

# BUSINESS ANALYSIS & VALUATION

5e

USING FINANCIAL STATEMENTS

**Text & Cases**



## 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.

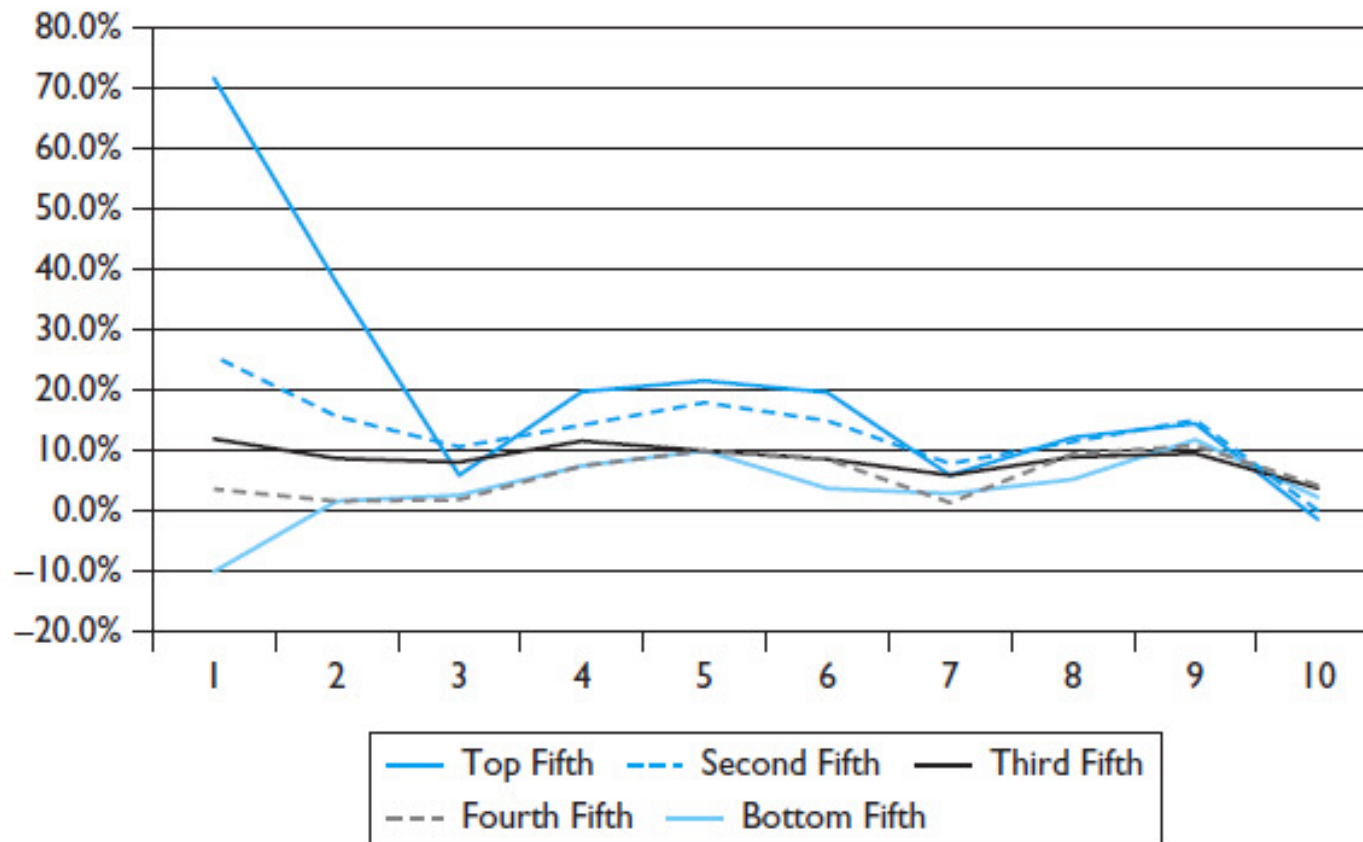
# Key Accounting Measures

- 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

