



Chapter

6

PROSPECTIVE ANALYSIS: FORECASTING

Most financial statement analysis tasks are undertaken with a forward-looking decision in mind—and much of the time it is useful to summarize the view developed in the analysis with an explicit forecast. Managers need forecasts to formulate business plans and provide performance targets; analysts need forecasts to help communicate their views of the firm's prospects to investors; and bankers and debt market participants need forecasts to assess the likelihood of loan repayment. Moreover, there are a variety of contexts (including but not limited to security analysis) where the forecast is usefully summarized in the form of an estimate of the firm's value. This estimate can be viewed as an attempt to best reflect in a single summary statistic the manager's or analyst's view of the firm's prospects.

Prospective analysis includes two tasks—forecasting and valuation—that together represent approaches to explicitly summarizing the analyst's forward-looking views. In this chapter we focus on forecasting; valuation is the topic of the next two chapters. Forecasting is not so much a separate analysis as it is a way of summarizing what has been learned through business strategy analysis, accounting analysis, and financial analysis. However, there are certain techniques and knowledge that can help a manager or analyst to structure the best possible forecast based on what has been learned in the previous steps. Below we summarize an approach to structuring the forecast, offer information useful in getting started, explore the relationship between the other analytical steps and forecasting, and give detailed steps to forecast earnings, balance sheet data, and cash flows. The key concepts discussed in this chapter are illustrated using a forecast for TJX, the off-price retailer examined in Chapter 5.

THE OVERALL STRUCTURE OF THE FORECAST

The best way to forecast future performance is to do it comprehensively—producing not only an earnings forecast, but also a forecast of cash flows and the balance sheet. A comprehensive approach is useful, even in cases where one might be interested primarily in a single facet of performance, because it guards against unrealistic implicit assumptions. For example, if an analyst forecasts growth in sales and earnings for several years without explicitly considering the required increases in working capital and plant assets and the associated financing, the forecast might possibly imbed unreasonable assumptions about asset turnover, leverage, or equity capital infusions.

A comprehensive approach involves many forecasts, but in most cases they are all linked to the behavior of a few key “drivers.” The drivers vary according to the type of business, but for businesses outside the financial services sector, the sales forecast is nearly always one of the key drivers; profit margin is another. When asset turnover is expected to remain stable—often a realistic assumption—working capital accounts and investment in plants should track the growth in sales closely. Most major expenses also track sales, subject to expected shifts in profit margins. By linking forecasts of such amounts to the sales forecast, one can avoid internal inconsistencies and unrealistic implicit assumptions.

In some contexts the manager or analyst is interested ultimately in a forecast of cash flows, not earnings per se. Nevertheless, in practice even forecasts of cash flows tend to be grounded on forecasts of accounting numbers, including sales, earnings, assets, and liabilities. Of course it would be possible in principle to move directly to forecasts of cash flows—inflows from customers, outflows to suppliers and laborers, and so forth—and in some businesses this is a convenient way to proceed. In most cases, however, the growth prospects, profitability, and investment and financing needs of the firm are more readily framed in terms of accrual-based sales, operating earnings, assets, and liabilities. These amounts can then be converted to cash flow measures by adjusting for the effects of non-cash expenses and expenditures for working capital and plant, property, and equipment.

A Practical Framework for Forecasting

The most practical approach to forecasting a company’s financial statements is to focus on projecting “condensed” financial statements, as used in the ratio analysis in Chapter 5, rather than attempting to project detailed financial statements at the level that the company reports. There are several reasons for this recommendation. Forecasting condensed financial statements involves a relatively small set of assumptions about the future of the firm, so the analyst will have more ability to think about each of the assumptions carefully. A detailed line-item forecast is likely to be very tedious, and an analyst may not have a good basis to make all the assumptions necessary for such forecasts. Further, for most purposes, condensed financial statements are all that are needed for analysis and decision making. We therefore approach the task of financial forecasting with this framework.

Recall that the condensed income statement that we used in Chapter 5 consists of the following elements: sales, net operating profits after tax (NOPAT), net interest expense after tax, taxes, and net income. The condensed balance sheet consists of net operating working capital, net long-term assets, net debt, and equity. Also recall that we start with a balance sheet at the beginning of the forecasting period. Assumptions about how we use the beginning balance sheet and run the firm’s operations will lead to the income statement for the forecasting period; assumptions about investment in working capital and long-term assets, and how we finance these assets, results in a balance sheet at the end of the forecasting period.

To forecast the condensed income statement, one needs to begin with an assumption about next period’s sales. Beyond that, assumptions about NOPAT margin, interest rate on beginning debt, and tax rate are all that are needed to prepare the condensed income statement for the period.

To forecast the condensed balance sheet for the end of the period (or the equivalent, the beginning of the next period), we need to make the following additional assumptions: (1) the ratio of net operating working capital to sales, to estimate the level of working capital needed to support those sales; (2) the ratio of net operating long-term assets to the following year’s sales, to calculate the expected level of net operating long-term assets; and (3) the ratio of net debt to capital to estimate the levels of debt and equity needed to finance the estimated amount of assets on the balance sheet.

Once we have the condensed income statement and balance sheet, it is relatively straightforward to compute the condensed cash flow statement, including cash flow from operations before working capital investments, cash flow from operations after working capital investments, free cash flow available to debt and equity, and free cash flow available to equity.

We discuss how best to make the necessary assumptions to forecast the condensed income statement, balance sheet, and cash flow statements below.

PERFORMANCE BEHAVIOR: A STARTING POINT

Every forecast has, at least implicitly, an initial benchmark—some notion of how a particular amount, such as sales or earnings, would be expected to behave in the absence of detailed information. For example, in beginning to contemplate fiscal 2011 profitability for TJX, 2010 performance might be a starting point. Another potential place to begin might be 2010 performance adjusted for recent trends. A third possibility that might seem reasonable—but one that generally turns out not to be very useful—is the average performance over several prior years.

By the time one has completed a business strategy analysis, an accounting analysis, and a detailed financial analysis, the resulting forecast might differ significantly from the original point of departure. Nevertheless, for purposes of having a starting point that can help anchor the detailed analysis, it is also useful to know how certain financial statistics behave “on average” for all firms.

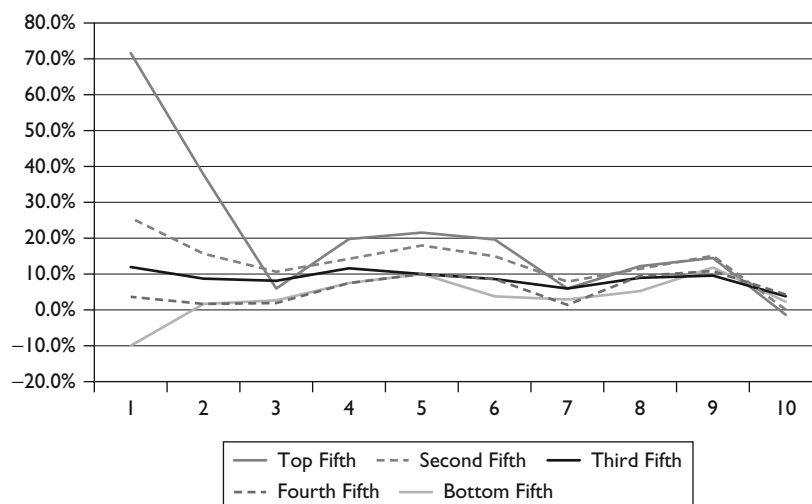
In the case of some key statistics, such as earnings, a point of departure based only on prior behavior of the number is more powerful than one might expect. Research demonstrates that some such benchmarks for earnings are almost as accurate as the forecasts of professional security analysts, who have access to a rich information set (we return to this point in more detail later). Thus, the benchmark is often not only a good starting point but also close to the amount forecast after detailed analysis. Large departures from the benchmark could be justified only in cases where the firm’s situation is demonstrably unusual.

