabilities}} \]
\[ 2 = \frac{\$6 \text{ million} - \text{inventory}}{\$2 \text{ million}} \]
\[ \$4 \text{ million} = \$6 \text{ million} - \text{inventory} \]
\[ \$2 \text{ million} = \text{inventory}. \]

b. \[ \text{cash ratio} = \frac{\text{cash + marketable securities}}{\text{current liabilities}} \]
\[ .75 = \frac{\text{cash + marketable securities}}{\$2 \text{ million}} \]
\[ \$1.5 \text{ million} = \text{cash + marketable securities}, \]

and quick ratio = \[ \frac{\$1.5 \text{ million} + \text{receivables}}{\$2 \text{ million}} \]
\[ \$4 \text{ million} = \$1.5 \text{ million} + \text{receivables} \]
\[ \$2.5 \text{ million} = \text{receivables}. \]

c. Current ratio will change from 3.0 to:
\[ \frac{\$6 \text{ million}}{\$1 \text{ million}} = 6.0 \]

Quick ratio will change from 2.0 to:
\[ \frac{\$4 \text{ million}}{\$1 \text{ million}} = 4.0 \]

Cash ratio will change from .75 to:
\[ \frac{\$1.5 \text{ million}}{\$1 \text{ million}} = 1.5. \]

Thus, all three ratios double when the denominator is cut in half.