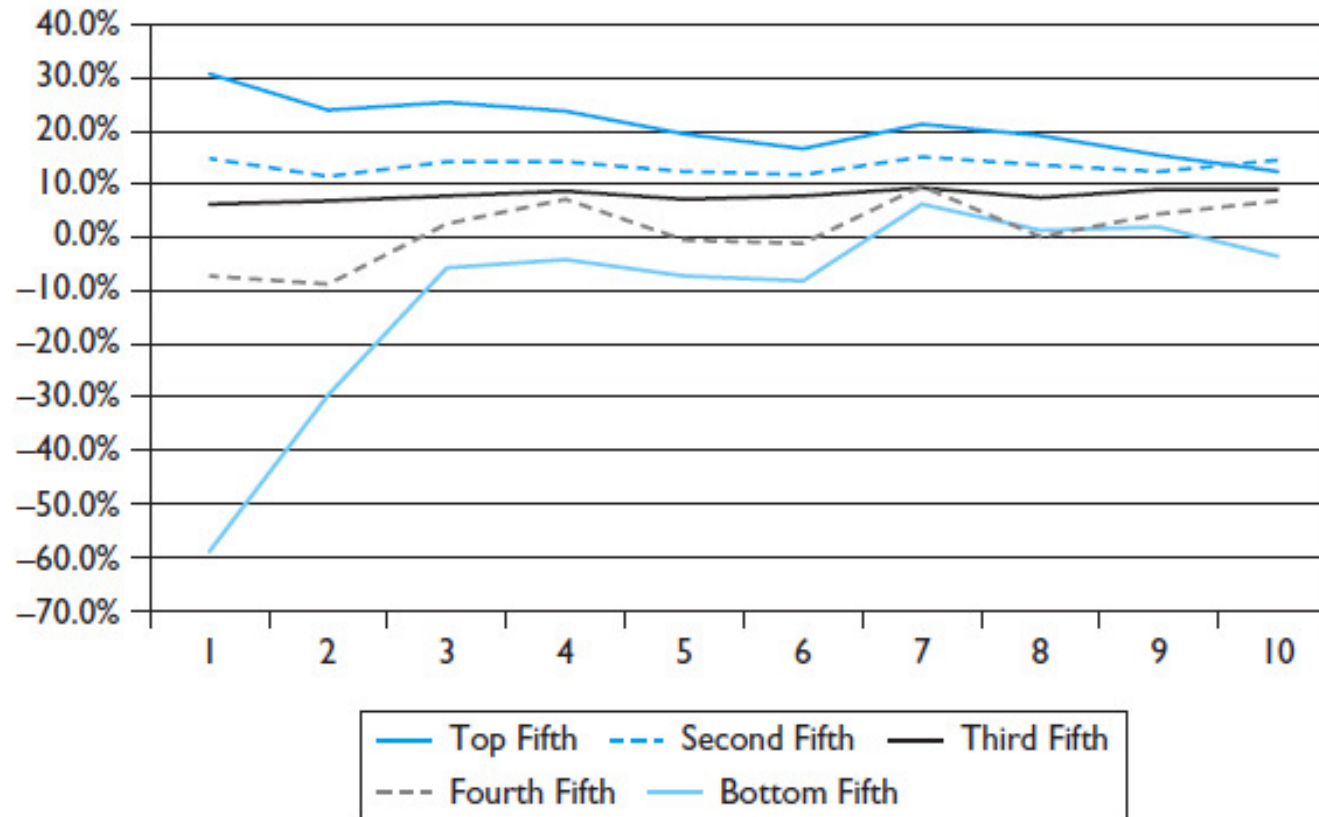
# Key Accounting Measures

- 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:

$$\text{ROE} = \text{NOPAT margin} * \text{Operating asset turnover} + \text{Spread} * \text{Net financial leverage}$$

- 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.

