CHAPTER 14
Financial Statement Analysis

14.1 THE MAJOR FINANCIAL STATEMENTS

Income Statement
- Four broad classes:
  - Cost of goods sold
  - General and administrative expenses
  - Interest expense
  - Taxes on earnings
- Common Sizing

Balance Sheet
- Assets
  - Current
  - Long-term
- Liability and stockholders’ equity
- Common Sizing

Table 14.1 Consolidated Statement of Income

<table>
<thead>
<tr>
<th></th>
<th>$ Million</th>
<th>Percent of Revenues</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operating revenues</td>
<td>$81,658</td>
<td>100.0%</td>
</tr>
<tr>
<td>Operating expenses</td>
<td>$46,020</td>
<td>72.9%</td>
</tr>
<tr>
<td>Selling, general, and administrative expenses</td>
<td>11,266</td>
<td>13.8%</td>
</tr>
<tr>
<td>Research and development expenses</td>
<td>5,591</td>
<td>6.9%</td>
</tr>
<tr>
<td>Depreciation</td>
<td>2,353</td>
<td>2.9%</td>
</tr>
<tr>
<td>Interest expense</td>
<td>2,301</td>
<td>2.9%</td>
</tr>
<tr>
<td>Operating income</td>
<td>$6,657</td>
<td>8.4%</td>
</tr>
<tr>
<td>Earnings before interest and income taxes</td>
<td>$7,640</td>
<td>8.1%</td>
</tr>
<tr>
<td>Interest expense</td>
<td>2,092</td>
<td>0.3%</td>
</tr>
<tr>
<td>Taxes</td>
<td>7,511</td>
<td>7.8%</td>
</tr>
<tr>
<td>Net income</td>
<td>$6,196</td>
<td>6.8%</td>
</tr>
</tbody>
</table>

Table 14.2 Consolidated Balance Sheet

<table>
<thead>
<tr>
<th></th>
<th>$ Million</th>
<th>Total Assets</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash</td>
<td>32,600</td>
<td>32,600</td>
</tr>
<tr>
<td>Accounts receivable</td>
<td>2,238</td>
<td>2,238</td>
</tr>
<tr>
<td>Inventories</td>
<td>1,648</td>
<td>1,648</td>
</tr>
<tr>
<td>Current assets</td>
<td>$4,328</td>
<td>4,328</td>
</tr>
<tr>
<td>Property, plant, and equipment</td>
<td>12,000</td>
<td>12,000</td>
</tr>
<tr>
<td>Intangible fixed assets</td>
<td>3,000</td>
<td>3,000</td>
</tr>
<tr>
<td>Total assets</td>
<td>$17,328</td>
<td>17,328</td>
</tr>
<tr>
<td>Total liabilities</td>
<td>$17,354</td>
<td>17,354</td>
</tr>
<tr>
<td>Common stock</td>
<td>1,000</td>
<td>1,000</td>
</tr>
<tr>
<td>Retained earnings</td>
<td>7,850</td>
<td>7,850</td>
</tr>
<tr>
<td>Additional paid-in capital</td>
<td>550</td>
<td>550</td>
</tr>
<tr>
<td>Total stockholders’ equity</td>
<td>8,400</td>
<td>8,400</td>
</tr>
<tr>
<td>Total liabilities and stockholders’ equity</td>
<td>17,354</td>
<td>17,354</td>
</tr>
</tbody>
</table>
Statement of Cash Flows

