Chapter 6: Prospective Analysis: Forecasting
Key Concepts in Chapter 6

• Strategy, accounting, and financial performance analyses provide valuable information that help to shape forecast assumptions.

• Forecasts of future performance should be comprehensive, including all condensed financial statements.

• The starting point for forecasts should be the time series behavior of key measures such as sales growth, earnings, and ROE (and its components).
Overall Structure of the Forecast

- Typically a few key strategic drivers are critical to forecasting future firm performance.
  - For example, breakthrough technologies, business alliances, and business line expansions.

- A practical approach begins with deriving condensed financial statements that contain key elements of the income statement, balance sheet, and statement of cash flows.

- Typically, estimating future sales is the critical first step in arriving at forecasted financial statement information.
Performance Behavior: A Starting Point

• Past performance may be used to understand the behavior of key measures such as sales or earnings.
  – Studying the time series of measures such as earnings can provide insights into trends for future performance.
  – Measures from prior periods provide benchmarks to compare forecasts against.
Key Accounting Measures

• Sales Growth Behavior
  – Growth rates tend to be mean-reverting. See Figure 6-1 on the next slide.

• Earnings Behavior
  – On average, follow a random walk or random walk with drift.
  – Long-term trends tend to be sustained, on average.
Sales Growth Rates Over Time

FIGURE 6-1 Behavior of Sales Growth for U.S. Firms, 1993–2010

Source: © Cengage Learning 2013
Key Accounting Measures

• Return on Equity Behavior
  – ROE behavior is dependent on both earnings and the asset base.
  – Patterns tend to be mean-reverting. See Figure 6-2 on the next slide.
ROE Behavior Over Time

**Figure 6-2** Behavior of ROE for U.S. Firms, 1993–2010

Source: © Cengage Learning 2013
Decomposing ROE for Further Analysis

• ROE may be decomposed ultimately to the following components:
  \[ \text{ROE} = \text{NOPAT margin} \times \text{Operating asset turnover} + \text{Spread} \times \text{Net financial leverage} \]

• Analyzing the behavior of the components from 1993–2010 provided the following insights:
  – Operating asset turnover and net financial leverage tend to be rather stable
  – NOPAT margin is the most variable component of ROE, and drives changes in the spread
How Forecasting Relates to Other Analyses

• Preliminary analyses can assist with conducting forecasts.

• Using TJX as an example:
  – **Business strategy analysis**: Is TJX’s infrastructure able to allow the company future dominance of US markets?
  – **Accounting analysis**: Do TJX’s accounting practices suggest misstatements in past elements of their financial statements?
  – **Financial analysis**: What are the sources of superior performance, and is it sustainable?
Sales Growth and Macroeconomic Factors

- The impact of changing macroeconomic conditions is sufficiently unpredictable to focus on the firm’s competitive position and strategy.

- Sales growth has historically met and exceeded investor expectations, making it reasonable this trend of strong sales growth will continue.

<table>
<thead>
<tr>
<th>TABLE 6-2</th>
<th>Forecasted Sales Growth for TJX</th>
</tr>
</thead>
<tbody>
<tr>
<td>TJX</td>
<td>5.7%</td>
</tr>
<tr>
<td>U.S./Canada</td>
<td></td>
</tr>
<tr>
<td>TJX Europe</td>
<td>5.0%</td>
</tr>
<tr>
<td>Overall Sales Growth</td>
<td>5.7%</td>
</tr>
</tbody>
</table>

Source: © Cengage Learning 2013
NOPAT Margins

• To retain a competitive advantage, TJX will likely have to pursue a strategy of deeper discounting than competitors, resulting in gradually declining NOPAT margins.

• Additionally, international margins are expected to be relatively low.

<table>
<thead>
<tr>
<th>TABLE 6-3</th>
<th>Forecasted NOPAT Margins for TJX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Overall NOPAT margin</td>
<td>7.9%</td>
</tr>
</tbody>
</table>

Source: © Cengage Learning 2013
Other Measures for TJX

- Working capital to sales – likely to remain at or near zero as the firm’s market power grows.

- Long-term assets to sales – likely to deteriorate as international sales growth outpaces that of domestic business.

- Capital structure – share repurchases and stability of leverage should not lead to any long-term change in TJX’s structure.
Making Forecasts, TJX

Though TJX has a history of generating above-market returns, mean-reverting behavior is expected.

<table>
<thead>
<tr>
<th>TABLE 6-1 Forecasting Assumptions for TJX</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sales growth rate</td>
</tr>
<tr>
<td>NOPAT margin</td>
</tr>
<tr>
<td>Beginning net operating working capital/sales</td>
</tr>
<tr>
<td>Beginning net operating long-term assets/sales</td>
</tr>
<tr>
<td>Beginning net debt to capital ratio</td>
</tr>
<tr>
<td>After-tax cost of debt</td>
</tr>
</tbody>
</table>

Source: © Cengage Learning 2013
TJX-Mart Overall Forecast

• Besides the mean-reverting behavior of returns, there are other assumptions that drive an overall forecast for TJX’s performance:

  – NOPAT margin can be maintained given TJX’s market leadership and a growing international presence

  – Relative cost of debt will be similar to prior years and capital structure will remain relatively unchanged.

