

# CHAPTER 12

# Applied Fundamental Analysis

## Introduction

In the last chapter, we examined how such factors as a firm's investments, choice of financing, and capital structure decisions determine the value of its stock. In this chapter, we extend our examination of fundamental analysis by looking at different quantitative approaches that are used to estimate the intrinsic value of a stock. The two most common approaches used by fundamentalists to value stocks are the discounted cash flow (DCF) method and the *multiplier approach*. The DCF approach is the valuation approach we discussed in preceding chapters. The important variables to estimate in the DCF are earnings per share (*EPS*) next year, the growth rate in EPS, the dividend-payout ratio, the discount rate, and the type of growth—constant, two-stage, or three-stage. The multiplier approach involves estimating the stock's price-to-earnings ratio and its expected earnings next year to determine its value. For years, the multiplier approach was the most popular method used by analysts to estimate a stock's value. It and other similar multiplier approaches using different multipliers (e.g., price-to-sales or price to earnings before interest, taxes, depreciation, and amortization, *EBITDA*) are referred to as relative valuation analysis. Quantitative stock analysis, however, always needs to be complemented with qualitative analysis of the strengths, weakness, opportunities, and threats (SWOT) facing a company. Combining the quantitative with qualitative engenders a conviction regarding whether a stock merits a buy or a sell recommendation.

In this chapter, we examine the multiplier and DCF models for evaluating stocks, as well as identify qualitative factors that analysts consider when evaluating stock. In Chapter 13, we will extend our examination of fundamental analysis by showing how the models are applied to valuing the overall market and industries.

## Valuation Using the Multiplier Approach

The multiplier approach involves valuing a stock by multiplying the stock's price-earnings ratio by the stock's forecasted earnings per share for the next period.

$$V_t = \frac{P}{e} E(EPS_{t+1})$$

The  $EPS$  (e also signifies EPS) for the price-to-earnings ratio,  $P/e$ , multiplier is the expected  $EPS$  with  $EPS$  generally measured as an annualized  $EPS$ .

### Estimating the $P/e$ Multiplier

The  $P/e$  is defined as the stock's equilibrium  $P/e$  value. Riskier stocks, for example, trade with higher discount rates and lower prices relative to their earnings than do less risky stocks. Stocks with higher expected growth rates trade with higher prices relative to their earnings than do stocks with lower rates. Analysts vary in how they estimate the equilibrium  $P/e$  ratio. Some simply use an historical  $P/e$  ratio as an estimate of the equilibrium  $P/e$  ratio. Others divide the current price or an average price by a consensus estimate of next period's  $EPS$  made by analysts.

One simple approach for estimating the multiplier is to use the Gordon-Williams constant-growth model: Divide the model's value  $V$  (or price,  $P$ ) by  $EPS$  (or  $e$ ).

$$V = P = \frac{d}{k_e - g}$$
$$\frac{V}{e} = \frac{P}{e} = \frac{d/e}{k_e - g}$$

Using this approach,  $P/e$  is estimated by estimating the model's three parameters,  $d/e$ ,  $k_e$ , and  $g$ . For example, consider our Two-Dollar General Store that we evaluated in Chapter 11:

- All equity company.
- Current  $EAT_0$  = \$24 million.
- Corporate investment policy in which its annual investments equal 75 percent of its  $EAT$ .
- Dividend payout = 25%.
- Investment financing done internally.
- Estimated rate of return on its investments =  $i = 0.20$ .
- Beta of the firm and beta of the company's investments = 2.
- Security market line (SML):  $k_e = 0.05 + [0.10]\beta = 0.25$ .
- The above features are expected to characterize this company for a long time.
- Number of shares = 5 million.

- $g = (\text{retention ratio}) (i) = (0.75)(0.20) = 0.15$ .
- $E(EAT_1) = EAT_0 (1 + g) = \$24 \text{ million} (1.15) = \$27.6 \text{ million}$ .
- Total Dividends =  $D_0$  = (dividend-payout ratio)  $EAT_0 = (0.25) (\$24 \text{ million}) = \$6 \text{ million}$ .
- $E(D_1) = D_0 (1 + g) = \$6 \text{ million} (1.15) = \$6.9 \text{ million}$ .
- $EPS_0 = EAT_0/n = \$24 \text{ million}/5 \text{ million} = \$4.80$ .
- $DPS_0 = D_0/n = \$6 \text{ million}/5 \text{ million} = \$1.20$ .
- $E(EPS_1) = EPS_0 (1 + g) = \$4.80 (1.15) = \$5.52$ .
- $E(DPS_1) = DPS_0 (1 + g) = \$1.20 (1.15) = \$1.38$ .
- $V_E = E(D_1)/(k_e - g) = \$6.9 \text{ million}/(0.25 - 0.15) = \$69 \text{ million}$ .
- $V_e = E(d_1)/(k_e - g) = \$1.38/(0.25 - 0.15) = \$13.80$ .

The  $P/e$  for Two-Dollar General store would be 2.5, and its value using the multiplier would be \$13.80 (the same value we obtained directly):

$$\frac{P}{e} = \frac{E(DPS_1)/E(EPS_1)}{k_e - g} = \frac{(\$1.38/\$5.52)}{0.25 - 0.15} = \frac{0.25}{(0.25 - 0.15)} = 2.5$$

$$V_e = \frac{P}{e} E(EPS_1) = (2.5) (\$5.52) = \$13.80$$

### Estimating the Multiplier

The multiplier is quite sensitive to changes in  $k_e$  and  $g$ . For example, suppose analysts estimated the return on investments for Two-Dollar to be 30 percent instead of 20 percent. The growth rate for the company would then be 22.5 percent and Two-Dollar's  $P/e$  ratio would increase from 2.5 to 10 [=  $0.25/(0.25 - 0.225)$ ]. Or suppose the company's beta was reassessed by analysts and estimated to be 1.5 instead of 2. The required return would be 20 percent instead of 25 percent, and the  $P/e$  would increase from 2.5 to 5 [=  $0.25/(0.20 - 0.15)$ ]. Note also that the  $P/e$  value using the Gordon-Williams model is undefined when  $g$  is equal to or greater than  $k_e$ .

Instead of a direct approach, some analysts use a cross-sectional regression model to estimate the multiplier. Cross-sectional models differ in terms of the explanatory variables used to explain  $P/e$ . As discussed in Chapter 6, Elton and Gruber regressed the  $P/e$  ratios of 150 stocks against their historical growth rates to estimate the relation between the  $P/e$  of any stock and its growth rate. In an earlier study, Malkiel and Cragg regressed 150 stocks'  $P/e$  ratios against three variables: dividends-to-earnings ratio, historical growth rates, and betas.

Finally, Bloomberg provides a number of  $P/e$  measures for stocks and indexes. Their ratios vary from  $P/e$  ratios based on the current year or period values,  $P/e$  ratios based on estimated  $EPS$  for next year, to  $P/e$  ratios calculated using moving averages for  $EPS$ . Some of the Bloomberg  $P/e$  ratios are defined in [Exhibit](#)

[12.1](#), and their different values are shown for the Dow stocks in [Exhibit 12.2](#). In examining the P/e ratios in [Exhibit 12.2](#), note the wide variation in the different P/e values on the same stock. This suggests that finding the equilibrium P/e ratio is a challenge facing analysts using the multiplier approach.

- **Price Earnings, PE\_Ratio:** Ratio of the price of a stock and the company's earnings per share. It is calculated as last price divided by trailing 12 month EPS before XO items or Basic EPS before XO.
- **Estimated PE Next Year, EST\_PE\_NXT\_YR:** Price earnings ratio calculated based on next year's earnings per share estimates provided by BEst (Bloomberg Estimates).
- **Estimated PE Current Year, EST\_PE\_CUR\_YR:** Price earnings ratio calculated based on current year earnings per share estimates provided by BEst(Bloomberg Estimates).
- **Best PE Ratio, BEST\_PE\_RATIO:** Ratio calculated by dividing the price of the security by BEst (Bloomberg Estimates) earnings per share. The periodicity of the default denominator is dependent on the user settings. If default is set to Quarterly, the consensus estimates for the next four quarters is used. If BEst EPS for the next four upcoming quarters are not available, BEst P/E Ratio will return N.A. If user default is set to Semi-Annual or Yearly, the semiannual or annual BEst EPS will be used in the denominator instead.
- **Price/Earning - Five-Year Average, 5\_YR\_AVE\_PRICE\_EARNINGS:** The simple five-year average of the price/earnings ratio. If the quarterly or semiannual periodicity is selected the ratio will return the average of the last five periods (quarters or semiannuals).
- **BEst P/E Next Year, BEST\_PE\_NXT\_YR:** The company's price/earnings ratio using the BEst next year estimated earnings per share.
- **Cons Est P/E Curr Year, CONS\_EST\_PE\_CUR\_YR(Consolidated Estimated P/E current year):** Price Earnings ratio calculated based on current year earnings per share estimates provided on consolidated basis. Estimates provided by Bloomberg Estimates (BEst).
- **Best P/E Ratio Market Convention, BEST\_PE\_RATIO\_MARKET:** Bloomberg Estimates ratio calculated by dividing the current price of the security by the earnings per share estimate provided by the requested broker or consensus.
- **Ten-Year Moving Average P/E: 10\_YEAR\_MOVING\_AVERAGE\_PE:** Ratio of the price of a stock to the company's average annual earnings per share (EPS) in the past 10 years.
- **BEst Est P/E Next 4 Quarters, BEST\_EST\_PE\_4Q:** The price/earnings ratio using the BEst earnings per share estimate for the next four quarters.
- **Long-Term Price Earnings Ratio, LONG\_TERM\_PRICE\_EARNINGS\_RATIO:** Long-term price to earnings ratio using the company's Last Price and ten-year average real earnings per share (EPS). Real EPS is computed by adjusting earnings per share for ratios by the company's country's Consumer Price Index (CPI). Ten-year average real EPS is computed using 40 quarters, or 20 semiannual periods or 10 annual figures.

Symbol	Name	Financial Ratios and Metrics										Last Price	
		Market Valuation					Growth & Profitability						
		PE_Ratio	Nxt_Yr	Cur_Yr	Ratio	Earnings	Nxt_Yr	Cur_Yr	Market	PE	4Qtrs		
AAPL	American Express Co	15.700	13.509	14.839	14.261	16.858	13.509	14.839	14.261	25.057	14.261	21.10	
BA	Boeing Co/The	21.134	15.907	17.736	17.198	16.148	15.907	17.736	17.198	30.452	17.198	26.00	
CAT	Caterpillar Inc	12.337	11.652	13.329	12.416	16.192	11.652	13.329	12.416	17.705	12.416	15.00	
CSCO	Cisco Systems Inc	14.515	9.921	10.684	10.694	14.997	9.921	10.684	10.694	18.379	10.694	17.00	
CVX	Chevron Corp	9.520	9.432	9.728	9.575	9.619	9.432	9.728	9.575	13.818	9.575	12.00	
DOW	El du Pont de Nemours	18.772	13.276	14.980	13.606	13.366	13.276	14.980	13.606	20.660	13.606	17.00	
DIS	Walt Disney Co/The	19.333	16.251	18.869	16.899	14.853	16.251	18.869	16.899	34.947	16.899	28.00	
GE	General Electric Co	15.331	13.116	14.346	14.046	12.609	13.116	14.346	14.046	14.523	14.046	12.00	
GS	Goldman Sachs Group Inc/The	8.980	9.994	10.275	10.811	12.178	9.994	10.275	10.811	11.556	10.811	10.00	
HDP	Home Depot Inc/The	21.325	16.958	20.092	18.595	17.396	16.958	20.092	18.595	32.552	18.595	28.00	
INTC	International Business	12.000	9.910	10.760	10.322	12.419	9.910	10.760	10.322	21.133	10.322	18.00	

Company	Industry	Market Cap	Beta	EPS Growth	EPS Consistency	EPS Consistency Score	EPS Consistency Rank	EPS Consistency Avg	EPS Consistency Std Dev	EPS Consistency Range	10-Year Financials			Last Price	
								EPS Consistency			EPS Consistency				
								Est PE	Best PE	Avg PE	Best PE	Avg PE	Std Dev		
PE_Ratio	Nxt_Yr	Cur_Yr	Ratio	Earnings	Nxt_Yr	Cur_Yr	Market	PE	4Qtrs	RA	PE_Ratio	Nxt_Yr	Cur_Yr	Last_Pe	
Machines															
Intel Corp	12.293	11.340	11.908	11.278	12.190	11.340	11.908	11.543	15.674	11.278	14.12	14.12	14.12	14.12	
Johnson & Johnson	16.334	14.777	15.738	15.550	13.562	14.777	15.738	15.550	21.149	15.550	18.00	18.00	18.00	18.00	
JPMorgan Chase & Co	7.949	8.397	8.868	8.883	13.597	8.397	8.868	8.883	13.820	8.883	11.00	11.00	11.00	11.00	
Coca-Cola Co/The	18.257	16.487	17.657	17.271	17.540	16.487	17.657	17.271	25.663	17.271	22.00	22.00	22.00	22.00	
McDonald's Corp	17.094	15.298	16.673	16.023	16.916	15.298	16.673	16.023	27.633	16.023	24.00	24.00	24.00	24.00	
3MCo	18.385	15.940	17.566	16.726	14.502	15.940	17.566	16.726	24.334	16.726	21.00	21.00	21.00	21.00	
Merck & Co Inc	13.624	13.015	13.595	13.444	10.277	13.015	13.595	13.444	14.776	13.444	13.00	13.00	13.00	13.00	
Microsoft Corp	12.133	11.153	12.317	12.386	11.708	11.153	12.317	12.386	17.294	12.386	15.00	15.00	15.00	15.00	
NIKE Inc	24.626	20.168	23.227	22.562	19.555	20.168	23.227	22.562	39.912	22.562	35.00	35.00	35.00	35.00	
Pfizer Inc	13.439	12.220	13.073	12.720	9.046	12.220	13.073	12.720	13.582	12.720	11.00	11.00	11.00	11.00	
Procter & Gamble Co/The	19.011	16.485	17.920	17.966	17.097	16.485	17.920	17.966	23.735	17.966	21.00	21.00	21.00	21.00	
AT&T Inc	14.277	12.579	13.653	13.163	13.085	12.579	13.653	13.163	16.032	13.163	14.00	14.00	14.00	14.00	

													10_YEAR	LO										
													FIVE_YR_AVG											
													CONS_EST	BEST_PE_	_MOVING_	BEST_EST	_PI							
														EST_PE_	EST_PE	BEST_PE	_PRICE	BEST_PE_	_PE	RATIO	AVERAGE_	_PE_	EA	
														PE_RATIO	NXT_YR	CUR_YR	_RATIO	EARNINGS	NXT_YR	CUR_YR	_MARKET	PE	4QTRS	RA
Travelers Cos Inc/The		11.179		10.317		9.829		10.292		11.007		10.317		9.829		10.292		17.632		10.292		14.		
UnitedHealth Group Inc		13.570		12.214		12.966		12.751		9.596		12.214		12.966		12.751		21.835		12.751		18.		
United Technologies Corp		18.184		14.844		16.708		16.129		14.044		14.844		16.708		16.129		24.685		16.129		21.		
Visa Inc		22.408		20.602		24.248		21.655		20.469		20.602		24.248		21.655		NA		21.655		NA		
Verizon Communications Inc		18.974		13.306		16.435		14.913		16.201		13.306		16.435		14.913		19.643		14.913		17.		
Wal-Mart Stores Inc		14.202		12.758		14.020		13.459		13.929		12.758		14.020		13.459		21.524		13.459		18.		
Exxon Mobil Corp		10.984		10.658		11.239		10.868		11.900		10.658		11.239		10.868		14.057		10.868		12.		