Reasonable points of departure for forecasts of key accounting numbers can be based on the evidence summarized next. Such evidence may also be useful for checking the reasonableness of a completed forecast.

Sales Growth Behavior

Sales growth rates tend to be “mean-reverting”: firms with above-average or below-average rates of sales growth tend to revert over time to a “normal” level (historically in the range of 7 to 9 percent for U.S. firms) within three to ten years. Figure 6-1 documents this mean-reverting effect for the period 1993 through 2010 for all the publicly traded U.S. firms covered by the Compustat database. All firms are ranked in terms of their sales growth in 1993 (year 1) and formed into five portfolios based on the relative ranking of their sales growth in that year. Firms in portfolio 1 are in the top 20 percent of rankings in terms of their sales growth in 1993, those in portfolio 2 fall into the next 20 percent, while those in portfolio 5 are in the bottom 20 percent when ranked by sales growth. The sales growth rates of firms in each of these five portfolios are traced from 1993 through the subsequent nine years (years 2 to 10). The same experiment is repeated with 1997 and then 2001 as the base year (year 1). The results are averaged over the three experiments, and the resulting sales growth rates of each of the five portfolios for years 1 through 10 are plotted in Figure 6-1.

The figure shows that the group of firms with the highest growth initially—sales growth rates of a little over 70 percent—experience a decline to about an 8 percent

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


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growth rate within three years and are never much above 20 percent in the next seven years. Those with the lowest initial sales growth rates, negative 10 percent, improve immediately to a marginally positive sales growth in year 2 and show positive growth through year 10. One explanation for the pattern of sales growth seen in Figure 6-1 is that as industries and companies mature, their growth rate slows down due to demand saturation and intra-industry competition. Therefore, even when a firm is growing rapidly at present, it is generally unrealistic to assume that the current high growth will persist indefinitely. Of course, how quickly a firm's growth rate reverts to the average depends on the characteristics of its industry and its own competitive position within an industry.

Earnings Behavior

Earnings have been shown on average to follow a process that can be approximated by a “random walk” or “random walk with drift.” This implies that the prior year's earnings is a good starting point in considering future earnings potential. Even a simple random walk forecast—one that predicts next year's earnings will be equal to last year's earnings—is surprisingly useful. One study documents that professional analysts' year-ahead forecasts are only 22 percent more accurate, on average, than a simple random walk forecast.¹ Thus a final earnings forecast will usually not differ dramatically from a random walk benchmark. In addition, it is reasonable to adjust this simple benchmark for the earnings changes of the most recent quarter, i.e., changes relative to the comparable quarter of the prior year after controlling for the long-run trend in the series.

Although the average level of earnings over several prior years is not useful, long-term trends in earnings tend to be sustained on average, and so they are also worthy of consideration. If quarterly data are also included, then some consideration should usually be given to any departures from the long-run trend that occurred in the most recent quarter. For most firms, these most recent changes tend to be partially repeated in subsequent quarters.²

Return on Equity Behavior

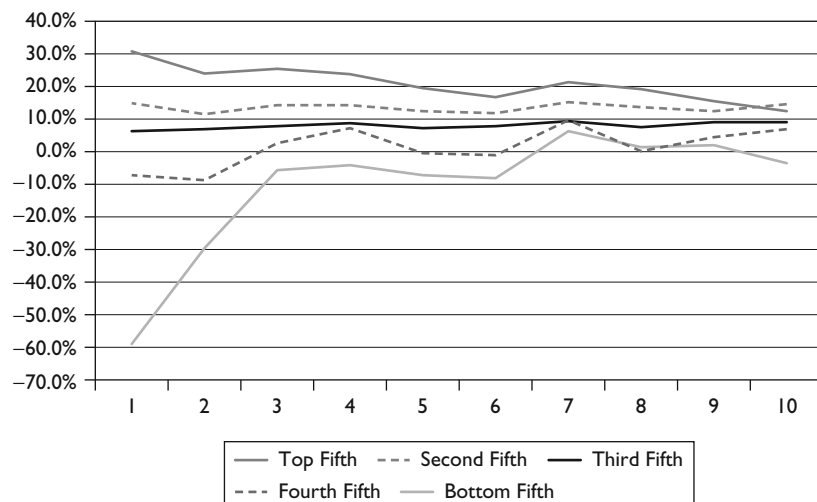
Given that prior earnings serve as a useful benchmark for future earnings, one might expect the same to be true of measures of return on investment such as ROE. That, however, is not the case for two reasons. First, even though the average firm tends to sustain the current earnings level, this is not true of firms with unusual levels of ROE. Firms with abnormally high (low) ROE tend to experience earnings declines (increases).³

Second, firms with higher ROEs tend to expand their investment bases more quickly than others, which causes the denominator of the ROE to increase. Of course, if firms could earn returns on the new investments that match the returns on the old ones, then the level of ROE would be maintained. However, firms have difficulty continuing to generate those impressive ROEs. Firms with higher ROEs tend to find that, as time goes by, their earnings growth does not keep pace with growth in their investment base, and ROE ultimately falls.

The resulting behavior of ROE and other measures of return on investment is characterized as mean-reverting, a pattern similar to that observed for sales growth rates earlier. Firms with above-average or below-average rates of return tend to revert over time to a “normal” level (historically in the range of 10 to 15 percent for U.S. firms) within no more than ten years.⁴ Figure 6-2 documents this mean-reverting effect for U.S. firms from 1993 through 2010. All firms are ranked in terms of their ROE in 1993 (year 1) and formed into five portfolios in a similar fashion to the sales growth analysis above. Firms in portfolio 1 have the top 20 percent ROE rankings in 1993, those in portfolio 2 fall into the next 20 percent, and those in portfolio 5 have the bottom 20 percent. The average ROE of firms in each of these five portfolios is then traced through nine subsequent years (years 2 to 10). The same experiment is repeated with 1997 and 2001 as the base year (year 1). Figure 6-2 plots the average ROE of each of the five portfolios in years 1 to 10 averaged across these three experiments.

Though the five portfolios start out in year 1 with a wide range of ROEs (–60 percent to +30 percent), by year 10 the pattern of mean-reversion is clear. The most profitable group of firms initially—with average ROEs of 30 percent—experience a decline to below 20 percent

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



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within five years. By year 10 this group of firms has an ROE of 12 percent. Those with the lowest initial ROEs (−60 percent) experience a dramatic increase in ROE in the first three years and are marginally profitable or at least close to breakeven by the final four years.

