**Spreadsheet Problem Solution**

**Chapter 2**

a. Following are the data and the ratios for Cary:

INPUT DATA: KEY OUTPUT:

Cary Industry

Cash $ 72,000 Quick 0.85 1.00

A/R 439,000 Current 2.33 2.70

Inventories 894,000 Inv. turn. 4.00 5.80

Land and bldg 238,000 DSO (days) 36.84 32.00

Machinery 132,000 FA turnover 9.95 13.00

Other F.A. 61,000 TA turnover 2.34 2.60

ROA 5.90% 9.10%

Accts & Notes Pay. $ 432,000 ROE 13.07% 18.20%

Accruals 170,000 TD/TA 54.81% 50.00%

Long-term debt 404,290 PM 2.53% 3.50%

Common stock 575,000 EPS $4.71 n.a.

Retained earnings 254,710 Stock Price $23.57 n.a.

P/E ratio 5.00 6.00

Total assets $ 1,836,000 M/B 0.65 n.a.

Total liabilities & equity $ 1,836,000

RE last year 146,302

Income statement

Sales $ 4,290,000

Cost of G.S. 3,580,000

Adm. & sales exp. 236,320

Depreciation 159,000

Misc. expenses 134,000

Net income $ 108,408

P/E ratio 5.0

No. of shares 23,000

Cash dividend $ 0.95

Here are Cary's base-case ratios and other data as compared to the industry:

Cary Industry Comment

Quick 0.85x 1.0x Weak

Current 2.33x 2.7x Weak

Inventory turnover 4.0x 5.8x Poor

Days sales outstanding 36.8 days 32.0 days Poor

Fixed assets turnover 10.0x 13.0x Poor

Total assets turnover 2.3x 2.6x Poor

Return on assets (ROA) 5.9% 9.1% Bad

Return on equity (ROE) 13.1% 18.2% Bad

Debt ratio 54.8% 50.0% High

Profit margin on sales 2.5% 3.5% Bad

EPS $4.71 n.a. ‑‑

Stock Price $23.57 n.a. ‑‑

P/E ratio 5.0x 6.0x Poor

M/B ratio 0.65 n.a. ‑‑

Cary appears to be poorly managed—all of its ratios are worse than the industry averages, and the result is low earnings, a low P/E, a low stock price, and a low M/B ratio. The company needs to do something to improve.

b. The revised data and ratios are shown below:

INPUT DATA: KEY OUTPUT:

Cary Industry

Cash $ 314,000 Quick 1.25 1.00

A/R 439,000 Current 2.41 2.70

Inventories 700,000 Inv. turn. 5.00 5.80

Land and bldg 238,000 DSO (days) 36.84 32.00

Machinery 132,000 FA turnover 9.95 13.00

Other F.A. 61,000 TA turnover 2.28 2.60

ROA 8.30% 9.10%

Accts & Notes Pay. $ 432,000 ROE 17.82% 18.20%

Accruals 170,000 TD/TA 53.41% 50.00%

Long-term debt 404,290 PM 3.65% 3.50%

Common stock 575,000 EPS $6.80 n.a.

Retained earnings 302,710 Stock Price $34.00 n.a.

P/E ratio 5.00 6.00

Total assets $ 1,884,000 M/B 0.89 n.a.

Total liabilities & equity $ 1,884,000

RE last year 146,302

Income statement

Sales $ 4,290,000

Cost of G.S. 3,500,000

Adm. & sales exp. 236,320

Depreciation 159,000

Misc. expenses 134,000

Net income $ 156,408

P/E ratio 5.0

No. of shares 23,000

Cash dividend $ 0.95

Cary’s liquidity position has improved. In addition, ROA and ROE are better than in the previous scenario, and the profit margin now is higher than the industry average. Although the stock price has increased more than $10 per share, there is room for more improvements.

c. The revised data and ratios are shown below:

INPUT DATA: KEY OUTPUT:

Cary Industry

Cash $ 84,527 Quick 1.21 1.00

A/R 395,000 Current 2.99 2.70

Inventories 700,000 Inv. turn. 4.93 5.80

Land and bldg 238,000 DSO (days) 33.15 32.00

Machinery 132,000 FA turnover 8.25 13.00

Other F.A. 150,000 TA turnover 2.52 2.60

ROA 10.53% 9.10%

Accts & Notes Pay. $ 275,000 ROE 19.88% 18.20%

Accruals 120,000 TD/TA 47.03% 50.00%

Long-term debt 404,290 PM 4.17% 3.50%

Common stock 575,000 EPS $7.78 n.a.