- **PE\_Ratio:** Price Earnings: Calculated as last price divided by trailing 12-month EPS before XO items
- **EST\_PE\_NXT\_YR, Estimated PE Next Year:** P/e based on next year's EPS estimates provided by BEst (Bloomberg Estimates)
- **EST\_PE\_CUR\_YR, Estimated PE Current Year:** Based on current year EPS estimates provided by BEst
- **BEST\_PE\_RATIO, Best PE Ratio:** Based on BEst EPS
- **5\_YR\_AVE\_PRICE\_EARNINGS, Price/Earnings - 5 year Average:** 5-year average
- **BEST\_PE\_NXT\_YR, BEst P/E Next Year:** Based on BEst next year estimated EPS

- **CONS\_EST\_PE\_CUR\_YR**, **Consolidated Estimated P/E current year**: Based on current year EPS estimates provided on consolidated basis
- **BEST\_PE\_RATIO\_MARKET**, **Best P/E Ratio Market Convention**: Based on EPS estimates provided by the requested broker or consensus
- **10\_YEAR\_MOVING\_AVERAGE\_PE**, **10-Year Moving Average P/E**: Based on average annual EPS for the past 10 years
- **BEST\_EST\_PE\_4Q**, **BEST Est P/E Next 4 Quarters**: Based on BEst EPS for the next four quarters
- **LONG\_TERM\_PRICE\_EARNINGS\_RATIO**, **Long Term Price Earnings Ratio**: Based on last Price and 10-year average real EPS

**EXHIBIT 12.2** P/e Ratios for Dow Jones Stocks, 8/10/2013

### Example: Macy's P/e Ratio

The department store industry in North America consists of companies such as Macy's, Belk, Kohl's, and Sears. Macy's is one of the largest companies in that industry. [Exhibit 12.3](#) summarizes some of the key points and drivers identified in Macy's 2012 10-K Report, and Exhibit 12.4 shows annual data on sales-per-share (SPS), EPS, DPS, profit margins, and P/e ratios for the company. The data were pulled from Bloomberg's FA and GP screens.

Macy's P/e multipliers from 2000 to 2013 fluctuated. The P/e ratio based on actual price and the trailing 12-month EPS increased from 8.33 in 2000 to 21.49 in 2009 and then decreased to 11.27 in 2012. The five-year average P/e from 2000 to 2013 fluctuated within a more narrow range between 13.912 and 11.207. Using the

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#### BLOOMBERG EXCEL ADD-IN

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The data in many of the exhibits in this chapter were imported into Excel using Bloomberg's Excel Add-In and the "Import Data" tab.

To create cross-section exhibits like [Exhibit 12.2](#), 12.6, and 12.11, do the following:

- On the Bloomberg Add-In in Excel, click "Real-Time/Current" from the "Import Data" dropdown.
- On the Bloomberg Data Wizard Box, Step 1, click "Indexes" in the "From" dropdown and the name of index (e.g., DOW JONES INDUS. AVG.) from the "Indexes" dropdown, and then click "Add All." This will bring up the stocks for the index. Once loaded, click "Next."
- On the Bloomberg Data Wizard Box, Step 2, search and then add stock returns, for example, price-to-earnings, growth rates, and DDM implied growth rates. Note, the definitions for the variable appear at the bottom.
- After loading variables, click "Next."
- On the Bloomberg Data Wizard Box, Step 3, click "Finish" to export the data to Excel.

To create time-series exhibits like Exhibit 12.4 do the following:

- On the Bloomberg Add-In in Excel, click "Historical End of Day" from the "Import Data" and then follow the Wizard's steps.

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Gordon-Williams model, the author, in turn, estimated Macy's P/e ratio to be 13.14. This estimate is closer to the high range of the five-year average P/e. The author's P/e was based on an estimated growth rate of 12.5 percent in EPS, payout ratio of 23 percent, and a required return of 14.25 percent. The growth rate reflected Macy's recent high returns on equity and sustainable growth rates (see Exhibit 12.4). The required return was based on the estimated SML relationship found on Bloomberg's EQRP screen on 12/31/2012 and using Macy's adjusted beta of 1.428 (Bloomberg's HRA screen):

$$\begin{aligned}k_e &= R_f + [E(R^M - R_f)] \beta \\k_e &= 0.0175 + [0.0875] 1.428 \\k_e &= 0.1425\end{aligned}$$

Given these estimated values, the P/e value for Macy's using the Gordon-Williams model was 13.14:

$$\frac{P}{e} = \frac{d/e}{k_e - g} = \frac{0.23}{0.1425 - 0.125} = 13.14$$

### **Company**

- The Company is a corporation organized under the laws of the State of Delaware in 1985. The Company's executive offices are located at 7 West Seventh Street, Cincinnati and New York, New York.
- The Company and its predecessors have been operating department stores since 1830.
- As of February 2, 2013, the operations of the Company included approximately 840 stores in 45 states, the District of Columbia, Guam and Puerto Rico under the names "Macy's" and "Bloomingdale's" as well as macys.com and bloomingdales.com.
- The Company operates twelve Bloomingdale's Outlet stores.
- Bloomingdale's in Dubai, United Arab Emirates, is operated under a license agreement with Al Tayer Insignia, a company of Al Tayer Group, LLC.
- The Company is an omnichannel retail organization operating stores and Web sites under two brands (Macy's and Bloomingdale's) that sell a wide range of merchandise, including apparel and accessories (men's, women's and children's), cosmetics, home furnishings and other consumer goods in 45 states, the District of Columbia, Guam and Puerto Rico.
- In 2012, the Company's subsidiaries provided various support functions to the Company's retail operations on an integrated, company-wide basis: The Company's bank subsidiary, FDS Bank provides credit processing and collections; Macy's Systems and Technology, Inc. provides operational electronic data processing and management information services to all of the Company's operations; Macy's Merchandising Group, Inc. a wholly-owned direct subsidiary of the Company, and its subsidiary Macy's Merchandising Group International, LLC., is responsible for the design, development and marketing of Macy's private label brands and certain licensed brands; Macy's Logistics and Operations, a division of a wholly-owned indirect subsidiary of the Company, provides warehousing and merchandise distribution services for the Company's operations.
- As of February 2, 2013, the Company had approximately 175,700 regular full-time and part-time employees.

### **Industry Features**

- Seasonality: The retail business is seasonal in nature with a high proportion of sales and operating income generated in the months of November and December.
- Purchasing: The Company purchases merchandise from many suppliers.
- Competition: The retailing industry is intensely competitive. The Company's operations compete with many retailing formats, including department stores, specialty stores, general merchandise

stores, off-price and discount stores, manufacturers' outlets, the Internet, mail order catalogs and television shopping, among others.

- Comparative Advantage: The Company seeks to attract customers by offering superior selections, obvious value, and distinctive marketing in stores that are located in premier locations, and by providing an exciting shopping environment and superior service through an omnichannel experience.

#### Risk

- The Company's pension funding could increase at a higher than anticipated rate.
- The Company's expenses relating to employee health benefits are significant. Unfavorable changes in the cost of such benefits could negatively affect the Company's financial results and cash flow.
- Inability to access capital markets could adversely affect the Company's business or financial condition. A decrease in the ratings that rating agencies assign to the Company's short and long-term debt may negatively impact the Company's access to the debt capital markets and increase the Company's cost of borrowing.
- The Company depends on its ability to attract and retain quality employees.

- The Company depends upon designers, vendors and other sources of merchandise, goods and services. The Company's relationships with established and emerging designers have been a significant contributor to the Company's past success. The Company's ability to find qualified vendors and access products in a timely and efficient manner is often challenging, particularly with respect to goods sourced outside the United States.
- The Company's procurement of goods and services from outside the United States is subject to risks associated with political or financial instability, trade restrictions, tariffs, currency exchange rates, transport capacity and costs and other factors relating to foreign trade.
- The Company's sales and operating results could be adversely affected by product safety concerns.
- The Company depends upon the success of its advertising and marketing programs.

#### Notables

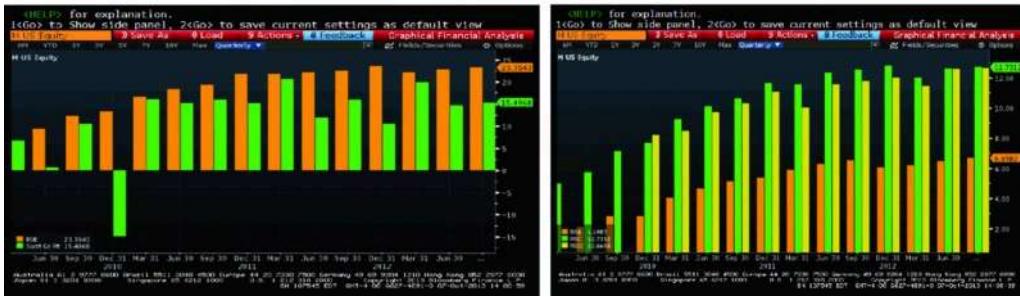
- Macy's MAGIC Selling program is an approach to customer engagement that helps Macy's to better understand the needs of customers, as well as to provide options and advice.
- In fiscal 2010, the Company piloted a new Bloomingdale's Outlet store concept. Bloomingdale's Outlet stores are each approximately 25,000 square feet and offer a range of apparel and acces-

sories, including women's ready-to-wear, men's, children's, women's shoes, fashion accessories, jewelry, handbags and intimate apparel.

- Additionally, in February 2010, Bloomingdale's opened in Dubai, United Arab Emirates.
- During 2011, the Company opened three new Bloomingdale's Outlet stores and reopened one Macy's store that had been closed in 2010 due to flood damage.
- During 2012, the Company opened two new Macy's stores and five new Bloomingdale's Outlet stores. Also during 2012 the Company opened its new 1.3 million square foot fulfillment center in Martinsburg, WV.
- The Company has announced that in 2013 it intends to open three new Macy's stores.
- Comparable sales increased 3.7% which represents the third consecutive year of comparable sales growth in excess of 3.5%.
- Operating income for fiscal 2012 was \$2.666 billion or 9.6% of sales, excluding impairments, store closing costs and gain on sale of leases, an increase of 12% and 60 basis points as a percent of sales over 2011 on a comparable basis. See pages 16 to 18 for a reconciliation of this non-GAAP financial measure to the most comparable GAAP financial measure and other important information.
- Diluted earnings per share, excluding certain items, grew 20% to \$3.46 in 2012.
- Adjusted *EBITDA* (earnings before interest, taxes, depreciation and amortization, excluding premium on early retirement of debt and impairments, store closing costs and gain on sale of leases) as a percent to net sales reached 13.4% in 2012, reflecting steady improvement toward the Company's goal of a 14%.
- Return on invested capital reached 21.2%, continuing an improvement trend over the past four years.
- The Company repurchased 35.6 million shares of its common stock for \$1,350 million in 2012, and doubled its annualized dividend rate to 80 cents per share.

**EXHIBIT 12.3** Macy's 2012 10-K Information

Date	Sales per Share	Proportional Change	EPS	Proportional Change	Profit Margin EPS/Sales	Dividend Payout DPS	P/E Trailing 12 Month EPS	P/E 5-Year Average	Share Price	Proportional Change	Personal Consumption Expend. PCE (billions)	Proportional Change	
12/29/00	\$40.620	-\$0.45	-0.01108	\$0.000	0.00000	\$8.33	\$13.52	\$17.50	\$6,989				
12/31/01	\$39.987	-0.0156	-\$0.71	0.5667	-0.01763	\$0.000	0.0000	\$13.37	\$13.12	\$20.45	0.1686	\$7,190	0.02180
12/31/02	\$39.116	-0.0218	\$2.08	-3.9433	0.05305	\$0.000	0.0000	\$8.43	\$11.37	\$14.38	-0.2968	\$7,549	0.04322
12/31/03	\$41.388	0.0581	\$1.88	-0.0940	0.04542	\$0.188	0.0997	\$12.74	\$11.20	\$23.57	0.6387	\$7,970	0.04753
12/31/04	\$44.632	0.0784	\$1.97	0.0452	0.04403	\$0.265	0.1349	\$13.13	\$11.41	\$26.90	0.2262	\$8,514	0.05537
12/31/05	\$52.559	0.1776	\$3.30	0.6794	0.06279	\$0.385	0.1167	\$12.98	\$11.93	\$33.17	0.1478	\$9,021	0.03326
12/29/06	\$49.944	-0.0497	\$1.84	-0.4424	0.03684	\$0.508	0.2758	\$15.13	\$12.58	\$38.13	0.1497	\$9,508	0.04923
12/31/07	\$58.919	0.1797	\$2.00	0.0870	0.03395	\$0.518	0.2588	\$11.10	\$13.46	\$25.87	-0.3215	\$9,941	0.03580
12/31/08	\$59.098	0.0030	-\$11.40	-6.7000	-0.19290	\$0.528	-0.0463	\$7.00	\$12.10	\$10.35	-0.5999	\$9,737	0.01681
12/31/09	\$55.701	-0.0575	\$0.78	-1.0684	0.01400	\$0.200	0.2564	\$21.49	\$13.67	\$16.76	0.1693	\$10,001	-0.00324
12/31/10	\$59.067	0.0694	\$2.00	1.5641	0.03386	\$0.200	0.1000	\$11.94	\$13.19	\$25.30	0.5095	\$10,438	0.03066
12/30/11	\$62.203	0.0531	\$2.96	0.4800	0.04759	\$0.350	0.1182	\$11.20	\$12.22	\$32.18	0.2719	\$10,887	0.03263
12/31/12	\$68.276	0.0976	\$3.29	0.1115	0.04819	\$0.800	0.2432	\$11.27	\$12.10	\$39.02	0.2126	\$11,301	0.04597
Average	\$51,655	0.04905	\$0.73	-0.7262	0.01524	\$0.303	0.1198	\$12.16	\$12.45	\$25.04	0.1438	\$9,157	0.03409
Standard Deviation	\$9,749	0.07944	\$3.85	2.3147	0.06697	\$0.242	0.1115	\$3.62	\$0.87	\$9.03	0.3811	\$14,414	0.01637



**EXHIBIT 12.4** Macy's: Sales, EPS, DPS, Profit Margin, Payout, and P/e

## Estimating EPS

In addition to estimating *P/e*, the multiplier model also requires the analyst to make a forecast of *EPS* for next period. *EPS* measures can vary depending on the inclusion or exclusion of income statement items. There are also forecasts of *EPS* made by analysts. [Exhibit 12.5](#) shows the definitions of some of the Bloomberg measures of *EPS*, and [Exhibit 12.6](#) shows the different *EPS* values for the Dow stocks as of 10/10/2013.