The pattern in Figure 6-2 is not a coincidence—it is exactly what the economics of competition would predict. The tendency of high ROEs to fall is a reflection of high profitability attracting competition; the tendency of low ROEs to rise reflects the mobility of capital away from unproductive ventures toward more profitable ones.⁵ Despite the general tendencies documented in Figure 6-2, there are some firms whose ROEs may remain above or below normal levels for long periods of time. In some cases the phenomenon reflects the strength of a sustainable competitive advantage, but in other cases it is purely an artifact of conservative accounting methods. A good example of the latter phenomenon in the United States is pharmaceutical firms, whose major economic asset, the intangible value of research and development, is not recorded on the balance sheet and is therefore excluded from the denominator of ROE. For these firms, one could reasonably expect high ROEs—in excess of 20 percent—over the long run, even in the face of strong competitive forces.

The Behavior of Components of ROE

The behavior of rates of return on equity can be analyzed further by looking at the behavior of its key components. Recall from Chapter 5 that ROEs and profit margins are linked as follows:

$$\begin{aligned} \text{ROE} &= \text{Operating ROE} + (\text{Operating ROA} - \text{Net interest rate after tax}) \\ &\quad \times \text{Net financial leverage} \\ &= \text{NOPAT margin} \times \text{Operating asset turnover} + \text{Spread} \\ &\quad \times \text{Net financial leverage} \end{aligned}$$

The time-series behaviors of the primary components of ROE for U.S. companies for 1993 through 2010 are shown in a series of figures in the appendix to this chapter. Some major conclusions can be drawn from these figures:

- (1) Operating asset turnover tends to be rather stable, in part because it is largely a function of the technology of the industry. The only exception to this is the set of firms with very high asset turnover, which tends to decline somewhat over time before stabilizing;
- (2) Net financial leverage also tends to be stable, simply because management policies on capital structure are not often changed; and
- (3) NOPAT margin stands out as the most variable component of ROE. If the forces of competition drive abnormal ROEs toward more normal levels, the change is most likely to arrive in the form of changes in profit margins. The change in NOPAT margin will drive changes in the spread, since the cost of borrowing is likely to remain stable because leverage tends to be stable.

To summarize, profit margins and ROEs tend to be driven by competition to normal levels over time. What constitutes normal varies widely according to the technology employed within an industry and the corporate strategy pursued by the firm, both of which influence turnover and leverage.⁶ In a fully competitive equilibrium, profit margins should remain high for firms that must operate with a low turnover, and vice versa.

The above discussion of rates of return and margins implies that a reasonable starting point for forecasting such statistics should consider more than just the most recent observation. One should also consider whether that rate or margin is above or below a normal level. If so, then absent detailed information to the contrary, one would expect

some movement over time toward that norm. Of course this central tendency might be overcome in some cases—for example, where the firm has erected barriers to competition that can protect margins, even for extended periods. The lesson from the evidence, however, is that such cases are unusual.

In contrast to rates of return and margins, it is reasonable to assume that asset turnover, financial leverage, and net interest rate remain relatively constant over time. Unless there is an explicit change in technology or financial policy being contemplated for future periods, a reasonable starting point for assumptions for these variables is the current period level. The only exceptions to this appear to be firms with either very high asset turns that experience some decline in this ratio before stabilizing, or those firms with very low (usually negative) net debt to capital that appear to increase leverage before stabilizing. In addition, firms with very high levels of leverage tend to survive at a lower rate than more conservatively financed firms, driving down averages over time.

As we proceed with the steps involved in producing a detailed forecast, the reader will note that we draw on knowledge of the behavior of accounting numbers to some extent. However, it is important to keep in mind that a knowledge of average behavior will not fit all firms well. The art of financial statements analysis requires not only knowing what the “normal” patterns are but also having expertise in identifying those firms that will not follow the norm.

OTHER FORECASTING CONSIDERATIONS

In general, the mean-reverting behavior of sales growth and return on equity that is demonstrated by the broader market should hold for individual companies over time. The starting point for any forecast should therefore be the time-series behavior of the various measures of firm performance, as discussed. However, there are several other factors that the analyst should consider in making forecasts. These include an understanding of implications of the three levels of analysis that precede prospective analysis—strategy, accounting, and financial performance—and of macroeconomic considerations.⁷

Strategy, Accounting, and Financial Analysis and Forecasting

The analysis of a firm’s strategy, accounting, and financial performance discussed throughout this book can generate important questions and insights about a firm’s future performance. A projection of the future performance of any company must therefore be grounded in an understanding of the questions raised by these analyses, such as:

- From business strategy analysis: What are the characteristics of the industry in which a firm operates? Are there significant barriers to entry that are likely to deter future competition? If so, how long are they expected to last? What are the industry’s growth prospects? How are they likely to affect future competition? And, does the company in question have a clear strategy that positions it for future success? For example, following up on the discussion of TJX’s business strategy in Chapter 2, the analyst might ask whether TJX has succeeded in creating a retailing infrastructure that will allow it to continue to succeed in the U.S. market? Will it be able to replicate this market success internationally? At what rate will TJX be able to grow its sales, both in the short term and the long term, without sacrificing its margins? Will competitors be able to replicate TJX’s efficiency while competing with a differentiated product offering?
- From accounting analysis: The accounting analysis discussed in Chapters 3 and 4 provide the analyst with an understanding of how a company’s accounting affects its reported financial performance. Are assets overstated, requiring a future

write-down? Does the firm have off-balance sheet assets, such as R&D, that overstate reported rates of return? If so, what are the implications for future accounting statements? For TJX, we pointed out that the firm's accounting resulted in the value and associated liabilities of operating leases being excluded from the firm's assets and liabilities.

- From financial analysis: What are the sources of a firm's poor or strong recent performance? Is this performance sustainable? Are there any discernible patterns in the firm's past performance? If so, are there any reasons why this trend is likely to continue or to change?

These insights assist the analyst in answering questions of whether and for how long the firm will be able to maintain any competitive advantage and current performance levels, which are critical to forecasting. The answers to these questions determine the speed with which the firm's performance follows the general mean-reverting trends discussed above.

Macroeconomic Factors and Forecasting

For companies whose financial performance is highly sensitive to the economic cycle, the analyst will also want to consider macroeconomic conditions when making forecasts. Such is likely to be the case for TJX, which in the first half of 2011 faced a slow U.S. economic recovery following the economic crisis of 2008. Despite increased consumer spending, overall spending had not yet recovered to pre-recession levels. TJX's focus on value had helped it to maintain growth during the difficult economic time, with sales growing at an average of 5 percent per year from FY 2007 through FY 2010.⁸

However, several factors are likely to affect TJX's growth prospects. High gas prices could temper consumer enthusiasm for driving to suburban stores and reduce consumer spending. Further, the slow pace of the economic recovery, with unemployment continuing to hover near the 10 percent level and a weak housing market, combined with concerns over U.S. government debt levels and legislative gridlock, raised concerns of the potential for a "double-dip" recession in the United States. Such economic conditions generally favor discount retailers such as TJX but also lead to reduced overall consumer spending.⁹ Finally, TJX's expansion plans in Europe are likely to be affected by a deteriorating economic climate arising from the financial crises in Greece, Portugal, Spain, Ireland, and Italy.