- Recognizes only transactions in which cash changes hands

Table 14.3 Consolidated Statement of Cash Flows

<table>
<thead>
<tr>
<th>Description</th>
<th>$ million</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cash provided by operations</td>
<td>9,499</td>
</tr>
<tr>
<td>Additions to net income</td>
<td></td>
</tr>
<tr>
<td>Depreciation</td>
<td>2,763</td>
</tr>
<tr>
<td>Changes in working capital</td>
<td></td>
</tr>
<tr>
<td>Decrease in accounts receivable</td>
<td>(982)</td>
</tr>
<tr>
<td>Decrease in inventories</td>
<td>(1,106)</td>
</tr>
<tr>
<td>Increase in accrued liabilities</td>
<td>974</td>
</tr>
<tr>
<td>Other adjustments</td>
<td></td>
</tr>
<tr>
<td>Total adjustments</td>
<td>3,427</td>
</tr>
<tr>
<td>Cash provided by operations</td>
<td>9,166</td>
</tr>
<tr>
<td>Cash flows from investment</td>
<td></td>
</tr>
<tr>
<td>Investments in long-term assets</td>
<td>(982)</td>
</tr>
<tr>
<td>Investments in business acquisitions</td>
<td>(950)</td>
</tr>
<tr>
<td>Investment in other assets</td>
<td>40</td>
</tr>
<tr>
<td>Cash provided by (used) FD activities</td>
<td>(5,785)</td>
</tr>
<tr>
<td>Cash provided by (used) FD investments</td>
<td>(5,785)</td>
</tr>
<tr>
<td>Additions to (used) FD activities</td>
<td>$ (138)</td>
</tr>
<tr>
<td>Additions to (used) non-current assets</td>
<td>$ (5,246)</td>
</tr>
<tr>
<td>Investments in long-term assets</td>
<td>(982)</td>
</tr>
<tr>
<td>Non-cash adjustments</td>
<td></td>
</tr>
<tr>
<td>Cash provided by (used) FD activities</td>
<td>(5,977)</td>
</tr>
<tr>
<td>Net increase in cash</td>
<td>$ 2,487</td>
</tr>
</tbody>
</table>

Source: Authors, Based on Company Data

14.2 ACCOUNTING VERSUS ECONOMIC EARNINGS

- Accounting earnings
  - Affected by several conventions regarding the valuation of assets
- Economic earnings
  - Earnings above or below a trend line

14.3 PROFITABILITY MEASURES

- Past Versus Future ROE
  - Data from recent past may provide information regarding future performance
  - Analysts should always keep an eye on the future
  - Expectations of future dividends and earnings determine intrinsic value of stock
**Financial Leverage and ROE**

- The relationship among ROE, ROA, and leverage:

\[
ROE = (1 - \text{Tax rate}) \left( \frac{\text{ROA} + (\text{ROA} - \text{Interest rate})}{\text{Debt} \div \text{Equity}} \right)
\]

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**14.4 RATIO ANALYSIS**

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**Ratio Analysis**

- **Purpose of Ratio Analysis**
- **Uses**
  - Trend analysis
  - Comparative analysis
  - Combination
- **Use by External Analysts**
  - Important information for investment community
  - Important for credit markets

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**Decomposition of ROE**

\[
ROE = \frac{\text{Net Profit}}{\text{Pretax Profit}} \times \frac{\text{Pretax Profit}}{\text{EBIT}} \times \frac{\text{EBIT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Assets}} \times \frac{\text{Assets}}{\text{Equity}}
\]

\[= (5) \times (2) \times (3) \times (4) \times (5)
\]

\[
= \text{Tax Burden} \times \text{Interest Burden} \times \text{Margin} \times \text{Turnover} \times \text{Leverage}
\]

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**Type of Financial Ratios**

- Profitability Ratios
- Turnover or Asset Utilization Ratios
- Liquidity Ratios
- Leverage Ratios
- Market Price Ratios

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**Profitability Ratios**

- **Net Profit Margin %**
  \(\frac{\text{Net Income}}{\text{Sales}}\)
- **Operating Return on Assets %**
  \(\frac{\text{Earnings Before Int. & Taxes}}{\text{Total Assets}}\)
Profitability Ratios (cont.)

- Return on Equity %
  \[
  \text{Net Income} \div \text{Common Equity}
  \]
- Operating Margin After Depreciation %
  \[
  \text{Operating Profit} \div \text{Sales}
  \]

Activity or Management Efficiency Ratios

- Inventory Turnover
  \[
  \frac{\text{Sales or Cost of Goods Sold}}{\text{Inventory}}
  \]
- Total Asset Turnover
  \[
  \frac{\text{Sales}}{\text{Total Assets}}
  \]

Activity or Management Efficiency Ratios (cont.)