- **Trailing 12-Month EPS, TRAIL\_12MO\_EPS:** The trailing 12-month diluted EPS from continuing operations.
- **BEST EPE, BEST\_EPS: The BEST (Bloomberg Estimates):** Earnings per share (EPS adjusted) estimate returns earnings per share from continuing operations, which may exclude the effects of one-time and extraordinary gains/losses.
- **BEST LTG EPS, BEST\_LTG\_EPS: The BEST (Bloomberg Estimates):** LTG EPS is the estimated compounded annual growth rate (CAGR) of the operating earnings per share (EPS) over the company's next full business cycle (typically three to five years).
- **Trailing 12-Month Estimate Comparable EPS Adjusted, TRAIL\_12M\_EST\_COMP:** Trailing 12-month estimate comparable EPS adjusted, calculated by adding estimate comparable EPS adjusted for the most recent four quarters.
- **Best EPS Excludes Stock Compensation Expense, BEST\_EPS\_EXCLUDES:** Indicates the company excludes stock compensation expense and may exclude the effects of one-time and extraordinary gains/losses. One-time charges include: realized investment gains/losses, restructuring charges, nonrecurring charges/gains, unusual charges/gains, special charges/gains, reserve charges, large writedowns, spin-off/sell-off expenses, merger expenses, acquisition charges, sale of subsidiary expenses, forgiveness of debt, writedown of goodwill, ESOP charges, and acquired research and development costs.
- **Basic Earnings per Share, IS\_EPS:** Bottom-line earnings per share. Includes the effects of all one-time, non-recurring and extraordinary gains/losses. Uses Basic Weighted Average Shares excluding the effects of convertibles. Computed as Net Income Available to Common Shareholders divided by the Basic Weighted Average Shares outstanding.
- **Est EPS Curr Year, EEPS\_CURR\_YR:** Estimated EPS Current year: Current year earnings per share estimates provided by BEST.
- **BEST EPS GAAP, BEST\_EPS\_GAAP:** The BEST (Bloomberg Estimates) GAAP earnings per share (EPS) estimate returns reported earnings per share (Before Extraordinary Items OR Bottom Line). Available for Broker estimates and Consensus: Standard, Re-Set Consensus, and 4 Week.
- **Est EPS Next Year, EEPS\_NXT\_YR:** Estimated EPS Next year: Next year earnings per share estimates provided by BEST.

**EXHIBIT 12.5** Selected Bloomberg EPS Measures

Name	TRAIL_12M_			EEPS_	EEPS_	BEST_	
	TRAIL_	BEST_	EST_COMPARA	CURR	NXT	EEPS_	
	12M_EPS	EPS	BLE_EPS_ADJ	IS_EPS	_YR	CUR_YR	
American Express Co	4.60	1.22	4.60	3.91	4.87	5.35	4.87
Boeing Co/The	5.42	1.52	6.03	5.15	6.45	7.20	6.45
Caterpillar Inc	6.77	1.72	6.35	8.71	6.27	7.17	6.27
Cisco Systems Inc	1.55	0.51	1.89	1.87	2.11	2.27	2.11
Chevron Corp	11.69	2.89	11.31	13.42	11.92	12.31	11.92
El du Pont de Nemours	3.03	0.41	3.27	2.98	3.80	4.29	3.80
Walt Disney Co/The	3.29	0.76	3.29	3.17	3.37	3.91	3.37
General Electric Co	1.54	0.35	1.51	1.29	1.64	1.80	1.64
Goldman Sachs Group Inc/The	17.20	2.46	16.44	14.63	15.03	15.45	15.03
Home Depot Inc/The	3.48	0.89	3.48	3.03	3.69	4.37	3.69
International Business Machines	15.11	3.95	15.92	14.53	16.85	18.30	16.85
Intel Corp	1.84	0.54	1.92	2.20	1.90	1.99	1.90

Name	TRAIL_12M_			EEPS_	EEPS_	BEST_	
	TRAIL_	BEST_	EST_COMPARA	CURR	NXT	EEPS_	
	12M_EPS	EPS	BLE_EPS_ADJ	IS_EPS	_YR	CUR_YR	
Johnson & Johnson	5.26	1.32	5.36	3.94	5.46	5.82	5.46
JPMorgan Chase & Co	6.38	1.31	6.19	5.22	5.72	6.04	5.72
Coca-Cola Co/The	2.03	0.53	2.05	2.00	2.10	2.25	2.10
McDonald's Corp	5.46	1.51	5.45	5.41	5.59	6.10	5.59
3M Co	6.39	1.76	6.38	6.40	6.69	7.38	6.69
Merck & Co Inc	3.47	0.87	3.47	2.03	3.48	3.63	3.48
Microsoft Corp	2.73	0.55	2.67	2.61	2.69	2.97	2.69
NIKE Inc	2.88	0.58	2.92	2.77	3.05	3.51	3.05
Pfizer Inc	2.11	0.56	2.10	1.96	2.17	2.31	2.17
Procter & Gamble Co/The	4.05	1.06	4.06	4.04	4.29	4.67	4.29
AT&T Inc	2.36	0.65	2.37	1.25	2.47	2.68	2.47
Travelers Cos Inc/The	7.37	1.93	7.38	6.35	8.38	7.98	8.38
UnitedHealth Group Inc	5.26	1.52	5.26	5.38	5.51	5.84	5.51
United Technologies	5.66	1.54	5.50	5.73	6.16	6.93	6.16

Name	TRAIL_12M_			EEPS_	EEPS_	BEST_	
	TRAIL_	BEST_	EST_COMPARA	CURR	NXT	EEPS_	
	12M_EPS	EPS	BLE_EPS_ADJ	IS_EPS	_YR	CUR_YR	
Visa Inc	8.20	1.85	7.16	3.17	7.58	8.92	7.58
Verizon CommLinications Inc	2.43	0.74	2.43	0.31	2.81	3.47	2.81
Wal-Mart Stores Inc	5.14	1.13	5.14	5.04	5.21	5.72	5.21
Exxon Mobil Corp	7.75	1.88	7.76	9.70	7.58	7.99	7.58

Source: Bloomberg

**EXHIBIT 12.6** EPS Measures for Dow Jones Stocks, 8/10/2013

Analysts vary in their approaches to forecasting earnings. Some analysts, for example, use regression models to estimate the relationship between a company's *EPS* or its growth rate and macroeconomic factors such as inflation, gross domestic product (*GDP*), and interest rates. Given the estimated equation, they then try to forecast the macroeconomic variables for next year to determine the company's *EPS* for next year. For many stocks, however, there is often a low correlation between *EPS* and macroeconomic variables such as *GDP*. Given this common problem, many analysts forecast the individual components defining *EPS*, instead of forecasting *EPS* directly in terms of *GDP* or some other economic aggregate.

### **EPS, Sales-per-Share, and Profit Margins**

One *EPS* forecast model is to forecast sales per share (*SPS*) for the stock, *S*, based on an estimated regression relationship between *SPS* and macroeconomic variables, such as *GDP*, inflation, personal consumption expenditures, world economic growth, or energy prices,  $P^{EN}$ :

$$S_t = a + b_1 GDP_t + b_2 \text{Inflation}_t + P_t^{EN}$$

Given the regression relation, an analyst would next forecast the explanatory variables and then use the regression relation to estimate next period sales. Given an *SPS* forecast, *EPS* is estimated by first estimating the profit margin for the company, *m*. Profit margins are generally explained in terms of factors that influence profitability: industrial production (*IP*), production capacity (*Cap*), labor cost (*LCost*), exchange rates (*ER*), inflation, and advertising expenditures (*Adv*):

$$m = \frac{EPS_t}{S}$$

$$m_t = c_0 + c_1 IP_t + c_2 Cap_t + c_3 ER_t + c_4 Inflation_t + c_5 Adv + c_6 LCost$$

As a methodology, an analyst could forecast these explanatory variables and then use an estimated regression relation to estimate the company's profit margin for next period.

Finally, given the multiplier estimate, expected *EPS* for the next period is obtained by multiplying the estimated margin by our forecasted sales:

$$EPS_t = m_t S_t$$

To see the relations between *EPS*, *SPS*, and profit margins, consider the case of the Zuber Oil Company that was presented in Chapter 11. The company's income statement is shown in [Exhibit 12.7](#). The exhibit shows two forecasts of the company's income. The first shows the company expected to generate \$180 million in total revenue (*TR*) next year from the sale of its crude oil from its oil well. As shown, the company also expects to pay \$60 million in operating cost, \$20 million in interest (that is tax deductible), and \$40 million in taxes. The Zuber Company's expected profit margin based on these expectations is 33.33 percent, and with five million shares, its expected *SPS* (*S*) is \$12 and its expected *EPS* is \$12.

$$S_1 = \frac{TR_1}{n} = \frac{\$180 \text{ million}}{5 \text{ million}} = \$36$$

$$m_1 = \frac{E(EAT_1)}{TR_1} = \frac{\$60 \text{ million}}{\$180 \text{ million}} = 0.3333$$

$$E(EPS_1) = m_1 E(S_1) = (0.33333) (\$36) = \$12$$

Total Revenue ( <i>TR</i> )	\$180 million	\$175 million
-Total Operating Cost ( <i>TOC</i> )	\$60 million	\$65 million
= Earnings Before Interest and Taxes ( <i>EBIT</i> )	\$120 million	\$110 million
- Interest ( <i>Int</i> = (0.08)(\$250 million) = \$20	\$20 million	\$20 million
= Earnings Before Taxes ( <i>EBT</i> )	\$100 million	\$90 million
- Taxes ( <i>T</i> ) (Effective Corporate Tax Rate = <i>t</i> = 40%)	\$40 million	\$36 million
= Earnings After Taxes ( <i>EAT</i> )	\$60 million	\$54 million
- Retained Earnings ( <i>RE</i> )	0	0
= Total Dividends ( <i>D</i> )	\$60 million	\$54 million
÷ Number of Shares ( <i>n</i> )	5 million	5 million
= Dividends per Share ( <i>d</i> )	\$12	\$10.80
Sales per Share ( <i>S</i> ) = <i>TR/n</i>	\$36	\$35
Profit Margin: <i>m</i> = <i>EAT/TR</i>	0.33333	0.3086
<i>EPS</i> = <i>m S</i>	\$12	\$10.80
Operating Margin = <i>m</i> <sup>0</sup> = <i>EBIT/TR</i>	0.66667	0.6286
Interest Expense per Share = <i>I</i> = <i>Int/n</i>	\$4	\$4

$EBIT/n = m^0 S$	\$24	\$22
$EPS = [EBIT/n - I - Dep/n](1 - 0.4)$	\$12	\$10.80

**EXHIBIT 12.7** Zuber Oil Company Expected Annual Income Statement, Margins, and Sales Per Share

The second forecast shown in [Exhibit 12.7](#) projects lower revenues of \$175 million based on an expectation of lower world oil prices, and projects higher operating costs of \$65 million based on an expectation of greater labor costs and health costs. With these projections, the Zuber Company's expected profit margin is 30.86 percent, its expected *SPS* is \$35, and its expected *EPS* is \$10.80:

$$S_1 = \frac{TR_1}{n} = \frac{\$175 \text{ million}}{5 \text{ million}} = \$35$$

$$m_1 = \frac{E(EAT_1)}{TR_1} = \frac{\$54 \text{ million}}{\$175 \text{ million}} = 0.3086$$

$$E(EPS_1) = m_1 E(S_1) = (0.3086) (\$35) = \$10.80$$

For a simple company like Zuber it may be easier to estimate each item in the income statement as was done in the exhibit. For complicated companies or for indexes and industries, forecasting the margins may lead to better statistical relations.

### Estimating Macy's EPS, Intrinsic Value, and Expected Return

[Exhibit 12.8](#) shows the author's forecast of Macy's *EPS* for 2013 based on sales and profit margin estimates, an estimate of the company's intrinsic value on 12/31/2012 given the estimated *P/e* ratio of 13.14, and a forecast of Macy's expected rate of return for 2013. The estimates and forecasts were made by the author on 12/31/2012 using data on *SPS*, *EPS*, *DPS*, profit margins (*m*), *P/e* ratios, and personal consumption expenditures that are shown in [Exhibit 12.4](#).