While macroeconomic factors certainly will have an impact on TJX's performance in the short, medium, and long term, these factors cannot be forecast with a high degree of certainty. Consequently, for forecasting purposes it is generally advisable to assume that the impact of changes in the business cycle will even out in the long run.

MAKING FORECASTS

The analysis of TJX's performance in Chapter 5, and preceding discussions about general market behavior and TJX's strategic positioning, leads us to the conclusion that while TJX has consistently generated above-normal returns for its stakeholders, in the long run it is likely that a portion of the firm's abnormal profits will be competed away. The performance of the firm will revert toward the mean, as has been the general trend that we have seen earlier in the chapter.

Table 6-1 shows the forecasting assumptions we have made for TJX for years 2011 to 2020. We use as our base the adjusted financial statements detailed in Chapter 5 so that we can fully incorporate the impact of TJX's off-balance sheet operating leases into our forecasts. We have chosen a ten-year forecasting period because we believe that the firm

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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should reach a relatively steady state of performance by then (discussed in further detail in Chapter 8). We discuss the forecasting assumptions below.

The forecasts for TJX for the first two or three years of the forecast period are a straightforward extrapolation of recent performance, which are heavily influenced by the company's strategic positioning, existing financials, and other company-specific metrics. This is generally a valid approach for an established company such as TJX for a few reasons. First, the company's management gives no indication of any major restructurings or changes to its operating and financing policies in the short term. Second, the beginning balance sheet for any forecast period places constraints on operating activities during that forecast period. For example, inventories at the beginning of the year will determine to some extent the sales activities during the year; stores in operation at the beginning of the year also determine to some extent the level of sales achievable during the year. To put it another way, since our discussion above shows that asset turns for a company do not usually change significantly in a short time, sales in any period are to some extent constrained by the beginning of the period assets in place in the company's balance sheet (although a company like TJX with explicit plans to expand assets through new store openings will be able to achieve some flexibility in this regard).

In contrast, when the analysis shifts focus to the later years of the forecast, the analyst should increasingly incorporate the influence of mean-reverting behavior demonstrated by the time-series analyses behavior discussed earlier.

Developing a Sales Growth Forecast

Despite the intense competition in retailing, TJX has built an impressive track record of steady earnings and sales growth, with 15 consecutive years of earnings per share growth as of 2010 and with annual consolidated comparable store sales increasing every year except one in its 34 years of business.¹⁰ Given this history, it is reasonable to expect

that TJX will continue to deliver growth over the forecast period. TJX has three geographic segments—the domestic market in the United States, which shows signs of stagnating as a result of the intensity of competition and market saturation; the Canadian market, which at this point seems to be behaving in a similar manner to the U.S. market; and the European market, where TJX's initial expansion out of North America into the markets of the U.K., Ireland, Germany, and Poland are critical components to continued expansion as the U.S. and Canadian markets approach saturation.

At the beginning of 2011, TJX operated over 2,000 stores in the United States with its T.J. Maxx, Marshalls, and Home Goods formats, with U.S. sales accounting for roughly 77 percent of total TJX revenue. Sales for T.J. Maxx and Marshalls stores (referred to collectively as Marmaxx) grew 6 percent in the year ending January 2011, compared to 7.4 percent in the previous year. Comparable store sales grew by 4 percent. Home Goods store sales (which made up about 12 percent of total U.S. sales) grew 9 percent in the year ending January 2011, with same store sales increasing 6 percent. Given that TJX has a fairly comprehensive U.S. retail network (the company estimated that it had achieved roughly 70 percent market penetration in the U.S. market by 2011), new store openings would be expected to increasingly cannibalize sales from existing stores in the same area as full market penetration is approached, reducing growth in comparable store sales.¹¹ New store openings are also likely to slow as unique attractive locations become increasingly scarce. At the same time, TJX viewed the recent economic downturn as an opportunity to broaden its customer base, perceiving a permanent consumer “shift to value,” and has worked to attract and retain more affluent customers with store upgrades and targeted advertising.¹² However, it is unclear whether this shift in consumer sentiment will be permanent and whether this initiative will be successful in offsetting a coming slowdown in same store sales. TJX also faces increasing competition from high-end department stores that have established their own off-price formats (Nordstrom Rack, Off 5th), as well as from the growing online channel. Thus, it is reasonable to expect that TJX's overall U.S. sales growth will trend downward, though probably at a slower pace than would be implied by the mean-reverting tendency of sales growth for the overall market.

TJX Canada sales (which accounted for about 12 percent of total TJX sales) increased 16 percent for the year ended January 2011 as compared to the previous year, although roughly 9 percent of that was due to currency translation—previous year's sales growth had been only 1 percent, including currency translation impact, which reduced that level by 3 percent. Same store sales increased by 4 percent for the year ended January 2011 and 2 percent for the previous year. Absent currency translation effect, TJX Canada seems to be behaving in a similar manner to the U.S. segment. TJX estimates market penetration in Canada at about 70 percent in early 2011, and thus it is reasonable to expect that TJX Canada will exhibit similar sales growth characteristics as the U.S. market discussed above.¹³

TJX's European operation presents a more interesting forecasting challenge. The subtleties of local tastes and bureaucratic complexities in local real estate markets have made it extremely challenging for nondomestic retailing companies to establish market leadership outside their home markets. Since its entry into the U.K. in 1994, TJX has worked to establish its position as the only major off-price retailer in Europe, with operations in 2011 in the U.K., Germany, and Poland. Sales grew by 10 percent from 2009 to 2010, and 13 percent when a negative currency translation impact is excluded.¹⁴ While TJX continues to see strong growth potential in Europe, early in 2011 it actually announced plans to slow its expansion in order to address execution concerns that in the year ended January 2011, resulted in a decrease in segment profit and a decline in same store sales.¹⁵ Given TJX's estimate of 41 percent penetration in its European segment, it is reasonable to assume that once the company sorts out its operational issues, it will experience a rate of growth that may surpass that of its more penetrated markets

TABLE 6-2		Forecasted Sales Growth for TJX									
Forecast Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	
TJX U.S./Canada	5.7%	6.4%	6.7%	6.5%	6.2%	6.0%	5.8%	5.7%	5.5%	5.3%	
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%	

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in the United States and Canada. However, on an overall basis, a higher growth rate in Europe will likely not be enough to overcome slowing growth in the United States and Canada, given that as of 2011 the European segment contributed only about 11 percent of total TJX sales revenue and, in our ten year forecast period, rises only to about 14 percent of total TJX sales revenue.

The projections in Table 6-2 reflect the analysis of TJX's three geographic segments discussed above. We have combined the U.S. and Canada segments given that they appear to have similar growth and saturation characteristics. For TJX overall we show a gradual improvement in sales growth over the next couple of years, followed by a slow decline in growth as the impact of mean-reversion pressures are felt. While this pattern is based on a mixture of business intelligence and a knowledge of long-term trends in the market, it is important to note that an analyst could capture much of the dynamics of the projections merely by assuming that TJX will not be immune to the long-run forces of competition and mean reversion.