<b>TABLE 6-2</b>		<b>Forecasted Sales Growth for TJX</b>									
Forecast Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
TJX	5.7%	6.4%	6.7%	6.5%	6.2%	6.0%	5.8%	5.7%	5.5%	5.3%	
U.S./Canada											
TJX Europe	5.0%	8.0%	10.0%	10.0%	10.0%	10.0%	10.0%	9.0%	8.5%	8.0%	
Overall Sales Growth	5.7%	6.6%	7.1%	6.9%	6.7%	6.5%	6.3%	6.1%	5.9%	5.7%	

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 6-3**

**Forecasted NOPAT Margins for TJX**

Forecast Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Overall NOPAT margin	7.9%	7.5%	7.1%	6.7%	6.3%	5.9%	5.5%	5.0%	4.5%	4.0%

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 6-1		Forecasting Assumptions for TJX									
Forecast Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
Sales growth rate	5.7%	6.6%	7.1%	6.9%	6.7%	6.5%	6.3%	6.1%	5.9%	5.7%	
NOPAT margin	7.9%	7.5%	7.1%	6.7%	6.3%	5.9%	5.5%	5.0%	4.5%	4.0%	
Beginning net operating working capital/sales	0.6%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	1.0%	
Beginning net operating long-term assets/sales	33.4%	34.0%	34.3%	34.5%	34.8%	35.0%	35.3%	35.5%	35.8%	36.0%	
Beginning net debt to capital ratio	57.5%	57.5%	57.5%	57.5%	57.5%	57.5%	57.5%	57.5%	57.5%	57.5%	
After-tax cost of debt	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	2.73	

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# 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 6-4** Forecasted Financial Statements for TJX

Forecast Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
<b>Beginning Balance Sheet</b>										
Beg. net working capital	144.1	247.2	264.8	283.1	302.0	321.7	341.9	362.8	384.2	406.1
+ Beg. net long-term assets	7,754.4	8,406.0	9,069.1	9,765.6	10,495.4	11,258.0	12,052.7	12,878.7	13,734.5	14,618.9
<b>= net operating assets</b>	<b>7,898.5</b>	<b>8,653.3</b>	<b>9,333.9</b>	<b>10,048.7</b>	<b>10,797.4</b>	<b>11,579.7</b>	<b>12,394.7</b>	<b>13,241.4</b>	<b>14,118.7</b>	<b>15,025.0</b>
Net Debt	4,541.4	4,975.3	5,366.6	5,777.6	6,208.1	6,657.9	7,126.5	7,613.4	8,117.8	8,638.9
+ Preferred stock	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
+ Shareholders' equity	3,357.1	3,677.6	3,967.2	4,271.0	4,589.3	4,921.8	5,268.2	5,628.1	6,001.0	6,386.2
<b>= Net capital</b>	<b>7,898.5</b>	<b>8,653.3</b>	<b>9,333.9</b>	<b>10,048.7</b>	<b>10,797.4</b>	<b>11,579.7</b>	<b>12,394.7</b>	<b>13,241.4</b>	<b>14,118.7</b>	<b>15,025.0</b>
<b>Income Statement</b>										
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
<b>= Net income</b>	<b>1,708.4</b>	<b>1,718.6</b>	<b>1,733.6</b>	<b>1,738.9</b>	<b>1,733.4</b>	<b>1,716.2</b>	<b>1,686.2</b>	<b>1,606.2</b>	<b>1,507.4</b>	<b>1,388.7</b>
– Preferred dividends	0	0	0	0	0	0	0	0	0	0
<b>= Net income to common</b>	<b>1,708.4</b>	<b>1,718.6</b>	<b>1,733.6</b>	<b>1,738.9</b>	<b>1,733.4</b>	<b>1,716.2</b>	<b>1,686.2</b>	<b>1,606.2</b>	<b>1,507.4</b>	<b>1,388.7</b>
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	2.8	2.7	2.7	2.7
<b>Cash Flow Data</b>										
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
<b>= Free cash flow to equity</b>	<b>1,387.6</b>	<b>1,429.3</b>	<b>1,429.8</b>	<b>1,420.6</b>	<b>1,400.9</b>	<b>1,369.8</b>	<b>1,326.3</b>	<b>1,233.3</b>	<b>1,122.2</b>	<b>1,024.7</b>
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
<b>= Free cash flow to capital</b>	<b>1,077.5</b>	<b>1,173.7</b>	<b>1,165.2</b>	<b>1,147.7</b>	<b>1,120.5</b>	<b>1,082.8</b>	<b>1,033.8</b>	<b>936.6</b>	<b>822.5</b>	<b>767.9</b>

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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.