	2012 12/31/12	2013 12/31/13	Reason
(1) Sales ( $S$ )	\$68.276	\$72.07	2013 Forecast: $\Delta PCE/PCE = 0.05$ $\Delta S/S = 1.11192(\Delta PCE/PCE) = 0.0556$ $S_{13} = (1 + \Delta S/S)S_{12}$ $S_{13} = (1 + 0.0556)(\$68.276) = \$72.07$
(2) Profit Margin, $m = EPS/S$	4.819%	4.819%	Macy's strong competitive position and innovation will more than offset expected increases in cost, enabling the company to sustain its relatively high profit margin.
(3) EPS	\$3.29	\$3.47	$EPS_{13} = m_{13} S_{13}$ $EPS = (0.04819) (\$72.07) = \$3.47$
(4) Payout Ratio ( $d/e$ )	0.2432	0.23	Macy's reported in their 2012 10-K Report that they planned to target $DPS$ at \$0.80. Given a projected $EPS$ of \$3.47, a $DPS$ of \$0.80 would equate to a projected payout ratio of 23% ( $= \$0.80/\$3.47$ ).
(5) DPS	\$0.80	\$0.80	$DPS_{13} = (d/e)_{13} EPS_{13}$ $DPS_{13} = (0.23) (\$3.47) = \$0.80$
(6) $g$		12.5%	The growth reflects Macy's recent high returns on equity and sustainable growth rates.
(7) $k_e$		14.25%	$k_e = R_f + [E(R^M - R_f)]\beta$ $k_e = 0.0175 + [0.0875]1.428 = 0.1425$
(8) P/e	13.14	13.14	Estimated based on Gordon-Williams model and the estimate of $d/e$ , $g$ , and $k_e$ : $\frac{P}{e} = \frac{d/e}{k_e - g} = \frac{0.23}{0.1425 - 0.125} = 13.14$

	2012 12/31/12	2013 12/31/13	Reason
(9) Value, $V$	\$45.60	\$51.30 or \$48.13	$V_{12} = (P/e)E(EPS_{13}) = (13.14)(\$3.47) = \$45.60$ $V_{13} = (P/e)E(EPS_{13})(1 + g) = (13.14)(\$3.47)(1.125) = \$51.30$ $V_{13} = (P/e)E(EPS_{13})(1 + g) = (13.14)(\$3.47)(1.0556) = \$48.13$
(10) Market Price, $P$	\$39.02		Macy's is underpriced by 14.43% ( $=(\$45.60/\$39.02) - 1$ )
(11) Expected Rate	33.52%		$E(\text{Rate}) = [(\$51.30 + \$0.80)/\$39.02] - 1 = 0.3352$
Rate	or		$E(\text{Rate}) = [(\$48.13) + \$0.80)/\$39.02] - 1 = 0.2540$
			24.50%

**Buy Recommendation:** With expected rates exceeding the required rate of 14.25%, Macy's merits a buy recommendation.

**EXHIBIT 12.8** 2013 Forecast of Macy's Intrinsic Value  $EPS$  and Expected Rate

***EPS and Intrinsic Value***

- Sales:** The forecast projects that Macy's  $SPS$  will increase 5.56 percent from its \$68.276 per share level on 12/30/2012 to \$72.07 per share on 12/30/2013. The sales projection is based on a projected 5 percent increase in disposable personal consumption expenditures and on the following estimated relationship between the proportional change in  $SPS$  for Macy's and the proportional change in personal consumption expenses ( $PCE$ ):

$$\Delta S/S = 1.11192(\Delta PCE/PCE)$$

The sales and  $PCE$  relation was estimated by regressing annual data on the proportional change in  $SPS$  of Macy's against the proportional changes in  $PCE$ . The forecast of a 5 percent increase, in turn, was based on recent trends in  $PCE$ .

$$\Delta S/S = 1.11192(\Delta PCE/PCE)$$

$$\Delta S/S = 1.11192(0.05) = 0.0556$$

$$S_{13} = S_{12}(1 + \Delta S_t/S)$$

$$S_{13} = \$68.276(1 + 0.0556) = \$72.07$$

- 2. Profit Margin:** The forecast projects no change in the Macy's profit margin from its 2012 level of 4.819 percent. Macy's projected profit margin of 4.819 percent is significantly higher than the department store industry's margin of 0.821 percent. The industry's low margins were due to high commodity and labor costs, higher exchange rates, and increased competition from outlet stores and online retailing. In contrast, Macy's had experienced an increase in its market share resulting from its marketing strategies. (See [Exhibit 12.3](#) for a summary of the drivers identified in Macy's 2012 10-K Report). The forecast, in turn, projects that Macy's strong competitive position will more than offset the expected cost increases, enabling the company to sustain its high profit margin.

- 3. EPS:** Given a projected profit margin of 4.819 percent and the forecasted *SPS* of \$72.07, the projected 2013 *EPS* for Macy's was \$3.47. This represents a 5.56 percent increase in *EPS* from the *EPS* of \$3.29 (= \$3.47305/\$3.29 – 1) on 12/31/2012:

$$EPS_{13} = m_{13} S_{13}$$

$$EPS_{13} = (0.04819)(\$72.07)$$

$$EPS_{13} = \$3.47$$

- 4. DPS:** Macy's reported in their 2012 10-K Report that they planned to target *DPS* at \$0.80 (see [Exhibit 12.3](#)). Given a project *EPS* of \$3.47, the *DPS* of \$0.80 equates to a payout ratio of 23 percent (= \$0.80/\$3.47):

$$DPS_{2013} = EPS_{2013} (d/e)_{2013}$$

$$DPS_{2013} = \$3.47(0.23)$$

$$DPS_{2013} = \$0.80$$

- 5. P/e:** As noted previously, Macy's five-year average *P/e* from 2000 to 2013 ranged between 13.912 and 11.2017. The author's estimated *P/e* was 13.14 based on a growth rate of 12.5 percent in *EPS*, an estimated payout ratio of 23 percent, and a required return of 14.25 percent:

$$\frac{P}{e} = \frac{d/e}{k_e - g} = \frac{0.23}{0.1425 - 0.125} = 13.14$$

- 6. Intrinsic Value:** Using the *P/e* of 13.14 and the projected *EPS* for the next year of \$3.47, the intrinsic value of the Macy's on 12/31/2012 was \$45.60:

$$V_{12} = \frac{P}{e} E(EPS_{13})$$

$$V_{12} = (13.14)(\$3.47) = \$45.60$$

Given the share price of Macy on 12/30/2012 of \$39.02, the stock was underpriced by 16.86% [= (\$45.60/39.02) – 1].

### **Macy's Expected Intrinsic Value and Expected Rate of Return**

Macy's estimated intrinsic value on 12/31/2012 is based on the expected *EPS* for 2013. Using the multiplier approach, the estimated intrinsic value for the next year (12/31/2013) should be based on the expected *EPS* for 2014. Using the estimated growth rate in *EPS* of 12.5 percent, *g*, the projection for *EPS* in 2014 would be \$3.90 [= \$3.47(1.125)]. If we assume no change in the equilibrium *P/e* ratio of 13.14, the projected intrinsic value for 2013 is \$51.30:

$$V_{13} = \frac{P}{e} E(EPS_{14}) = \frac{P}{e} E(EPS_{13})(1 + g)$$
$$V_{13} = (13.14)(\$3.47)(1.125) = \$51.30$$

Note that if Macy's had been trading at the estimated intrinsic value of \$45.60 on 12/31/2013 instead of \$39.02, then with a projected *DPS* of \$0.80 and an estimated 2013 intrinsic value of \$51.30, its expected rate of return would have equaled its required rate of 14.25 percent:

$$E(\text{Rate}) = \frac{\$51.30 + \$0.80}{\$45.60} - 1 = 0.1425$$

The 14.25 percent expected return would consist of an expected price yield of 12.5 percent and an expected dividend yield of 1.75 percent:

$$\frac{\Delta P}{P} = \frac{\$51.30}{\$45.60} - 1 = 0.125$$
$$\frac{E(d)}{P} = \frac{\$0.80}{\$45.60} = 0.0175$$

Given the lower market price of \$39.02 on 12/30/2012, the expected rate would be 33.52 percent given the projected *DPS* of \$0.80 and an expected price equal to the estimated intrinsic value of \$51.30:

$$E(\text{Rate}) = \frac{\$51.30 + \$0.80}{\$39.02} - 1 = 0.3352$$

This 33.52 percent rate consists of an expected price yield of 31.47 percent [= (\$51.30/\$39.02) – 1] and an expected dividend yield of 2.05 percent (= \$0.80/\$39.02).

With an expected rate of 33.52 percent exceeding the required rate of 14.24 percent, a portfolio manager confident in this forecast would take a strong bullish position on Macy's. The assessment, however, is based on the projection that *EPS* will grow in 2014 at the projected equilibrium growth rates of 12.5 percent. The 12.5 percent growth rate in *EPS* represents an equilibrium rate used to estimate the equilibrium *P/e* multiplier. This rate, in turn, was predicated on Macy's increasing its market share. Realizing that such changes may take time, an analyst would more likely want to use a more recent growth rate in *EPS* or the current project *EPS* growth rate of 5.56 percent for her forecast of 2014 *EPS*. If we use the projected

2013 EPS growth of 5.56 percent for 2014, then EPS in 2014 would be only \$3.66 and the estimated 2013 value of Macy's would be \$48.13:

$$V_{13} = \frac{P}{e} E(EPS_{14}) = \frac{P}{e} E(EPS_{13})(1 + g)$$

$$V_{13} = (13.14)(\$3.47)(1.0556) = \$48.13$$

If an analyst expected Macy's to be priced at the end of 2013 at \$48.13, then her expected rate of return would be only 25.40 percent:

$$E(\text{Rate}) = \frac{\$48.13 + \$0.80}{\$39.02} - 1 = 0.2540$$

The two expected rates of return shown in [Exhibit 12.8](#) are the rates where Macy's EPS are projected to grow in 2014 at 5.56 percent and at 12.5 percent. Both these scenarios are based on an assessment that Macy's is underpriced now but would be equal to its equilibrium value one year later. It is quite possible that Macy's could continue to be underpriced one year later. If we assume, however, that Macy's stock would increase from its market price of \$39.02 by the 12.5 percent growth rate and that the expected dividend yield would be equal to 1.75 percent of the current price, then on 12/31/2013 the projected price of Macy's would be \$43.90 [= \$39.02(1.125)], dividends would be \$0.68 [= (0.0175)(\$39.02)], and the expected return would be equal to Macy's required rate of 14.25 percent:

$$E(\text{Rate}) = \frac{\$43.90 + \$0.68}{\$39.02} - 1 = 0.1425$$

Thus, for an investor to obtain an expected rate greater than the required rate, a combination of expected price yield and dividend yield would have to exceed 14.25 percent. For example, if the estimated intrinsic value of \$45.60 was the projected value for 12/31/2013 and dividends were expected to be \$0.80, then the expected price yield would be 16.86 percent [= (\$45.60/\$39.02) - 1]; the expected dividend yield would equal 2.05 percent (\$0.80/\$39.02); and the expected rate of return would be 18.91 percent, exceeding the 14.5 percent required return:

$$E(\text{Rate}) = \frac{\$45.60 + \$0.80}{\$39.02} - 1 = 0.1891$$

### **Ex-Post Analysis**

An ex-post analysis of the buy recommendation for the period from 12/30/2012 to 10/4/2013 shows the stock hitting a high for the period of \$50.37 on 7/9/2013—a price increase of 29.09 percent (see [Exhibit 12.9](#)). This return exceeded the required return of 14.25 percent. However, on 10/3/2013 Macy's was trading at \$44.10, reflecting an increase of only 13.02 percent. The company had also made three dividend payments for the year totaling \$0.60. The periodic rate for the period from 12/30/2012 to 10/3/2013 was 14.56 percent [= (\$44.10+\$0.60)/\$39.02] - 1] and the approximate annualized rate was

19.41 percent [= (4/3)(14.56%)]—greater than the required rate of 14.25 percent. At that point, an analyst would be happy (for the moment) with her buy recommendation of Macy's, but also be concerned with its price drop from its \$50.37 high. The total return for the period based on weekly returns was 23.31 percent, close to the total return of the S&P 500 of 24.3 percent and significantly greater than industry index return of 11.85 percent (see lower screen in [Exhibit 12.9](#)).



(a)



(b)

**EXHIBIT 12.9** Macy's: GP and COMP Screens

#### Note

In trying to determine the intrinsic value of Macy's using this multiplier approach, several points should be noted. First, there are some statistical issues. Specifically, the data sample was relatively small in estimating the regression equations. Thus, the simple regression analysis applied here should be considered only preliminary. Second, the estimated P/e ratio as explained in terms of  $d/e$ ,  $k_e$ , and  $g$  is quite sensitive to changes in those parameters. Alternatively, one should also consider using one of the Bloomberg's P/e values or conducting a cross-sectional regression to estimate P/e. Finally, the valuation should also be done using other approaches to see if there is consistency and whether or not similar conclusions are reached.

## **EPS, Sales, and Operating Profit Margins**

Next period's *EPS* were estimated by forecasting sales and profit margins (*EPS/S*). A more disaggregate approach is to estimate sales, the operating profit margin instead of the profit margin ( $m^O = EBDIT/TR$ ), depreciation per share ( $Dep/n$ ), interest expense per share ( $I = Int/n$ ), and the effective tax rate ( $t$ ). For an index or industry, this is done on a per share basis, and for a company, it can be done on per share basis or with total firm value:

$$m_t^O = \frac{EBDIT_t}{S}$$

$$EBDIT_t/n = m_t^O S_t$$

$$EPS_t = [(EBDIT_t/n - Dep_t/n) - I_t](1 - t)$$

The first forecast of the Zuber Oil Company ([Exhibit 12.7](#)) shows an expected *EBIT* of \$120 million, interest costs of \$20 million or \$4 per share, and no depreciation. The Zuber Company's expected operating profit margin is 66.67 percent, and again its expected *EPS* is \$12:

$$S_1 = \frac{TR_1}{n} = \frac{\$180 \text{ million}}{5 \text{ million}} = \$36$$

$$m_1^O = \frac{E(EBDIT_1)}{TR_1} = \frac{\$120 \text{ million}}{\$180 \text{ million}} = 0.66667$$

$$\text{Interest Expense per Share} = I_1 = \frac{Int}{n} = \frac{\$20 \text{ million}}{5 \text{ million}} = \$4$$

$$\text{Depreciation Expense per Share} = \frac{Dep_1}{n} = \frac{0}{5 \text{ million}} = 0$$

$$E(EBDIT_1/n) = m_1^O E(S_1) = (0.66667)(\$36) = \$24$$

$$E(EPS_1) = [E(EBDIT_1/n) - I_1 - (Dep_1/n)](1 - t)$$

$$= [\$24 - \$4 - 0](1 - 0.4) = \$12$$

It is important to note that using this approach requires that one estimate operating margins, interest expenses, depreciation, and taxes. Depending on the type of company, the operating profit margin can depend on the company's capacity utilization rate, labor cost, cost of goods sold, material costs, administrative cost, and exchange rates (if inputs and goods are imported). Labor costs, in turn, depend on not only wages, salaries, and the cost of benefits, but also on productivity, which can be impacted by technology. The costs of goods sold, inputs costs, and material costs can be influenced by inflation and by the exchange rate. For companies that import their goods to be sold or the materials they use for manufacturing, exchange rate considerations are important. Operating costs also depend on the efficiency of the company's supply chain.