- Average Collection Period
  \[
  \frac{\text{Accounts Receivable}}{\text{Sales Per Day}}
  \]
- Days to Sell Inventory
  \[
  \frac{\text{Inventory}}{\text{Sales Per Day}}
  \]

Liquidity Ratios

- Current Ratio
  \[
  \frac{\text{Current Assets}}{\text{Current Liabilities}}
  \]
- Quick Ratio
  \[
  \frac{\text{Current Assets} - \text{Inventory}}{\text{Current Liabilities}}
  \]

Leverage Ratios

- Times Interest Earned
  \[
  \frac{\text{Earnings Before Int. & Taxes}}{\text{Interest Expense}}
  \]
- Fixed Charge Coverage Ratios
  - Lease Payments
  - Principal Repayments
  - Preferred Dividends

Leverage Ratios (cont.)

- Debt to Assets %
  \[
  \frac{\text{Long Term Debt}}{\text{Assets}}
  \]
- Debt to Equity %
  \[
  \frac{\text{Long Term Debt}}{\text{Shareholders Equity}}
  \]
Market Price Ratios

Price to Earnings
Market Price of Stock
Earnings
Market-to-Book-Value
Market Price of Stock
Book Value Per Share

14.5 ECONOMIC VALUE ADDED

Economic Value Added

- Approach to compare accounting profitability with the cost of capital
- Definition
  - ROA-K (Capital Invested in the firm)
  - K = opportunity cost for capital
- Ties accounting to return by investors

Table 14.12 Economic Value Added, 2006

<table>
<thead>
<tr>
<th>Economic Value Added, 2006</th>
<th>EVA ($ billion)</th>
<th>Capital ($ billion)</th>
<th>ROA (%)</th>
<th>Cost of capital (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reod Dutch Shell</td>
<td>3.98</td>
<td>12.15</td>
<td>12.2%</td>
<td>8.9%</td>
</tr>
<tr>
<td>GlicoSmithKline</td>
<td>2.60</td>
<td>29.41</td>
<td>18.2%</td>
<td>7.2%</td>
</tr>
<tr>
<td>Wal-Mart</td>
<td>2.13</td>
<td>100.78</td>
<td>8.9%</td>
<td>6.7%</td>
</tr>
<tr>
<td>Garvetch</td>
<td>1.11</td>
<td>117.72</td>
<td>16.3%</td>
<td>4.8%</td>
</tr>
<tr>
<td>Motorola</td>
<td>-0.80</td>
<td>21.43</td>
<td>6.9%</td>
<td>10.6%</td>
</tr>
<tr>
<td>Intel</td>
<td>-1.35</td>
<td>38.59</td>
<td>9.8%</td>
<td>13.3%</td>
</tr>
<tr>
<td>Hewlett-Packard</td>
<td>-2.35</td>
<td>41.39</td>
<td>6.2%</td>
<td>11.9%</td>
</tr>
<tr>
<td>AT&amp;T</td>
<td>-5.65</td>
<td>177.76</td>
<td>3.7%</td>
<td>6.9%</td>
</tr>
</tbody>
</table>

14.6 AN ILLUSTRATION OF FINANCIAL STATEMENT ANALYSIS
14.7 COMPARABILITY PROBLEMS

Comparability Problems

- Inventory valuation
  - LIFO and FIFO
- Depreciation
- Inflation and interest expense

International Accounting Conventions

- Reserving practices
- Depreciation
- Intangibles

Quality of Earnings: Areas of Accounting Choices

- Allowance for bad debts
- Non-recurring items
- Earnings smoothing
- Stock options
- Revenue recognition
- Off-balance sheet assets and liabilities
14.8 VALUE INVESTING: THE GRAHAM TECHNIQUE

Benjamin Graham

- Graham believed careful analysis of a firm’s financial statements could turn up bargain stocks.
- He developed many different rules for determining the most important financial ratios.