Developing a NOPAT Margin Forecast

In the U.S. and Canadian markets, TJX is likely to face increasing direct competitive pressure from the high-end department stores such as Nordstrom and Saks as they expand their off-price brands in the United States, and from U.S. and domestic competitors such as Target, Wal-Mart, Nordstrom, and Hudson's Bay Company as they establish or expand their Canadian presence. In addition, an improving economy in the United States would be expected to shift some portion of the more affluent end of TJX's customer base back toward the high-end department stores as consumer sentiment improves. TJX believes that its program of store upgrades and targeted advertising will be successful in retaining its broader customer base as the economy rebounds. In addition, it expects its global supply chain infrastructure to help it continue to increase inventory turns and reduce the need for markdowns by purchasing later in the sales cycle. This improved merchandising and affluent customer retention, if successfully executed, could lead to a narrowing of the margin gap seen in the comparison of TJX and Nordstrom in Chapter 5. However, over time it is likely that competitive pressures will have a greater impact, leading to a steady decline in NOPAT margins, although perhaps at a slower rate than that of less successful competitors.

Slow customer acceptance, start-up costs, and less-developed infrastructure has resulted in TJX's European operations generating lower margins than its U.S./Canadian businesses. In addition, European execution problems and accompanying weak financial results in 2011 led the company to slow expansion plans until the issues had been resolved.¹⁶ We anticipate that in the short term TJX's European margins will continue to be lower than those in the United States and Canada as the company sorts out its execution issues and establishes a larger presence in the market. Thereafter, margins in

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

Europe will show slow improvement as customer acceptance grows and operational efficiencies are achieved. However, given the costs of managing expected higher growth in Europe and continued lower levels of consumer acceptance versus the United States, we expect that margins in Europe will remain lower than those of the U.S. and Canadian markets throughout the forecast period, further lowering the company's overall NOPAT margins. Table 6-3 shows our forecast of TJX's average NOPAT margins going forward. While we would have preferred to forecast NOPAT margins by segment, TJX does not provide fully allocated segment data in order for us to do so. As a result, our overall NOPAT margin forecast takes into account the analysis above.

Developing a Working Capital to Sales Forecast

As discussed in Chapter 5, TJX had an operating working capital ratio to sales of less than 1.0 in the year ended January 2011. The primary drivers of this low ratio were its focus on driving higher inventory turnover and its low accounts receivable levels resulting from the strategic decision to outsource the TJX branded credit card operations. While TJX prides itself in prompt payment to vendors, as reflected in its reasonable 35.3 days accounts payable in 2010, this low ratio implies that TJX is able to fund its working capital needs—primarily for inventory—through its trade and other short-term creditors and accruals.

TJX continues to view its opportunistic buying strategy as critical to its success at maintaining low inventory levels, and it has built its global supplier network to facilitate this strategy.¹⁷ Working capital needs are also likely to decline as TJX improves operations in Europe and takes advantage of its growing international presence to negotiate more favorable terms with its suppliers. Therefore, it is reasonable to expect that its net operating working capital to sales ratio will remain at or near its current level as the firm's market power grows and it continues to invest in its supply chain.

Developing a Long-Term Assets to Sales Forecast

As the pace of TJX's new store openings in the United States and Canada slows, comparable store sales growth should improve as fewer new stores will open up near existing stores, reducing the risk of customer cannibalization. This should have a beneficial impact on the firm's long-term asset use in the United States and Canada. Counteracting this improvement is TJX's recent focus on attracting and retaining more affluent customers with enhanced stores. Also, with growth in the asset-intensive European segment outpacing that of the North American businesses, TJX's ratio of long-term assets to sales is likely to gradually deteriorate over the forecast horizon.

Developing a Capital Structure Forecast

As we discussed previously (and as can be seen in the historical data on capital structure found in the appendix), a company's capital structure would typically be expected to remain constant over the forecast period, simply because management policies on capital

structure are slow to change. We would expect this to be true of TJX as well after looking at recent actions related to capital structure taken by the company. For instance, TJX's Board of Directors authorized a \$1.0 billion share repurchase program in February 2010, of which \$594 million had yet to be repurchased as of January 2011. In addition, the Board of Directors approved a new stock repurchase program in February 2011 authorizing the repurchase of an additional \$1.0 billion of TJX common stock. However, there was no time limit within which these purchases needed to be completed, and decisions on share repurchases were based on the firm's assessment of "various factors including anticipated excess cash flow, liquidity, market conditions, the economic environment and prospects for the business and other factors."¹⁸ Thus, we expect that it is unlikely that TJX will make any fundamental change in its capital structure so that the firm's leverage and debt yield (5.5 percent before tax and 3.4 percent after tax) remain relatively stable.

Having made the set of key assumptions detailed above, it is a straightforward task to derive the forecasted income statements and beginning balance sheets for years 2011 through 2020 as shown in Table 6-4. Under these forecasts, TJX's sales will grow to \$40.6 billion, almost double the level in 2010. By 2020, the firm will have a net operating asset base of \$15.0 billion and shareholders' equity of \$6.4 billion. Consistent with market-wide patterns of mean-reversion in returns, TJX's return on equity and operating return on assets will decline steadily—ROE from 55.4 percent in 2010 to 21.7 percent by 2020, and Operating ROA from 27.8 percent to 10.8 percent over the same period.

Cash Flow Forecasts

Once we have forecasted income statements and balance sheets, we can derive cash flows for the years 2011 through 2020. Note that we need to forecast the beginning balance sheet for 2021 to compute the cash flows for 2020. This balance sheet is not shown in Table 6-4. For the purpose of illustration, we assume that the sales growth and the balance sheet ratios remain the same in 2021 as in 2020. Based on this, we project a beginning balance sheet for 2021 and compute the cash flows for 2020. Cash flow to capital is equal to NOPAT minus increases in net working capital and net long-term assets. As Table 6-4 shows, the free cash flow to all providers of capital decreases from \$1.1 billion in 2011 to \$0.8 billion by 2020, while cash flow to equity, which adds/deducts cash inflows/outflows to debt holders, decreases from \$1.4 billion to \$1.0 billion over the same period.

SENSITIVITY ANALYSIS

The projections discussed thus far represent nothing more than an estimation of a most likely scenario for TJX. Managers and analysts are typically interested in a broader range of possibilities. An analyst estimating the value of TJX would typically consider the sensitivity of projections to the key assumptions about sales growth, profit margins, and asset utilization. What if TJX is able to retain more of its competitive advantage in the United States than assumed in the above forecasts? Alternatively, what if it is unable to successfully address its operational issues in Europe and is unable to replicate its success in the United States in other markets? It is wise to also generate projections based on a variety of assumptions to determine the sensitivity of the forecasts to these assumptions.