Depreciation expenditures relate primarily to the amount and types of corporate investments companies make. For manufacturing companies, depreciation is often related to capacity utilization. Annual percent-

age increases in depreciation expenses have tended to range between 5 percent and 8 percent, with the higher end of the percentage increases occurring when the economy is at a high level of capacity utilization (leading to a need for greater capital expenditures on new equipment and plant expansion). Interest expenses depend not just on interest rates but also on the company's capital structure. In the 1990s, for example, interest costs were decreasing not just because of the decline in interest rates but also because companies were reducing their debt levels following the highly leveraged period of the 1980s. Finally, tax changes are the result of changes in tax codes. Estimating corporate taxes often require that an analyst conduct a detailed analysis of possible congressional and executive tax initiatives at the federal, state, and municipal levels, as well as international considerations for multinational companies.

### **EPS Forecasted in Term of Projected Income Statement Items**

A third approach is to estimate *EPS* by forecasting the accounting income statement items as reported by companies. Reported income statement items can be found on Bloomberg's FA screen ("IS" and "As Reported" tab). To forecast *EPS* based on reported items, an analyst needs to make a projection of each income statement item:

- Operating Income = Revenue (*S*) - Cost of Goods Sold (*CGS*) - Selling and General Administrative Expenses (*SGS*).
- Pretax Income = Operating Income - Interest Expenses (*Int*) - Net Foreign Exchange Losses - Net Nonoperating Losses.
- Income Before XO Items = Pretax Income - Income Tax.
- Net Income = Income before XO Item - Net XO Loss - Net Tax Effect of XO Loss - Minority Interest.

Based on the current reported income and expense items, an analyst could make estimates of the proportional changes (*g*) in revenue (*S*), cost of goods sold, *SGA*, interest expenses (*Int*), net FX losses, and income taxes and then multiply the reported level by  $(1 + g)$  to obtain a forecast for next period:

$$\begin{aligned} S_1 &= (1 + g)S_0 \\ CGS_1 &= (1 + g)CGS_0 \\ Int_1 &= (1 + g)Int_0 \end{aligned}$$

As an example, a one-year forecast of Macy's *EPS* based on projected proportional changes in these income-statement items is shown in [Exhibit 12.10](#). The forecast was made on 10/8/2013 using the Excel program: EPE\_PE\_Estimator. This program can be downloaded from the text's web site. The program pulls financial data on the selected company from Bloomberg. The forecast of *EPS* is based on the inputted proportional changes expected in sales, cost of goods sold, and other income statement items. These proportional changes are applied to the last four quarters of the income statement item to forecast out the item for the next four quarters.

<b>Estimated EPS</b>	4.23	<b>9.75862069</b>
<b>Estimated PE = (d/e)/(k-g)</b>	13.14	<b>V = (BB PE)E(EPS)</b>
<b>Estimated Price ( PE)</b>	\$ 55.59	\$ 41.27
Current Price	\$ 42.45	

Date Period	7/28/2012	10/27/2012	2/2/2013	5/4/2013	8/3/2013	Trailing Four Quarters	Next Full Year
	FQ2 2013	FQ3 2013	FQ4 2013	FQ1 2014	FQ2 2014		
Revenue	6,118	6,075	9,350	6,387	6,066	27,878	28,993
Sales Growth	-0.41%	-0.70%	53.91%	-31.69%	-5.03%	3.88%	4.00%
Cost of Goods Sold (Revenue)	3,555	3,672	5,554	3,911	3,533	16,670	17,837
% Δ in COGS	-5.38%	3.29%	51.25%	-29.58%	-9.67%	4.14%	7.00%
COGS/Revenue	58.11%	60.44%	59.40%	61.23%	58.24%	59.80%	61.52%
Selling, General & Administrative Expense	2,009	2,078	2,400	2,041	1,999	8,518	9,114
% Δ in S.G.&A	0.70%	3.43%	15.50%	-14.96%	-2.06%	2.18%	7.00%
S.G.&A/Revenue	32.84%	34.21%	25.67%	31.96%	32.95%	30.55%	31.44%
Operating Income	554	325	1,396	435	534	2,690	2,042
Operating Margin	9.06%	5.35%	14.93%	6.81%	8.80%	9.65%	7.04%
Interest Expense	105	104	106	97	97	404	424
% Δ in Interest	-7.08%	-0.95%	1.92%	-8.49%	0.00%	-7.13%	5.00%
Foreign Exchange Loss (G)	-	-	-	-	-	-	-
Net Non-Operating Loss (G)	-	(1)	138	-	(1)	136	-
Pretax Income	449	222	1,152	338	438	2,150	1,618
Income Tax Expense	170	77	422	121	157	777	-
Effective Tax Rate	37.86%	34.68%	36.63%	35.80%	35.84%	36.14%	0.00%
Income Before XO Items	279	145	730	217	281	1,373	1,618
XO Loss (Gain) Pretax	-	-	-	-	-	-	-
Tax Effect on XO Items	-	-	-	-	-	-	-
Minority Interest	-	-	-	-	-	-	-
Net Income	279	145	730	217	281	1,373	1,618
<b>EPS</b>	0.68	0.36	1.86	0.56	0.73	3.51	<b>4.23</b>
Number of Shares	411.20	401.30	392.30	388.20	382.50	*Forecast uses last quarter's # of shares*	382.50

**EXHIBIT 12.10** Macy's EPS 2014 Forecast and Value: 10/8/2013 EPS\_PE\_Estimator Excel Program

For Macy's the forecast made on 10/8/2013 projects its *EPS* for next full year to be \$4.23. The \$4.23 forecast represents a 20.51 percent increase from the \$3.51 level of the preceding four quarters. The *EPS* increase is based on a projected 4 percent increase in sales, 7 percent increase in the costs of goods sold and selling and administrative expenses, and 5 percent increase in interest cost. The program also allows the user to input a discount rate and growth rate to estimate the *P/e* ratio based on the Gordon-Williams model. The program then calculates the value of the stock based on the projected *EPS* and *P/e* ratio. The program also shows Bloomberg's best *P/e* estimate and determines the value based on that *P/e* and the forecasted *EPS*. Using our estimated multiplier of 13.14, the intrinsic value of Macy's on 10/8/2013 was \$55.58. Using Bloomberg's best *P/e* estimate of 9.758, the value was \$41.28, which was closer to the market price of \$42.45 on 10/8/2013.

In summary, forecasting *EPS* in terms of a company's projected sales, operating cost, cost of goods sold, interest expenses, depreciation, and taxes is a challenge facing all analysts. By doing so, an analyst develops a methodology for better understanding the company, what determines its stock value, and whether it is a good investment. In the process of estimating earnings, one becomes a better analyst—one who has an understanding of the breadth and the depth of a company.

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**BLOOMBERG: EPS\_PE\_ESTIMATOR EXCEL PROGRAM**

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The **EPS\_PE\_Estimator Excel Program** can be downloaded from the text web site. The program calculates the *EPS* for the next four quarters forward based on the user's inputted projections of the proportional changes in sales, cost of goods sold, interest expenses, and other income statement items. The program uses the company's reported income statement that can be found on the "IS" tab and "As Reported" tab on the FA screen for the stock. The program also calculates the value of the stock based on the projected *EPS* and a *P/e* ratio: A *P/e* ratio based on the Gordon-Williams model ( $P/e = (d/e)/(k_e - g)$ ) and one based on Bloomberg's best *P/e* estimates. See Exhibit 12.10 for an example.

- To load a stock in EPS\_PE\_Estimator Excel Program, enter the stock's ticker from the "BB Data" tab.
- Historical data on each income statement item, input box for inputting projections, and projections are found in the "Model" tab.
- Graphs of income-statement items can be accessed from the "Graphs" tab.
- Note: Cells are not protected in this Excel worksheet.

See Bloomberg Web [Exhibit 12.1](#).

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### Other Multipliers

Instead of *EPS*, the multiplier approach can be extended by using different denominators, such as free cash flow, *EBITDA*, *EBIT*, sales, or book value. Similar to the *P/e* approach, the income or balance sheet item used as the denominator is defined as the expected value for next period. The value of the stock or index, in turn, is equal to the product of estimated equilibrium multiplier and the expected value of the denominator:

$$\frac{P}{EBITDA_t} = \frac{P}{\text{Expected EBITDA per share}}$$

$$V = \frac{P}{EBITDA} E(EBITDA_t)$$

$$\frac{P}{S_t} = \frac{P}{\text{Expected Sales per Share}}$$

$$V = \frac{P}{S} E(S_t)$$

$$\frac{P}{BV_t} = \frac{P}{\text{Expected Book Value}}$$

$$V = \frac{P}{BV} E(BV_t)$$

The choice of multiplier depends on the type or stock or index being valued. Moreover, in the case of foreign stocks, a P/S multiplier may be a better multiplier than P/e or P/EBIT when there is suspected accounting manipulations. Like P/e, the equilibrium multiplier can be estimated using historical averages, the current values, or a consensus forecast of the values of the variables next period. [Exhibit 12.11](#) shows Bloomberg measures for P/EBITDA, P/S, and P/e multipliers for the Dow Jones stocks.

										Book
	Price to Sales	Price to Sales	Best Price	P/e Current	Sales per	EBITDA	Value per			
Name	EBITDA	Sales	5-Year Av	to Sales	Year	Share	per Share	Share	Best EPS	
American Express Co	7.6741	2.3962	1.5583	2.3698	14.839	29.0148	2.5128	17.5590	1.2170	
Boeing Co/The	10.9167	1.0833	0.6623	0.9922	17.736	108.7743	2.8264	9.9810	1.5180	
Caterpillar Inc	5.5583	0.9152	0.9724	0.9414	13.329	92.3535	3.5667	27.2091	1.7150	
Cisco Systems Inc	8.9640	2.5178	2.7002	2.4185	10.684	9.1212	0.6344	10.9705	0.5060	
Chevron Corp	5.1543	1.0480	0.8713	0.9654	9.728	112.4085	5.1728	73.3760	2.8850	
El duPont de Nemours	9.6440	1.5377	1.1642	1.4404	14.980	37.7735	2.8894	14.1434	0.4080	
Walt Disney Co/The	10.2586	2.6505	1.6627	2.4760	18.869	24.6709	1.9828	24.1867	0.7580	
General Electric Co	10.4036	1.7604	1.2232	1.6499	14.346	14.0157	0.5948	12.0298	0.3540	
Goldman Sachs Group Inc/The	3.5532	1.7402	1.4219	2.2365	10.275	75.3117	10.0338	151.2124	2.4590	
Home Depot Inc/The	10.6374	1.4096	0.8910	1.3385	20.092	53.2620	2.4128	10.7861	0.8940	
International Business	8.5740	2.0037	1.7871	1.9453	10.760	91.4742	4.5781	16.2092	3.9530	

Book									
	Price to	Price to	Price to Sales	Best Price	P/e Current	Sales per	EBITDA	Value per	
Name	EBITDA	Sales	5-Year Av	to Sales	Year	Share	per Share	Share	Best EPS
Machines									
Intel Corp	5.6815	2.1915	2.4523	2.1342	11.908	10.5223	0.9462	10.8091	0.5510
Johnson & Johnson	11.0920	3.4792	2.7628	3.4006	15.738	25.0172	2.1554	24.7549	1.3210
JPMorgan Chase & Co	NA	1.8126	1.3303	1.9491	8.868	26.6481	NA	52.4755	1.2880
Coca-Cola Co/The	13.3477	3.5357	3.7386	3.5057	17.657	10.6430	0.8360	7.2673	0.5340
McDonald's Corp	9.2854	3.4009	3.2885	3.2521	16.673	27.6489	2.5850	15.1768	1.5100
3M Co	10.5189	2.7084	2.1034	2.5593	17.566	43.8111	2.9599	26.1548	1.7580
Merck & Co Inc	9.5363	3.1706	2.6426	3.1102	13.595	14.8207	1.0961	16.2311	0.8740
Microsoft Corp	9.2224	3.6152	3.4480	3.3655	12.317	9.2969	0.8455	9.4793	0.5480
NIKE Inc	17.8233	2.5255	1.9068	2.3101	23.227	28.9008	1.1584	12.6714	0.5780
Pfizer Inc	8.5887	3.7238	2.5740	3.7352	13.073	7.6589	0.8510	11.8591	0.5590
Procter & Gamble Co/The	11.9478	2.5229	2.1784	2.4774	17.920	30.6870	1.3600	24.4052	1.0580
AT&T Inc	6.2130	1.4864	1.4118	1.3896	13.653	22.8545	1.9855	16.1155	0.6530

Book									
	Price to	Price to	Price to Sales	Best Price	P/e Current	Sales per	EBITDA	Value per	
Name	EBITDA	Sales	5-Year Av	to Sales	Year	Share	per Share	Share	Best EPS
Travelers Cos Inc/The	NA	1.2266	1.0680	1.2114	9.829	68.4671	NA	66.6399	1.9300
UnitedHealth Group Inc	7.0793	0.6432	0.4544	0.5723	12.966	114.4558	2.7166	31.1938	1.5230
United Technologies Corp	9.3732	1.5273	1.1603	1.4689	16.708	68.8663	3.2693	29.4133	1.5380
Visa Inc	15.9267	10.1636	7.0540	9.5048	24.248	18.5181	2.9616	34.3113	1.8530
Verizon Communications Inc	4.2213	1.1302	0.9812	1.0890	16.435	41.3125	3.7368	11.9026	0.7420
Wal-Mart Stores Inc	6.7517	0.5232	0.4858	0.4932	14.020	142.4336	2.7505	21.9415	1.1320
Exxon Mobil Corp	6.1758	0.9714	1.0242	0.8515	11.239	95.4363	3.0774	37.6299	1.8830