  – The magnitude of TJX’s competitive advantage over its rivals will decline over time.
### TJX’s Forecasted Financial Statements

<table>
<thead>
<tr>
<th>TABLE 6-4</th>
<th>Forecasted Financial Statements for TJX</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Beginning Balance Sheet</strong></td>
<td></td>
</tr>
<tr>
<td>Beg. net working capital</td>
<td>144.1</td>
</tr>
<tr>
<td>+ Beg. net long-term assets</td>
<td>7,754.4</td>
</tr>
<tr>
<td>= net operating assets</td>
<td>7,898.5</td>
</tr>
<tr>
<td>Net Debt</td>
<td>4,541.4</td>
</tr>
<tr>
<td>+ Preferred stock</td>
<td>0.0</td>
</tr>
<tr>
<td>+ Shareholders’ equity</td>
<td>3,357.1</td>
</tr>
<tr>
<td>= Net capital</td>
<td>7,898.5</td>
</tr>
</tbody>
</table>

**Income Statement**

- Sales | 23,192.9 | 24,723.6 | 26,479.0 | 28,306.1 | 30,202.6 | 32,165.7 | 34,192.2 | 36,277.9 | 38,418.3 | 40,608.2 |
- Net operating profits after tax | 1,832.2 | 1,854.3 | 1,880.0 | 1,896.5 | 1,902.8 | 1,897.8 | 1,880.6 | 1,813.9 | 1,728.8 | 1,624.3 |
- Net interest expense after tax | 123.9 | 135.7 | 146.4 | 157.6 | 169.4 | 181.6 | 194.4 | 207.7 | 221.5 | 235.7 |
- Net income | 1,708.4 | 1,718.6 | 1,733.6 | 1,738.9 | 1,733.4 | 1,716.2 | 1,686.2 | 1,606.2 | 1,507.4 | 1,388.7 |
- Preferred dividends | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
= Net income to common | 1,708.4 | 1,718.6 | 1,733.6 | 1,738.9 | 1,733.4 | 1,716.2 | 1,686.2 | 1,606.2 | 1,507.4 | 1,388.7 |

- Operating return on assets | 23.2% | 21.4% | 20.1% | 18.9% | 17.6% | 16.4% | 15.2% | 13.7% | 12.2% | 10.8% |
- Return on common equity | 50.9% | 46.7% | 43.7% | 40.7% | 37.8% | 34.9% | 32.0% | 28.5% | 25.1% | 21.7% |
- Book value of assets growth rate | 23.7% | 9.6% | 7.9% | 7.7% | 7.5% | 7.2% | 7.0% | 6.8% | 6.6% | 6.4% |
- Book value of common equity | 16.2% | 9.6% | 7.9% | 7.7% | 7.5% | 7.2% | 7.0% | 6.8% | 6.6% | 6.4% |

**Growth rate**

- Net operating asset turnover | 2.9 | 2.9 | 2.8 | 2.8 | 2.8 | 2.8 | 2.7 | 2.7 | 2.7 | 2.7 |

**Cash Flow Data**

- Net income | 1,708.4 | 1,718.6 | 1,733.6 | 1,738.9 | 1,733.4 | 1,716.2 | 1,686.2 | 1,606.2 | 1,507.4 | 1,388.7 |
- Change in net working capital | 103.1 | 17.6 | 18.3 | 19.0 | 19.6 | 20.3 | 20.9 | 21.4 | 21.9 | 23.2 |
- Change in net long-term assets | 651.6 | 663.0 | 696.5 | 729.8 | 762.6 | 794.7 | 825.9 | 855.9 | 884.4 | 833.3 |
- Change in net debt | 434.0 | 391.3 | 411.0 | 430.5 | 449.8 | 468.6 | 486.9 | 504.4 | 521.1 | 492.4 |
- Free cash flow to equity | 1,387.6 | 1,429.3 | 1,429.8 | 1,420.6 | 1,400.9 | 1,369.8 | 1,326.3 | 1,323.3 | 1,122.2 | 1,024.7 |
- Net operating profit after tax | 1,832.2 | 1,854.3 | 1,880.0 | 1,896.5 | 1,902.8 | 1,897.8 | 1,880.6 | 1,813.9 | 1,728.8 | 1,624.3 |
- Change in net working capital | 103.1 | 17.6 | 18.3 | 19.0 | 19.6 | 20.3 | 20.9 | 21.4 | 21.9 | 23.2 |
- Change in net long-term assets | 651.6 | 663.0 | 696.5 | 729.8 | 762.6 | 794.7 | 825.9 | 855.9 | 884.4 | 833.3 |
- Free cash flow to capital | 1,077.5 | 1,173.7 | 1,165.2 | 1,147.7 | 1,120.5 | 1,082.8 | 1,033.8 | 936.6 | 822.5 | 767.9 |

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Sensitivity Analysis

• Forecasts should be done with more than one possible set of assumptions in mind.
• In TJX’s case, there are at least two likely alternative situations to those used for the forecasted financial statements in Table 6-4:
  – Upside case: no mean reverting behavior and continued market dominance
  – Downside case: international expansion does not happen, which hastens the decline in TJX’s overall performance
Concluding Comments

• Forecasting is the first step in prospective analysis of firm performance.
• Preliminary business strategy, accounting, and financial analysis should form the basis for many assumptions used in forecasting.
• Forecasts should be comprehensive and include key elements of the financial statements.
• When forecasting, the time series behavior of various statistics should be kept in mind.