There is no limit to the number of possible scenarios that can be considered. One systematic approach to sensitivity analysis is to start with the key assumptions underlying a set of forecasts, and then examine the sensitivity to the assumptions with greatest uncertainty in a given situation. For example, if a company has experienced a variable pattern of gross margins in the past, it is important to make projections using a range

TABLE 6-4 Forecasted Financial Statements for TJX

Forecast Year	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Beginning Balance Sheet										
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
= net operating assets	7,898.5	8,653.3	9,333.9	10,048.7	10,797.4	11,579.7	12,394.7	13,241.4	14,118.7	15,025.0
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
= Net capital	7,898.5	8,653.3	9,333.9	10,048.7	10,797.4	11,579.7	12,394.7	13,241.4	14,118.7	15,025.0
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
= 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 growth rate	16.2%	9.6%	7.9%	7.7%	7.5%	7.2%	7.0%	6.8%	6.6%	6.4%
Net operating asset turnover	2.9	2.9	2.8	2.8	2.8	2.8	2.8	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	1,233.3	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

Source: © Cengage Learning 2013

of margins. Alternatively, if a company has announced a significant change in its expansion strategy, asset utilization assumptions might be more uncertain. In determining where to invest one's time in performing sensitivity analysis, it is therefore important to consider historical patterns of performance, changes in industry conditions, and changes in a company's competitive strategy.

In the case of TJX, two likely alternatives to the forecast can be readily envisioned. The forecast presented above expects that TJX's above average success in the U.S. market gradually diminishes, while the European division addresses its operational issues and contributes stronger growth and improvement in performance. An upside case for TJX would have the firm continuing to achieve strong results in the United States and resisting the mean-reverting trends that characterize the market in general, in addition to the increased contribution from European operations. On the downside, the projected improvement in the European business could fail to materialize, hastening the decline in TJX's overall performance toward the market averages.

Seasonality and Interim Forecasts

Thus far, we have concerned ourselves with annual forecasts. However, especially for security analysts in the United States, forecasting is very much a quarterly exercise. Forecasting quarter-by-quarter raises a new set of questions. How important is seasonality? What is a useful starting point—the most recent quarter's performance? The comparable quarter of the prior year? Some combination of the two? How should quarterly data be used to produce an annual forecast? Does the item-by-item approach to forecasting used for annual data apply equally well to quarterly data? Full consideration of these questions lies outside the scope of this chapter, but we can begin to answer some of them.

Seasonality is a more important phenomenon in sales and earning behavior than one might guess. It is present for more than just the retail sector firms that benefit from holiday sales. Seasonality also results from weather-related phenomena (e.g., for electric and gas utilities, construction firms, and motorcycle manufacturers), new product introduction patterns (e.g., for the automobile industry), and other factors. Analysis of the time series behavior of earnings for U.S. firms suggests that at least some seasonality is present in nearly every major industry.

The implication for forecasting is that one cannot focus only on performance of the most recent quarter as a starting point. In fact, the evidence suggests that, in forecasting earnings, if one had to choose only one quarter's performance as a basis for forecasting, it would be the comparable quarter of the prior year, not the most recent quarter. Note how this finding is consistent with the reports of analysts or the financial press; when they discuss a quarterly earnings announcement, it is nearly always evaluated relative to the performance of the comparable quarter of the prior year, not the most recent quarter.

Research has produced models that forecast sales, earnings, or EPS based solely on prior quarters' observations. These models are not used by many analysts since they have access to much more information than such simple models contain. However, the models are useful for helping those unfamiliar with the behavior of earnings data to understand how it tends to evolve over time. Such an understanding can provide useful general background, a point of departure in forecasting that can be adjusted to reflect details not revealed in the history of earnings, or a "reasonableness" check on a detailed forecast.

One model of the earnings process that fits well across a variety of industries is the so-called Foster model.¹⁹ Using Q_t to denote earnings (or EPS) for quarter t , and $E(Q_t)$ as its expected value, the Foster model predicts that

$$E(Q_t) = Q_{t-4} + \delta + \phi(Q_{t-1} - Q_{t-5})$$

Foster shows that a model of the same form also works well with quarterly sales data.

The form of the Foster model confirms the importance of seasonality because it shows that the starting point for a forecast for quarter t is the earnings four quarters ago, Q_{t-4} . It states that, when constrained to using only prior earnings data, a reasonable forecast of earnings for quarter t includes the following elements:

- the earnings of the comparable quarter of the prior year (Q_{t-4});
- a long-run trend in year-to-year quarterly earnings increases (δ); and
- a fraction (φ) of the year-to-year increase in quarterly earnings experienced most recently ($Q_{t-1} - Q_{t-5}$).

The parameters δ and φ can easily be estimated for a given firm with a simple linear regression model available in most spreadsheet software.²⁰ For most firms the parameter φ tends to be in the range of .25 to .50, indicating that 25 to 50 percent of an increase in quarterly earnings tends to persist in the form of another increase in the subsequent quarter. The parameter δ reflects in part the average year-to-year change in quarterly earnings over past years, and it varies considerably from firm to firm.

Research indicates that the Foster model produces one quarter ahead forecasts that vary from actual results by \$.30 to \$.35 per share, on average. Such a degree of accuracy stacks up surprisingly well with that of security analysts, who obviously have access to much information ignored in the model. As one would expect, most of the evidence supports analysts' forecasts being more accurate, but the models are good enough to be a reasonable approximation in most circumstances. While it would certainly be unwise to rely completely on such a mechanistic model, an understanding of the typical earnings behavior reflected by the model is useful.

SUMMARY

Forecasting represents the first step of prospective analysis and serves to summarize the forward-looking view that emanates from business strategy analysis, accounting analysis, and financial analysis. Although not every financial statement analysis is accompanied by such an explicit summarization of a view of the future, forecasting is still a key tool for managers, consultants, security analysts, investment bankers, commercial bankers, and other credit analysts, among others.

The best approach to forecasting future performance is to do it comprehensively—producing not only an earnings forecast but also a forecast of cash flows and the balance sheet as well. Such a comprehensive approach provides a guard against internal inconsistencies and unrealistic implicit assumptions. The approach described here involves a condensed, line-by-line analysis, so as to recognize that different items on the income statement and balance sheet are influenced by different drivers. Nevertheless, it remains the case that a few key projections—such as sales growth and profit margin—usually drive most of the projected numbers.

The forecasting process should be embedded in an understanding of how various financial statistics tend to behave on average and what might cause a firm to deviate from that average. Absent detailed information to the contrary, one would expect sales and earnings numbers to persist at their current levels, adjusted for overall trends of recent years. However, rates of return on investment (ROEs) tend, over several years, to move from abnormal to normal levels—close to the cost of equity capital—as the forces of competition come into play. Profit margins also tend to shift to normal levels, but for this statistic “normal” varies widely across firms and industries, depending on the levels of asset turnover and leverage. Some firms are capable of creating barriers to entry that

enable them to fight these tendencies toward normal returns, even for many years, but such firms are the unusual cases.

Forecasting should be preceded by a comprehensive business strategy, accounting, and financial analysis. It is important to understand the dynamics of the industry in which the firm operates and its competitive positioning within that industry. Therefore, while general market trends provide a useful benchmark, it is critical that the analyst incorporate the views developed about the firm's prospects to guide the forecasting process.

For some purposes, including short-term planning and security analysis, forecasts for quarterly periods are desirable. One important feature of quarterly data is seasonality; at least some seasonality exists in the sales and earnings data of nearly every industry. An understanding of a firm's intra-year peaks and valleys is a necessary ingredient of a good forecast of performance on a quarterly basis.

Forecasts provide the input for estimating a firm's value, which can be viewed as the best attempt to reflect in a single summary statistic the manager's or analyst's view of the firm's prospects. The process of converting a forecast into a value estimate is labeled valuation and is discussed in the next chapter.