Source: Bloomberg

**EXHIBIT 12.11** P/S, P/EBITDA, P/e Ratios for Dow Jones Stocks, 8/10/2013

One can also use a cross-sectional regression model to estimate the relation between the multiplier and identified explanatory factors, or the Gordon-Williams constant growth model (value divided by sales per

share, *EBIT* per share, *EBITDA* per share, or *BV* per share) and estimate the multiplier directly in term of  $g$ ,  $k_e$ , and  $d/EBITDA$ ,  $d/S$ , or  $d/EBIT$ :

$$V = P = \frac{d}{k_e - g}$$

$$\frac{V}{S} = \frac{P}{S} = \frac{d/S}{k_e - g}$$

### Macy's Valuation Using the P/S Multiplier

On 12/30/2012, the *P/S* ratio for Macy's was 0.536 (Bloomberg's BEst *P/S*). Multiplying this ratio by the projected sales for 2013 of \$72.07, we obtain an intrinsic value for Macy's of \$38.63, slightly less than the market price of 39.02. If we project the same sales growth in 2014 of 5.56 percent that was projected for 2013, then expected sales for 2014 would be \$76.08. Furthermore, if we assume the same *P/S* multiplier for 2013 that we used in 2012, then the estimated 2013 value for Macy's would be \$40.78 and the expected rate with an \$0.80 DPS would be just 6.56 percent:

$$S_{13} = S_{12} (1 + \Delta S_t / S)$$

$$S_{13} = \$68.276 (1 + 0.0556) = \$72.07$$

$$V_{12} = \frac{P}{S} E(S_{13})$$

$$V_{12} = (0.536)(\$72.07) = \$38.63$$

$$S_{14} = S_{13} (1 + \Delta S_t / S)$$

$$S_{14} = \$72.07(1.0556) = \$76.08$$

$$V_{13} = \frac{P}{S} E(S_{14})$$

$$V_{13} = (0.536)(\$76.08) = \$40.78$$

$$E(\text{Rate}) = \frac{\$40.78 + \$0.80}{\$39.02} - 1 = 0.0656$$

Based on the valuation using the Bloomberg's *P/S* multiplier, Macy's would be overpriced by 1.01 percent [ $= (\$39.02/\$38.63) - 1$ ] and the expected rate of return using the 2013 estimated intrinsic value of \$40.78 as our estimated price would only be 6.56 percent, considerably less than the required return. An analyst relying on this evaluation would likely recommend a sell or no buy. The different conclusions reached with the *P/S* model are the result of not including the strong long-run growth rate that was captured in *P/e* multiplier valuation. It could also be owing to the selection of the *P/S* multiplier.

## Valuation Using the Discounted-Cash Flow Model and Bloomberg's DDM Model

In valuing Macy's using the *P/e* multiplier approach, we estimate the *P/e* multiplier using the Gordon-Williams model. This model is a constant growth rate model. As a result, our valuation was based on the assumption that Macy's *EPS* would grow at constant growth rate of 12.5 percent, have a fixed dividend-payout ratio of 0.23, and its required rate would be 14.25 percent. If we value Macy's based on the values using the constant growth valuation model, we obtain our intrinsic value of \$45.60 (allow for slight rounding differences):

$$V = \frac{E(d_1)}{k_e - g} = \frac{(d/e)E(EPS)}{k_e - g} = \frac{0.23(\$3.47)}{0.1425 - 0.125} = \$45.60$$

An approximate value of \$46.73 is also obtained using the Bloomberg DDM screen. This can be seen in [Exhibit 12.12](#), which shows the valuation of Macy's using DDM. The DDM screen shown in the exhibit was adjusted to reflect our constant growth model assumptions:  $g = 12.5\%$ ,  $\beta = 1.428$ ,  $k_e = 0.142 = 0.0171 + (0.08755)\beta$ ,  $E(EPS_{FY1}) = 3.47$ ,  $E(EPS_{FY2}) = 3.47(1.125) = \$3.90$ , and  $E(EPS_{FY3}) = 3.47(1.125)^2 = \$4.39$ ,  $DPS_{FY1} = 0.80$ , dividend payout = 0.23, and no growth or transition period.



**EXHIBIT 12.12** Macy's Constant Growth Model Using Bloomberg DDM Screen, 10/12/2013

One of the limitations of the Gordon-Williams model is that the assumption of a constant growth rate is not applicable to many stocks and sectors. In one of our scenarios of Macy's, we assumed an expected growth rate in EPS to be relatively low (5.062 percent) for at least two years and then take on a rate of 12.5 percent. As discussed in previous chapters, Bloomberg's DDM determines the value of a stock using a three-stage growth model. The program defaults to one of four growth stage scenarios: explosive growth, high growth, average growth, and slow/mature growth. The classification is based on the normalized distribution of the forecasted growth rate for all equities. Explosive growth firms are at the high end of the distribution, with growth rates significantly above the normalized mean or median, while low/mature growth firms are those at the low end of the distribution. The Bloomberg DDM model initially sets the length of the growth stage to three years for explosive growth, five years for high growth, seven years for average growth, and nine years for slow growth. The growth rate defaults to the mean secular growth rate. The other default assumptions of the DDM include:

- A growth rate in the mature stage equal to the retention rate times the stocks required rate.
- The growth rates in the transition period decrease annually from the rate in the growth stage period to the rate in the mature stage.
- EPS for FY1, FY2, and FY3 equal the consensus earnings projections.

- The *EPS* for the remaining years in the initial growth period reflect the long-term growth rate assumption.
- *DPS* are FY2 and FY3, and the growth year periods are based on the current dividend-payout ratio.
- The payout ratio in the mature stage is 45 percent.
- The discount rate is equal to the risk-free rate of the 10-year Treasury bond plus a risk premium.

The upper DDM screen shown in [Exhibit 12.13](#) shows the DDM value of Macy's on 10/8/2013. The screen shows a \$50.426 value of Macy's and an internal rate of 11.105 percent. The value is based on Bloomberg's default assumptions:  $EPS_{FY1} = \$3.822$ ,  $EPS_{FY2} = \$4.350$ ,  $EPS_{FY3} = \$4.976$ ,  $DPS_{FY1} = \$0.951$ , long-term growth rate of 10.52 percent,  $\beta = 1.032$ ,  $k_e = 10.44$  percent, and mature growth rate = 5.742 percent. The lower screen in the exhibit shows a \$45.036 value for the stock and an internal rate of 11.852 percent; this value reflects assumptions that are closer to our preceding analysis:  $EPS_{FY1} = \$3.90$  ( $= (1.125)(\$3.47)$ ),  $EPS_{FY2} = \$4.39$ ,  $EPS_{FY3} = \$4.94$ ,  $DPS_{FY1} = \$0.80$ , long-term growth rate of 12.5 percent,  $\beta = 1.2$ ,  $k_e = 11.65$  percent, and mature growth rate = 6 percent. Both scenarios value Macy's higher than the current prices of \$42.55 and \$42.99 and both have internal rates of return exceeding their required returns. Thus, the DDM analysis would merit a buy recommendation by an analyst based on these projections, but perhaps not a strong buy.



(a)



(b)

**EXHIBIT 12.13** Macy's Three-Stage Growth Model Value Using Bloomberg's DDM Model, 10/8/2013

(a) 10/9/2013: Bloomberg Default Assumptions.

(b) 10/8/2013

**Exhibit 12.14** shows the market prices on 10/10/2013, EPS, P/e ratios, and DDM values of each stock composing the Dow Jones Average. The Bloomberg's DDM model reflects the Bloomberg DDM default assumptions. As a first pass, a comparison of market prices with DDM values shows 12 of the 30 Dow stocks were underpriced as of 10/10/2013.

Name	EPS:Y	P/E:Y	Price	Value	Proportion	
					BEst	BEst
					Market	DDM
					(Mkt Price/	EVA
<b>DJIA Stocks</b>						
GENERAL ELECTRIC CO	1.641	14.360	23.570	21.866	0.078	2,088.52
EXXON MOBIL CORP	7.577	11.239	85.160	147.604	-0.423	2,407.45
MICROSOFT CORP	2.685	12.317	33.070	37.759	-0.124	896.29
JOHNSON & JOHNSON	5.462	15.737	85.960	83.327	0.032	3,583.62
WAL-MART STORES INC	5.207	14.020	73.000	120.125	-0.392	-4,919.51
CHEVRON CORP	11.921	9.742	116.130	80.253	0.447	704.51
PROCTER & GAMBLE CO/THE	4.294	17.921	76.950	98.833	-0.221	165.65
INTL BUSINESS MACHINES CORP	16.851	10.760	181.320	228.601	-0.207	-9,750.13
JPMORGAN CHASE & CO	5.723	8.867	50.750	30.904	0.642	-7,109.32
PFIZER INC	2.166	13.064	28.290	27.542	0.027	2,470.54
AT&T INC	2.472	13.653	33.750	39.728	-0.150	8,775.17
COCA-COLA CO/THE	2.100	17.657	37.080	36.607	0.013	3,678.26
MERCK & CO. INC.	3.477	13.595	47.270	39.725	0.190	9,900.97

Name	EPS:Y	P/E:Y	Price	Value	Proportion	
					BEst	BEst
					Market	DDM
					(Mkt Price/	EVA
VERIZON COMMUNICATIONS INC	2.811	16.438	46.200	61.242	-0.246	-11,157.43
CISCO SYSTEMS INC	2.106	10.682	22.500	23.281	-0.034	3,260.02
VISA INC-CLASS A SHARES	7.582	24.250	183.850	225.184	-0.184	3,803.19
WALT DISNEY CO/THE	3.370	18.869	63.590	40.237	0.580	2,514.24
INTEL CORP	1.896	11.913	22.590	21.022	0.075	45.87
HOME DEPOT INC	3.690	20.092	74.140	116.178	-0.362	13,395.34
UNITED TECHNOLOGIES CORP	6.155	16.709	102.840	92.895	0.107	1,119.45
MCDONALD'S CORP	5.594	16.674	93.270	125.172	-0.255	5,520.29
BOEING CO/THE	6.454	17.735	114.470	88.656	0.291	4,256.30
3M CO	6.693	17.566	117.570	105.636	0.113	375.02
AMERICAN EXPRESS CO	4.867	14.840	72.220	58.764	0.229	-4,613.26
UNITED HEALTH GROUP INC	5.505	12.966	71.380	85.482	-0.165	3,190.17
GOLDMAN SACHS GROUP	15.031	10.274	154.440	48.860	2.161	2,822.49

Name	EPS:Y	P/E:Y	Price	Value	Proportion	
					BEst	BEST
					Market	DDM
<b>mispriced:</b>						
					(Mkt Price/	
NIKE INC-CLB	3.050	23.243	70.890	65.689	0.079	666.14
CATERPILLAR INC	6.266	13.329	83.520	53.585	0.559	5,970.78
DU PONT (E.I.) DE NEMOURS	3.801	14.981	56.940	43.013	0.324	12,914.22
TRAVELERS COS INC/THE	8.378	9.829	82.350	73.725	0.117	2,554.99

Source: Bloomberg

**EXHIBIT 12.14** DDM Value, Market Price and Economic Value Added, Dow Jones Stocks, 8/10/2013

## Growth Duration Model

Finding how long a company will grow at an extraordinary rate or equivalently how long it will take to reach the transitional or steady-state period is important if one is to estimate the values of stock using 2-stage and 3-stage models. As a general rule, companies with extraordinary growth rates will not grow at those rates for an extended time. They will eventually run out of potentially high-return investments. As noted, Bloomberg's DDM determines the length of stages by classifying stocks based on a normalized distribution of the forecasted growth rates for all equities. Explosive growth firms are at the high end of the distribution, with growth rates significantly above the normalized mean or median, while low/mature growth firms are those at the low end of the distribution.

Growth duration models can also be used to estimate the implied time it would take to move to steady state. One duration model is based on assuming that the current *P/e* of a stock will eventually converge to a value that is proportional to the market *P/e*, with the proportion being based on earnings and the market's steady-state growth. The formula for the model is:

$$T = \frac{\ln \left[ \frac{P/e}{P/e_M} \right]}{\ln \left[ \frac{(1 + g + DY)}{1 + g_M + DY_M} \right]}$$

where:

- $P/e$  = Current price-to-earnings ratio
- $g$  = Estimated growth rate in earnings (sustained)
- $DY$  = Dividend yield
- $M$  = Market

[Exhibit 12.15](#) shows the years,  $T$ , to steady state using the growth duration model for nine Dow stocks.

The calculations are based on the stocks'  $P/e$ , dividend yields, and sustainable growth rates as of 8/10/2013. The company with the longest duration is Pfizer.

Name	P/e	Dividend Yield, DY (%)	Sustained Growth Rate, g (%)	Time to Steady State, T (Years)
S&P 500	16.40	2.0800	9.0112	
WALT DISNEY CO	17.58	1.1101	11.9403	3.9624
GENERAL ELECTRIC	14.54	3.1639	5.6712	5.8635
HOME DEPOT INC	19.14	2.0558	15.6524	2.6723
JOHNSON & JOHNSON	16.18	2.9111	6.9645	1.2533
COCA-COLA CO/THE	17.60	2.9494	13.7367	1.4374
MERCK & CO	13.49	3.6329	1.8505	3.7680
NIKE INC-CL B	23.35	1.2320	16.2696	6.2982
PFIZER INC	12.84	3.3182	5.5454	12.0868
AT&T INC	13.36	5.2895	-3.0357	2.4738

Source: Bloomberg; P/e = Bloomberg BEst P/e

$$T = \ln \left[ \frac{P/e}{P/e_{S\&P}} \right] / \ln \left[ \frac{1 + g + DY}{1 + g_{S\&P} + DY_{S\&P}} \right]$$

**EXHIBIT 12.15** Times to Steady State, Duration Growth Model of Nine Dow Jones Stocks, 8/10/2013

## Economic Value Added

Economic Value Added (EVA, also referred to as economic profit) is a measure of a company's residual wealth. It is calculated by deducting the cost of capital from the company's operating profit.

$$EVA = \text{Net Operating Profit After Taxes} - \text{Cost of Capital}$$

$$EVA = EBIT(1 - t) - (WACC)(\text{Value of Assets})$$

Companies that can obtain risk-adjusted returns on their investments ( $i$ ) that exceed the returns obtained in the market will have positive  $EVAs$ . For example, consider our illustrative Zuber Oil Company. Recall that the company had bought an oil well reserve for \$500 million financed by the equity investors raising \$250 million and the company borrowing \$250 million at 8 percent. Suppose Zuber Oil Company was expected to generate \$120 million in  $EBIT$ , with \$20 million going to creditors, \$40 million to the government in taxes, and \$60 million to equity investors in dividends (see [Exhibit 12.7](#)). Zuber has a cost of equity capital of 24 percent ( $\beta = 2$ ; SML:  $k_e = R_f + (RP)\beta = 0.04 + (0.10)(2) = 0.24$ ), cost of debt of 8 percent ( $k_d$ ), and WACC of 14.4 percent ( $WACC = f_d k_d (1 - t) + f_e k_e = (0.5)(0.08)(1 - 0.4) + (0.5)(0.24) = 0.144$ ).