Retained earnings 325,237 Stock Price $46.68 n.a.

P/E ratio 6.00 6.00

Total assets $ 1,699,527 M/B 1.19 n.a.

Total liabilities & equity $ 1,699,527

RE last year 146,302

Income statement

Sales $ 4,290,000

Cost of G.S. 3,450,000

Adm. & sales exp. 248,775

Depreciation 159,000

Misc. expenses 134,000

Net income $ 178,935

P/E ratio 6.0

No. of shares 23,000

Cash dividend $ 0.95

Under these new conditions, Cary Corporation looks much better. Its turnover ratios are still low, but its ROA and ROE are above the industry average, its estimated P/E ratio is better, and its stock price is anticipated to double. There still is room for improvement, but the company is in much better shape.

d. The financial statements and ratios for the scenario in which the cost of goods sold decreases by an additional $125,000 are shown next. As you can see, the profit ratios are quite high and the stock price has risen to $66.24.

INPUT DATA: KEY OUTPUT:

Cary Industry

Cash $ 159,527 Quick 1.40 1.00

A/R 395,000 Current 3.18 2.70

Inventories 700,000 Inv. turn. 4.75 5.80

Land and bldg 238,000 DSO (days) 33.15 32.00

Machinery 132,000 FA turnover 8.25 13.00

Other F.A. 150,000 TA turnover 2.42 2.60

ROA 14.31% 9.10%

Accts & Notes Pay. $ 275,000 ROE 26.04% 18.20%

Accruals 120,000 TD/TA 45.04% 50.00%

Long-term debt 404,290 PM 5.92% 3.50%

Common stock 575,000 EPS $11.04 n.a.

Retained earnings 400,237 Stock Price $66.24 n.a.

P/E ratio 6.00 6.00

Total assets $ 1,774,527 M/B 1.56 n.a.

Total liabilities & equity $ 1,774,527

RE last year 146,302

Income statement

Sales $ 4,290,000

Cost of G.S. 3,325,000

Adm. & sales exp. 248,775

Depreciation 159,000

Misc. expenses 134,000

Net income $ 253,935

P/E ratio 6.0

No. of shares 23,000

Cash dividend $ 0.95

e. The financial statements and ratios for the scenario in which the cost of goods sold increases by $125,000 over the revised estimate are shown next. As you can see, profits would decline sharply. The ROE would drop to 12.6 percent, EPS would fall to $4.52, the stock price would drop to $27.11, and the M/B ratio would be only 0.76.

INPUT DATA: KEY OUTPUT:

Cary Industry

Cash $ 9,527 Quick 1.02 1.00

A/R 395,000 Current 2.80 2.70

Inventories 700,000 Inv. turn. 5.11 5.80

Land and bldg 238,000 DSO (days) 33.15 32.00

Machinery 132,000 FA turnover 8.25 13.00

Other F.A. 150,000 TA turnover 2.64 2.60

ROA 6.40% 9.10%

Accts & Notes Pay. $ 275,000 ROE 12.59% 18.20%

Accruals 120,000 TD/TA 49.20% 50.00%

Long-term debt 404,290 PM 2.42% 3.50%

Common stock 575,000 EPS $4.52 n.a.

Retained earnings 250,237 Stock Price $27.11 n.a.

P/E ratio 6.00 6.00

Total assets $ 1,624,527 M/B 0.76 n.a.

Total liabilities & equity $ 1,624,527

RE last year 146,302

Income statement

Sales $ 4,290,000

Cost of G.S. 3,575,000

Adm. & sales exp. 248,775

Depreciation 159,000

Misc. expenses 134,000

Net income $ 103,935

P/E ratio 6.0

No. of shares 23,000

Cash dividend $ 0.95

f. Computer models allow us to analyze quickly the impact of operating and financial decisions on the firm's overall performance. A firm can analyze its financial ratios under different scenarios to see what might happen if a decision, such as the purchase of a new asset, did not produce the expected results. This gives the managers some idea about what might happen under the best and worst cases and helps them to make better decisions.