DISCUSSION QUESTIONS

1. Merck is one of the largest pharmaceutical firms in the world, and over an extended period of time in the recent past, it consistently earned higher ROEs than the pharmaceutical industry as a whole. As a pharmaceutical analyst, what factors would you consider to be important in making projections of future ROEs for Merck? In particular, what factors would lead you to expect Merck to continue to be a superior performer in its industry, and what factors would lead you to expect Merck's future performance to revert to that of the industry as a whole?
2. John Right, an analyst with Stock Pickers, Inc., claims, "It is not worth my time to develop detailed forecasts of sales growth, profit margins, et cetera, to make earnings projections. I can be almost as accurate, at virtually no cost, using the random walk model to forecast earnings." What is the random walk model? Do you agree or disagree with John Right's forecast strategy? Why or why not?
3. Which of the following types of businesses do you expect to show a high degree of seasonality in quarterly earnings? Explain why.
 - a supermarket
 - a pharmaceutical company
 - a software company
 - an auto manufacturer
 - a clothing retailer
4. What factors are likely to drive a firm's outlays for new capital (such as plant, property, and equipment) and for working capital (such as receivables and inventory)? What ratios would you use to help generate forecasts of these outlays?
5. How would the following events (reported this year) affect your forecasts of a firm's future net income?
 - an asset write-down
 - a merger or acquisition
 - the sale of a major division
 - the initiation of dividend payments

6. Consider the following two earnings forecasting models:

$$E(EPSt_{t+1}) = EPSt_t$$

Model 1:

$$E(EPSt_{t+1}) = \frac{1}{5} \sum_{t=1}^5 EPSt_t$$

$E(EPSt_{t+1})$ is the expected forecast of earnings per share for year $t + 1$, given information available at t . Model 1 is usually called a random walk model for earnings, whereas Model 2 is called a mean-reverting model. The earnings per share for TJX for the fiscal years ending January 2006 (FY2005) through January 2010 (FY2009) are as follows:

Fiscal Year	2005	2006	2007	2008	2009
EPS	\$1.40	\$1.60	\$1.70	\$2.00	\$2.80

- What would the forecast for earnings per share in FY2010 be for each model?
 - Actual earnings per share for TJX in FY2010 were \$3.30. Given this information, what would be the FY2011 forecast for earnings per share for each model? Why do the two models generate quite different forecasts? Which do you think would better describe earnings per share patterns? Why?
7. Joe Fatcat, an investment banker, states, "It is not worth my while to worry about detailed long-term forecasts. Instead, I use the following approach when forecasting cash flows beyond three years: I assume that sales grow at the rate of inflation, capital expenditures are equal to depreciation, and that net profit margins and working capital to sales ratios stay constant." What pattern of return on equity is implied by these assumptions? Is this reasonable?

NOTES

- See P. O'Brien, "Analysts' Forecasts as Earnings Expectations," *Journal of Accounting and Economics* (January 1988): 53–83.
- See G. Foster, "Quarterly Accounting Data: Time Series Properties and Predictive Ability Results," *The Accounting Review* (January 1977): 1–21.
- See R. Freeman, J. Ohlson, and S. Penman, "Book Rate-of-Return and Prediction of Earnings Changes: An Empirical Investigation," *Journal of Accounting Research* (Autumn 1982): 639–53.
- See S. Penman, "An Evaluation of Accounting Rate-of-Return," *Journal of Accounting, Auditing, and Finance* (Spring 1991): 233–56; E. Fama and K. French, "Size and Book-to-Market Factors in Earnings and Returns," *Journal of Finance* (March 1995): 131–56; and V. Bernard, "Accounting-Based Valuation Methods: Evidence on the Market-to-Book Anomaly and Implications for Financial Statements Analysis," (working paper, University of Michigan, 1994). Ignoring the effects of accounting artifacts, ROEs should be driven in a competitive equilibrium to a level approximating the cost of equity capital.
- The pattern of ROE mean reversion is not just a U.S. phenomenon. It is also common among non-U.S. firms. Research finds that the pattern persists across a wide range of countries, and that mean reversion is faster in countries with more competitive product and capital markets, and with less efficient governments. See P. Healy, G. Serafeim, S. Srinivasan, and G. Yu, "Market Competition, Government Efficiency, and Profitability Around the World," HBS Working Paper, No. 12-010, 2011.

6. A “normal” profit margin is that which, when multiplied by the turnover achievable within an industry and with a viable corporate strategy, yields a return on investment that just covers the cost of capital. However, as mentioned above, accounting artifacts can cause returns on investment to deviate from the cost of capital for long periods, even in a competitive equilibrium.
7. A recent paper by B. Groysberg, P. Healy, N. Nohria, and G. Serafeim, “What Factors Drive Analyst Forecasts?” *Financial Analysts Journal* 67, no. 4 (July–August 2011) finds that, controlling for prior year performance, the most important factors explaining analysts’ revenue and earnings forecasts are their assessments of its industry’s growth prospects, followed by their evaluations of the quality of its top management, the firm’s ability to execute its strategy, whether its judged to have a performance-driven culture, and the competitiveness of its industry.
8. Thomson ONE, accessed May 2011.
9. For instance, see Tim Fernholz, “With Debt Ceiling Reached, Tensions Rise First in Washington,” *National Journal*, May 26, 2011, <http://www.nationaljournal.com/budget/with-debt-limit-reached-tensions-rise-first-in-washington-20110516>, accessed May 2011, and Simon Constable, “Economist Shiller Sees Potential for “Double Dip” Recession,” *Wall Street Journal*, August 28, 2010, <http://online.wsj.com/article/SB10001424052748704147804575455370525902224.html>, accessed May 2011.
10. TJX Companies, Inc., 2010 Annual Report, p. 1, http://www.tjx.com/investor_landing.asp, accessed May 2011.
11. TJX Companies, Inc., January 29, 2011, Form 10-K (filed March 30, 2011), pp. 5–6, http://www.tjx.com/investor_landing.asp, accessed May 2011.
12. TJX Companies, Inc., 2009 Annual Report, pp. 3–4, http://www.tjx.com/investor_landing.asp, accessed May 2011.
13. TJX Companies, Inc., January 29, 2011, Form 10-K (filed March 30, 2011), pp. 27–28, http://www.tjx.com/investor_landing.asp, accessed May 2011.
14. TJX Companies, Inc., 2009 Annual Report, p. 8, http://www.tjx.com/investor_landing.asp, accessed May 2011.
15. TJX Companies, Inc., January 29, 2011, Form 10-K (filed March 30, 2011), p. 28, http://www.tjx.com/investor_landing.asp, accessed May 2011.
16. *Ibid*, p. 28.
17. TJX Companies, Inc., 2009 Annual Report, http://www.tjx.com/investor_landing.asp, accessed May 2011.
18. TJX Companies, Inc., 2010 Annual Report, p. 31, http://www.tjx.com/investor_landing.asp, accessed May 2011.
19. See Foster, *op. cit.* A somewhat more accurate model is furnished by Brown and Rozeff, but it requires interactive statistical techniques for estimation. See L. Brown and M. Rozeff, “Univariate Time Series Models of Quarterly Accounting Earnings per Share,” *Journal of Accounting Research* (Spring 1979): 179–89.
20. To estimate the model, we write in terms of realized earnings (as opposed to expected earnings) and move Q_{t-4} to the left-hand side:

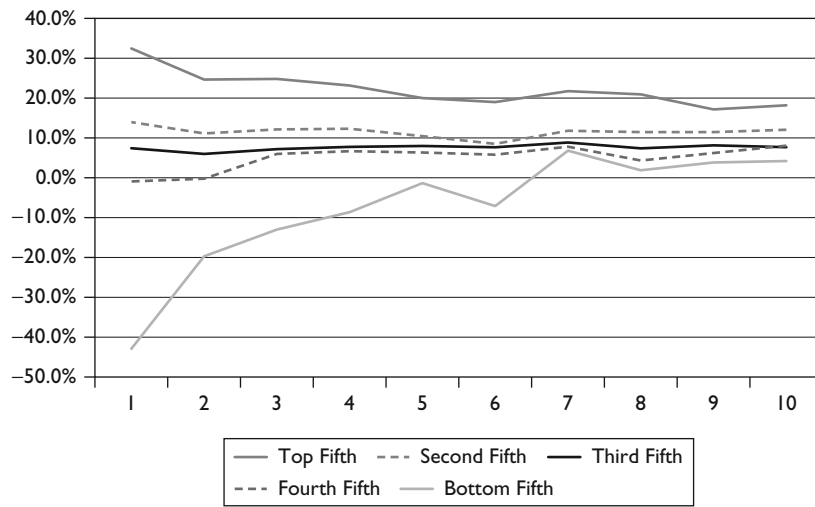
$$Q_t - Q_{t-4} = \delta + \phi(Q_{t-1} - Q_{t-5}) + e_t$$

We now have a regression where $(Q_t - Q_{t-4})$ is the dependent variable, and its lagged value— $(Q_{t-1} - Q_{t-5})$ —is the independent variable. Thus, to estimate the equation, prior earnings data must first be expressed in terms of year-to-year changes; the change for one quarter is then regressed against the change for the most recent quarter. The intercept provides an estimate of δ , and the slope is an estimate of ϕ . The equation is typically estimated using 24 to 40 quarters of prior earnings data.

APPENDIX The Behavior of Components of ROE

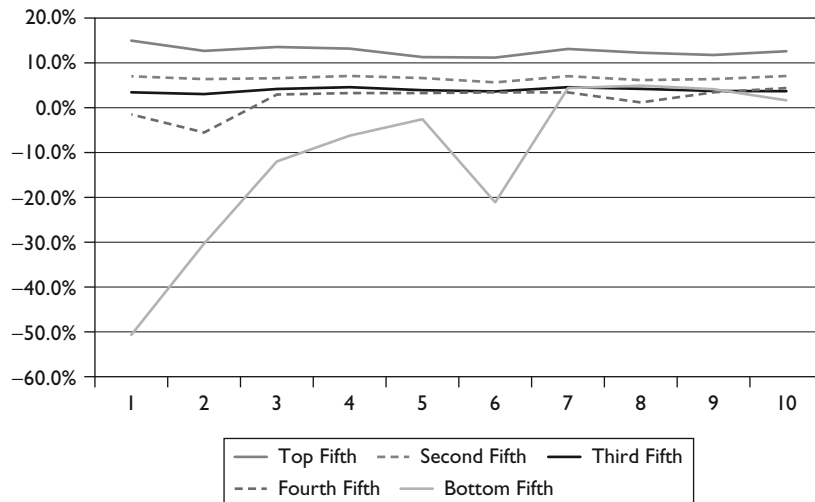
In Figure 6-2 we show that ROEs tend to be mean-reverting. In this appendix we show the behavior of the key components of ROE—operating ROA, operating margin, operating asset turnover, and net financial leverage. These ratios are computed using the same portfolio approach described in the chapter, based on the data for all publicly listed U.S. firms for the time period 1993 through 2010 as listed in the Compustat database.

FIGURE A-1 Behavior of Operating ROA for U.S. Firms, 1993–2010



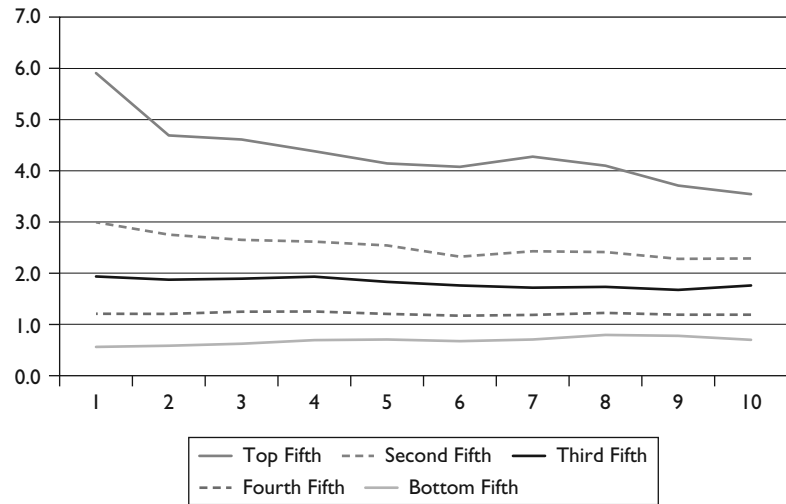
Source: © Cengage Learning 2013

FIGURE A-2 Behavior of NOPAT Margin for U.S. Firms, 1993–2010



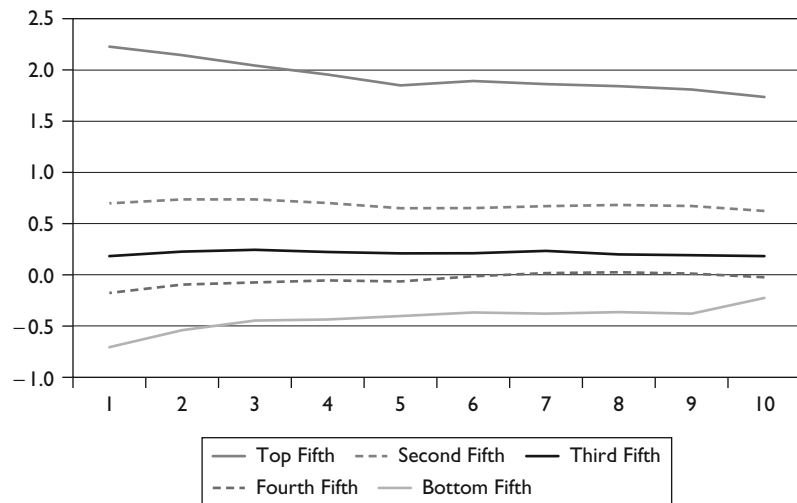
Source: © Cengage Learning 2013

FIGURE A-3 Behavior of Operating Asset Turnover for U.S. Firms, 1993–2010



Source: © Cengage Learning 2013

FIGURE A-4 Behavior of Net Financial Leverage for U.S. Firms, 1993–2010



Source: © Cengage Learning 2013