Given these rates, the value of Zuber's assets is \$500 million and its  $EVA$  is zero.

$$k_C^T = WACC = f_E k_e + f_D k_d (1 - t)$$

$$WACC = (0.5)(0.24) + (0.5)(0.08)(1 - 0.4) = 0.144$$

$$V_0^A = \frac{E(EBIT)(1 - t)}{k_C^T}$$

$$V_0^A = \frac{\$120 \text{ million} (1 - 0.4)}{0.144} = \$500 \text{ million}$$

$$EVA = EBIT(1 - t) - WACC(V_0^A)$$

$$EVA = \$120M (1 - 0.4) - (0.144) (\$500M) = 0$$

The zero  $EVA$  for Zuber indicates that the company is generating (or is expected to generate) an after-tax return of 14.44 percent from its \$500 million oil well assets—\$72 million:

$$\frac{EBIT(1 - t)}{V_0^A} = \frac{\$72M}{\$500M} = 0.144$$

A 14.4 percent return from \$500 million of invested capital equals the return the company required in order to take care of its shareholders who are financing half the asset and require a return of 24 percent and its creditors who are financing half the asset and require an 8 percent rate that is tax deductible.

Zuber would have a positive  $EVA$  if it generates a rate of return greater than its required return. For example, suppose the company generated \$130 million in  $EBIT$  and \$78 million in net operating profit [ $EBIT(1 - t) = \$130M (1 - 0.4) = \$78M$ ]. If the market values the company at \$500 million, then the company's return on its \$500 asset would be 15.60 percent [=  $EBIT(1 - t)/V^A = \$130M(1 - 0.4)/\$500M$ ], exceeding its WACC of 14.4 percent, and its  $EVA$  would be \$6 million:

$$EVA = EBIT(1 - t) - WACC(V_0^A)$$

$$EVA = \$130M(1 - 0.4) - (0.144)(\$500M) = \$6M$$

Companies with positive EVAs are growth firms—those capable of generating risk-adjusted rates on their investments that exceed the rates investors can obtain in the market. Suppose Zuber made a \$60 million investment in a new oil well with an investment return of 30 percent ( $i = 0.30$ ) and beta of two, and financed the new investment by raising \$30 million in new debt and \$30 million in equity (either by retained earnings or issuing stock). With this investment, Zuber's WACC would still be 14.4 percent, its total asset would be \$560 million, and its  $EBIT$  would be \$138 million: \$120 million from its old oil well and \$18 million from its new oil well [ $= il = (0.30)(\$60M) = \$18M$ ]. With the new investment, Zuber's  $EVA$  would be \$2.16 million:

$$EVA = [EBIT + iI_1](1 - t) - WACC(V_0^A + I_1)$$

$$EVA = [\$120M + (0.30)(\$60M)](1 - 0.4) - (0.144)(\$500M + \$60M)$$

$$EVA = \$138M(1 - 0.4) - (0.144)(\$560M) = \$2.16M$$

If Zuber's investment return on the new oil well were 24 percent—the same rate investors can get in the market for a  $\beta$  of two—then Zuber's  $EVA$  would be equal to zero.

$$EVA = [EBIT + iI_1](1 - t) - WACC(V_0^A + I_1)$$

$$EVA = [\$120M + (0.24)(\$60M)](1 - 0.4) - (0.144)(\$500M + \$60M)$$

$$EVA = \$134.40M(1 - 0.4) - (0.144)(\$560M) = 0$$

$EVAs$  are often measured in terms of book values for assets. These  $EVA$  values can be pulled from Bloomberg. The last column of Exhibit 12.14 shows the  $EVAs$  for the Dow stocks as of 8/10/2013. Note just five of the Dow stocks have negative  $EVAs$ .

## Relative Analysis

Stock valuation can be done on a stock-by-stock basis, with the objective of determining if a stock is underpriced and meriting a buy recommendation or overpriced and deserving a sell or no buy recommendation. Stock and portfolio investment decisions, however, also require relative analysis. This entails conducting a comparative analysis of the companies in the same industry or with the same style (e.g., growth stocks or small-cap stocks) and then applying the same type of analysis and forecast for each company.

A relative analysis of the larger cap companies that make up the department store industry is shown in the top panel of [Exhibit 12.16](#). The exhibit shows the  $SPS$ ,  $EPS$ ,  $DPS$ , profit margin, and  $P/e$  ratios based on Bloomberg's best consensus estimates as of 10/9/2013. The screen also shows the market prices on 10/9/2013, adjusted betas, sustainable growth rates, and the intrinsic values for each stock based on Bloomberg's DDM model (with Bloomberg DDM default assumptions). Based on the company DDM values relative to their market prices, Macy's was underpriced by 16.49 percent [(Market Price/DDM Value) -

$1 = (\$42.45/\$50.83) - 1 = -0.1649$ ], Dillards by 19.28 percent [=  $(\$76.97/\$95.36) - 1$ ], Nordstrom by 0.52 percent [=  $(\$55.62/\$55.91) - 1$ ], and Kohl's by 34.65 percent [=  $(\$50.77/\$77.69 - 1)$ ]. In contrast, Saks was overpriced by 348 percent [=  $(\$15.98/\$3.53) - 1$ ] and both J.C. Penney and Sears had negative EPS and zero sustainable growth rates, making their DDM values zero. As a first pass, an analyst would take a bearish position on Saks, J.C. Penney, and Sears (although each might warrant a different analysis later) and bullish positions on Macy's, Dillards, and Kohl's.

Department		Sales Performance & Financial Ratios									
Store	Market	Sales per Share	Best	Best	Best	Best	DDM	Market	Adjusted	Sustainable	
Industry		12 Month Trailing	EPS	Profit Margin	DPS	P/E	Value	Price	Beta	Growth Rate	
Name	Cap										
MACY'S INC	15907.43	71.28	3.82	0.0253	0.9511	11.106	50.83	42.450	1.032	16.866	
DILLARDS INC-CL A	3550.44	143.30	7.35	0.0326	0.2400	10.479	95.36	76.970	0.721	5.138	
KOHLS CORP	11104.71	85.62	4.25	0.0414	1.3150	11.945	77.69	50.770	0.710	10.927	
J.C. PENNEY CO INC	2396.92	55.09	-5.72	-0.1407	0.0000		0.00	7.770	1.482	0.000	
NORDSTROM INC	10872.69	62.99	3.68	0.0461	1.0989	15.107	55.91	55.620	1.021	26.622	
SAKS INC	2404.33	21.88	0.37	0.0229	0.0000	43.357	3.53	15.980	1.190	5.337	
SEARS HOLDINGS CORP	6365.83	362.64	-5.88	-0.0382	0.0000		0.00	63.050	1.729	0.000	
Department		Dupont Ratios					Growth Rate and ROE and ROA				
Store	Industry	Operating Income	Sales to Total Asset	Assets to Equity	ROE	Retention Ratio	Sustainable			Debt/Equity	Adjusted Beta
Name	to Net Sales: Q (%)	Total Asset (%)	Equity (%)	ROE (%)	Ratio (%)	Growth Rate (%)	ROA (%)	Equity (%)	Beta (%)		

Department		Sales								
Store	Market	Sales per Share	Best	Best	Best	Best	DDM	Market	Adjusted	Sustainable
Industry		12 Month Trailing	EPS	Profit Margin	DPS	P/E	Value	Price	Beta	Growth Rate
Name	Cap									
MACY'S INC	8.8032	0.2969	3.4895	23.354	65.970	15.407	6.197	114.527	1.032	
DILLARDS INC-CL A	4.7455	0.3693	2.0427	18.035	93.650	16.890	8.042	41.825	0.721	
KOHLS CORP	10.5153	0.3042	2.3289	15.865	67.965	10.783	7.030	75.281	0.710	
J.C. PENNEY CO INC	-13.0680	0.2285	5.0233	-53.714		0.000	-9.290	94.040	1.482	
NORDSTROM INC	10.4819	0.3739	4.2088	39.255	68.478	26.881	8.866	163.670	1.021	
SAKS INC	-4.3263	0.3368	1.8196	3.7679		0.000	2.981	31.273	1.190	
SEARS HOLDINGS CORP	-3.2916	0.4602	6.8265	-42.960		0.000	-4.568	98.361	1.729	
Financial Risk					Business Risk			Bankruptcy Risk		
Long-Term Debt to Equity	Debt-to-5 Yr Geo									Bloomberg
Term Debt to 5 Yr Geo	Equity 5 Yr Geo	EBIT to 5 Yr Geo	Operating Profit	Gross Profit	Profit Margin	Pretax Margin	Altman Z	Default Probability		
Name	Total Equity	Growth Rate	Total Interest	Margin	Margin	Margin	Margin	Z	Probability	

Department		Sales								
Store	Market	Sales per Share	Best	Best	Best	Best	DDM	Market	Adjusted	Sustainable
Industry		12 Month Trailing	EPS	Profit Margin	DPS	P/E	Value	Price	Beta	Growth Rate
MACY'S INC	112.48	2.280	6.059	8.803165	40.265839	4.821932	7.59229	3.724	0.000576	
DILLARDS INC-CL A	41.74	-6.345	7.583	4.745529	37.094746	4.976039	7.49293	3.835	0.000348	
KOHLS CORP	73.54	18.012	5.710	10.515272	36.257069	5.114373	8.09689	3.219	0.000528	
J.C. PENNEY CO INC	93.22	28.381	-4.478	-13.067968	31.313053	-7.585676	-11.829	0.747	0.079948	
NORDSTROM INC	163.30	-7.574	8.302	10.481852	38.821205	6.050379	9.75469	3.528	0.000152	
SAKS INC	22.66	-10.011	3.844	-4.326272	40.592789	1.997805	3.15785	3.506		
SEARS HOLDINGS CORP	61.25	34.893	-3.642	-3.291624	26.381292	-2.333517	-3.70854	1.738	0.007389	

Liquidity Risk						External Market Risk			
	Quick	Cash	Inventory	Ace. Rec.	Short	Average	Bid-Ask	Market	DDM
Name	Ratio LF	Ratio LF	Turnover	Turnover LF	Interest Ratio	Volume	Spread	Cap	Value
MACY'S INC	0.3425	0.2754	3.208	78.97	1.6341	5127780	0.01	15907.43	50.832
DILLARDS INC-CL A	0.1755	0.1426	2.989	226.20	6.0865	551857	0.06	3550.44	95.361

Department		Sale								
Store	Market	Sale per Share	Best	Best	Best	Best	DDM	Market	Adjusted	Sustainable
Industry		12 Month Trailing	EPS	Profit Margin	DPS	P/E	Value	Price	Beta	Growth Rate
KOHLS CORP	0.2206	0.2206	3.345		10.1128	2257518	0.02	11104.71	77.694	
J.C. PENNEY CO INC	0.4353	0.4353	2.809		3.1339	52559280	0.01	2396.92	0.000	
NORDSTROM INC	1.1810	0.3810	5.351	5.34	4.8177	1855050	0.02	10872.69	55.908	
SAKS INC	0.0185	0.0185	2.401		5.5650	6178331	0.01	2404.33	3.532	
SEARS HOLDINGS CORP	0.1464	0.0749	3.506	63.54	8.0239	770519	0.15	6365.83	0.000	

Source: Bloomberg RV Screens

**EXHIBIT 12.16** RV Analysis of Department Store Industry, 10/9/2013

In evaluating the buy recommendations, the DDM values for Macy's and Nordstrom are based on both having relatively high projected growth rates of 10.52 percent and 11.86 percent, respectively, and large discount rates because of their higher betas (see top DDM screen in [Exhibit 12.17a](#) for Macy's, and see Exhibit 12.17a for Nordstrom's DDM screen). In contrast, the DDM values for Kohl's and Dillard's reflect lower growth rates of 8.76 percent and 9.4 percent and lower discount rates because of their lower betas of 0.71 and 0.719 (see [Exhibit 12.17b](#) and [Exhibit 12.17c](#)).



(a)



(b)



(c)

**EXHIBIT 12.17** Nordstrom, Kohl's and Dillards DDM Values, 10/9/2013

(a) Nordstrom

(b) Kohl's

(c) Dillards

The second panel in Exhibit 12.16 shows various ratios related to sustainable growth and risk: business, financial, bankruptcy, liquidity, and external market risks. The ratios were pulled from Bloomberg's RV screens. In evaluating the companies with the initial buy recommendations in term of sustainable growth rates and return on equity (ROE). Nordstrom has the highest ROE (39.26 percent), followed by Macy's (23.35 percent), Dillards (18.04 percent), and Kohl's (15.86 percent). Nordstrom, in turn, has the highest sustainable growth rate. ROEs are often analyzed in terms of the financial ratios that define the DuPont model for measuring ROE:

$$ROE = \left[ \frac{\text{Net Income}}{\text{Sales}} \right] \left[ \frac{\text{Sales}}{\text{Assets}} \right] \left[ \frac{\text{Assets}}{\text{Equity}} \right]$$

The second panel of Exhibit 12.16 shows each company's DuPont ratios, ROEs, and return on assets (ROA). Note that each of the four companies have relatively high net income-to-sales ratios, with the highest being Kohl's (10.51 percent), followed by Nordstrom (10.48 percent), Macy's (8.80 percent), and Dillards (4.75 percent). Macy's and Nordstrom, however, have higher asset-to-equity ratios (3.49 and 4.21) than do Kohl's and Dillards (2.33 and 2.04). The higher asset-to-equity ratios for Macy's and Nordstrom help to explain why their ROE's (23.35 percent and 39.26 percent) exceed those of Kohl's and Dillard (15.86 percent and 18.03 percent). All of the companies, however, have comparable ROAs, with Nordstrom having the highest (8.87 percent) followed by Dillards (8.04 percent), Kohl's (7.03 percent), and Macy's (6.197 percent). The high asset-to-equity ratios of Macy's and Nordstrom show that both are

more leveraged than Kohl's and Dillard (Note: A further financial risk analysis of companies in this industry would require looking at their leases.) This is also reflected by the leverage ratios of the companies shown in the exhibit. Comparing Macy's and Nordstrom to Kohl's and Dillards, we find Macy's and Nordstrom with debt-to-equity ratios of 114.5 percent and 163.67 percent, compared to Kohl's and Dillards with ratios of only 75.28 percent and 41.82 percent. The higher leverage ratios for Macy's and Nordstrom would explain, in part, their higher *ROE* and why they have higher betas and discount rates.

In general, difference in betas among companies can be explained in terms of business risk (unleveraged beta) and financial risk. Companies with a high operating leverage tend to have high operating profit margins. As a result, their earnings vary more with sales, and as a result they tend to have higher unleveraged betas. Operating leverage relates to the mix of fixed (capital) and variable inputs (labor) used to produce the product. High operating leverage companies tend to have higher earnings in economic expansion and lower in economic slowdowns. Steel companies, for example, have high operating leverages and operating margins. Retail companies tend to have lower operating leverages and margins. Sales of cyclical sectors, such as auto or steel, tend to be more volatile than noncyclicals, such as hospital services. A relative analysis of business risk would look at a company's operating margins and profit margins or the volatility in operating income or in sales. In comparing the four companies' operating margins, Macy's, Kohl's, and Nordstrom have comparable operating margins, ranging between 8.8 percent for Macy's and approximately 10.5 percent for Kohl's and Nordstrom. Dillards had the lowest operating margin of 4.74 percent. An analyst would conclude that three of the four companies have similar business risk.

It should be noted that risk may not be limited just to business and financial risk. Financial and business risk may lead to bankruptcy risk, and there may also be liquidity risk where companies are in a cash-poor situation, reflecting possible future financial distress. Measures of bankruptcy risk include the Altman's Z-score, bond spreads, and spreads on credit default swaps. Liquidity risk, in turn, can be measured in terms of liquidity ratios (current ratio, quick ratio, and cash ratio) and turnover ratios for accounts receivable and inventory. Altman's Z-scores, Bloomberg default probability, and several liquidity ratios for the department stores are shown in Exhibit 12.16. The low Z-score, high default probability, and negative operating margin for J.C. Penney are red flags for the company. Sears and Saks both have relatively low cash ratios, as well as negative operating profits. Business risk may also be reflected in exchange-rate risk. Companies such as department stores that buy products from foreign suppliers or companies that have large foreign sales are subject to exchange-rate risk. Finally, independent of business and financial risk, is external liquidity risk. This risk is related to the marketability of the company's stock. Recall that marketability refers to the speed of trading a security with little change in price. External liquidity measures include the stock's trading volume, trading turnover (proportion of outstanding shares traded during a period of time), its bid-ask spread, and its proportion of institutional ownership.

In summary, the first-pass analysis of the companies making up the department store industry shows Macy's, Dillard's, and Kohl's merit strong buy recommendations and Nordstrom a buy recommendation. Macy's and Nordstrom have more financial risk and therefore higher discount rates than do Kohl's and Dillard's, but also a higher *ROE* and expected growth rates in *EPS*. Sears, J.C. Penney, and Saks appear to be overpriced, with negative profit margin. At certain prices, these stocks could be good values, plus given the industry's past tendency for consolidation, one of them could be the target for acquisition. The next step for an analyst would be to conduct a valuation analysis similar to the one we examined for Macy's.

## Qualitative Analysis

The quantitative approach to valuing equity requires estimating *EPS*, growth rates, capitalization rates, and growth stages. Estimating these values, in turn, requires one to breakdown these variables in term of their components and the factors that determine them: sales, operating cost, interest, depreciation, business risk, and financial risk. It is important to keep in mind that behind these numbers are tangible and intangible real assets—corporate investment machines—that create the next new miracle drug, smart phone, computer chip, financial information platform, online store, jumbo plane, energy source, blockbuster movie, sports franchise, consumer product, and skyscraper. Collectively, these companies add value to our lives. An important part in analyzing and valuing a company is to examine the qualitative factors underlying the company's value.

Qualitative analysis of a stock can be done by conducting a SWOT analysis of the company: strengths, weaknesses, opportunities, and threats. The analysis will vary depending on the company and its industry. SWOT can be on the revenue side, such as new markets or patents, or on the cost side, such as improved supply chains. SWOT can be internal, related to the company's management or the quality of its engineers, scientists, and strategic planners, or it can be external, such as the state of the economy, changing taste, or changes in exchange rates. [Exhibit 12.18](#) lists some of the considerations analysts consider when they do SWOT analysis. Bloomberg also provides detailed analysis by industry on its BI screen. This screen provides not only quantitative analysis, but also qualitative assessments of industry drivers and trends provided by some of the top analysts for the industry. [Exhibit 12.19](#) shows BI screens for the pharmaceutical and department store industries.

- 1. Strengths:** What is company's competitive advantage?
  1. Strong R&D, strong financial resources, strong buy image, low-cost producers, high quality producer.
- 2. Weaknesses:** What are the exploitable advantages of the company's competitors? Is the company doing anything about its weaknesses?
  1. Foreign competition, poor financial resources, etc.
- 3. Opportunities:** What are the external and internal factors that favor the company?
  1. Shrinking competition, favorable exchange rates, new products, new markets, etc.
- 4. Threats:** What are the external and internal factors that could hurt the company?
  1. Slow economy, government regulations, new entrants, new technology that makes company's product obsolete, etc.

### **Competitive Strategy Considerations**

1. Brand names.
2. Investment in technology to lower cost.
3. Investment in delivery systems.
4. Low-cost leader: Economies of scale, proprietary technology, access to raw material, etc.
5. Differentiated products: Unique marketing, distribution system.

[\*\*EXHIBIT 12.18\*\*](#) SWOT Analysis



(a)



(b)

**EXHIBIT 12.19** Bloomberg BI Screens

One of the most respected and successful investor is the well-known Warren Buffett. [Exhibit 12.20](#) summarizes some of Warren Buffett's tenets for investing. Examining these tenets shows his appreciation of both quantitative and qualitative analysis, as well common sense, when it comes to equity investing.

**1. Business Tenets:**

1. Business is simple.
2. Consistent operating history.
3. Favorable long-run prospects (e.g., the product is needed).

**2. Management Tenets:**

1. Management is rationale.

**3. Financial Tenets:**

1. Focus on ROE
2. Look for good ROE with little or no debt.
3. Look for high profit margins.
4. Look at free cash flow.

**4. Market Tenets:**

1. What is the value of the business?
2. Look at economic value-added model.

**EXHIBIT 12.20** Warren Buffett Investment Tenets

## When to Sell

The valuation of stock is generally associated with stock purchases. Once a stock is purchased, however, it needs monitoring and analysis to determine if investors should sell the stock or buy more.

As a general rule, the answer to when to sell should be based on the analysis, research, and convictions that convinced the investor to buy the stock in the first place. The key drivers that were identified for buying the stock, such as competitive advantage, reduced cost, or new opportunities, need to be monitored. When they change or weaken, it is time to reevaluate and possibly sell. In general, when a stock approaches its intrinsic value, it may be time to sell and reinvest the funds in another underpriced stock. Macy's, for example, may not continue to pick up market share as we forecasted, or the market may start to value Macy's as we do, driving up its price. These considerations would cause us to reevaluate and possibly change a hold position to a sell one. As a rule, if an investor knows why she bought the stock, she will be able to recognize when to sell it.

## Conclusion

In this chapter, we extended our examination of fundamental analysis by looking at the multiplier and DCF approaches to valuing stock. With both models, the important variables to estimate are expected EPS, the growth rate in EPS, the dividend-payout ratio, the discount rate, and the type of growth: con-

stant, two stage, or three stage. Moreover, quantitative approaches are important because they help us identify the correct questions that need to be asked and answered: What is the required return? What is the *ROE*? What is the investment policy? What are the expected sales? What is the profit margin? We also noted the importance of qualitative stock analysis as a complement to qualitative analysis. Ultimately, the fundamental evaluation of stock requires forming a vision about where the company is headed. Unfortunately, there is no unique approach or analysis of stocks that can give one a crystal ball for predicting where a company will be in the future. What fundamental analysis can do is try to identify the important factors and criteria that are needed in order to make a good assessment. In Chapter 13, we will complete our examination of fundamental analysis by examining the aggregate market and industries.

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#### BLOOMBERG RV AND FA SCREENS AND EXCEL TEMPLATES

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##### BLOOMBERG RV SCREEN

- The Bloomberg RV screen can be used to do a relative analysis of companies in terms of valuation, ratios, and earnings. From the Comp source dropdown, you can pull the stocks from indexes, portfolios formed in PRTU, and stocks in the loaded stock's industry or sector. The RV screen can also be customized (Custom Tab, "Create Templates," and click "Save as" tab to save the screen).

##### BLOOMBERG FA SCREEN

- Company income statements, balance sheets, valuation, and other information can be accessed on Bloomberg's FA screen. You can also create customized screens.

##### BLOOMBERG: EXCEL TEMPLATES

Bloomberg has a number of Excel templates for conducting fundamental analysis. Use DAPI to see a listing and to download: DAPI <Enter>; Click "Excel Template Library"; Click "Fundamentals."

Templates of note include the following:

- Discounted Cashflows Analysis, XDCF.
- Bloomberg Company in Depth Analysis, XIDA.XLS.
- Financial Statements for Equity Indexes, XFAI.XLS.
- Banks Comparison Sheet, XBS.XLS.
- Company Snapshot with Financial Analysis, XCSF.XLS.
- Company In-Depth Fundamentals, XIDS.XLS.
- Company Snapshot with Transparency, XCS4.XLS.
- Fundamental Scoring, XPFS.
- Financial Analysis, XFA.XLS.
- Company Comparison Sheet, XCS.XLS.

See Bloomberg Web [Exhibit 12.2](#).

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## Web Site Information

For financial information on securities, market trends, and analysis, see:

- [www.Finance.Yahoo.com](http://www.Finance.Yahoo.com)
- <http://www.hoovers.com>
- <http://www.bloomberg.com>
- <http://www.businessweek.com>

- <http://seekingalpha.com>
- <http://bigcharts.marketwatch.com>
- <http://www.morningstar.com>
- <http://free.stocksmart.com>
- <http://online.wsj.com/public/us>

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## Bloomberg Exercises

1. Using the BI screen (BI <Enter>) select an industry and evaluate it using the following BI Screens:
  1. Comp Sheets
  2. Key Indicators
  3. News/Research
  4. Events
  5. Data library
  6. Macro
2. Select one of the companies of interest from the industry you analyzed in Exercise 1 and evaluate it by customizing the stock's FA screen. Some customized screens to consider are:
  1. Earnings in terms of sales-per-share and profit margins.
  2. Multipliers: P/e, P/S, and P/EBITDA.
  3. Business Risk: margins.
  4. Financial Risk: leverage ratios.
  5. Liquidity Risk.
3. Conduct a relative analysis of the company you selected in Exercise 2 with its peers by customizing the stocks' RV screen. On the RV screen, select the index for the peers from Comp source dropdown. Some custom screens you may want to consider:
  1. Earnings in terms of sales per share and profit margins.
  2. Multipliers: P/e, P/S, and P/EBITDA.
  3. Business Risk: Operating and profit margins.
  4. Financial Risk: Leverage ratios.
  5. Liquidity Risk.
  6. Growth: Sustainable growth, payout ratios, and ROE.
  7. DuPont Ratios.
  8. Valuation: DDM values and market prices.
4. Select a group of stocks of interest. This could be from a portfolio you have already created, an index ((broad-based or industry/sector specific), or stocks found from a search (EQS).
  1. Conduct a relative analysis of the companies by customizing an RV screen showing the stocks' DDM values, market prices, and economic value added (EVA). Bring up the RV screen for one of the stock's in your group; on the RV screen, pull the other stocks from the Comp source dropdown (portfolio, index, or EQS search); customizes the screen, creating columns for DDM values, EVAs, and prices.
  2. Identify the stocks that are underpriced and have positive EVAs as possible buy recommendations.
  3. Compare each stock you have identified as a buy recommendation with the analysts' recommendation for that stock found on the stock's EE, ERN, and ANR screens.
  4. Conduct a SWOT analysis of one of your buy stocks. Possible screens you may want to use to obtain information to conduct your SWOT analysis:

- BI: Bloomberg's BI screen for analysis of the industry.

- CF: Company's 10-K reports (CF screen found on the stock's screen).

- SPLC: Supply chain.

- RSKC: Risk.

- DRSK: Credit risk.

- LITI: Litigation.

- CN: Company news.

- BRC: Company research.

5. Select one of the companies from the group of stocks you analyzed in Exercise 4 (or another stock of interest) and forecast its EPS forward for the next 12 months using the EPS\_PE\_Estimator Excel program found on the text's web site. See Bloomberg Exhibit box "Bloomberg: EPS\_PE\_Estimator Excel Program."

6. Screen and search for stocks using the EQS screen that meet some of the Warren Buffett Tenets, such as consistent operating history, good ROE and low debt, high profit margins, good cash position, and high EVAs. (see [Exhibit 12.20](#)).

1. Screen by selecting an index and then setting the criteria for your search: market cap, ROE, profit margins, EVA (WACC EVA spread), cash-to-sale ratio exceeding a certain percentage, and the debt/equity ratio being less than a certain percentage.

2. Analyze the stocks from your search using the RV screen for one of the stocks and importing your search from the Comp Source dropdown. Customize your screen to compare EVA, DDM values, and prices so that you can identify if the stocks are underpriced or overpriced.

7. Detailed Fundamental Analysis: Use Bloomberg to evaluate a stock of interest using fundamental analysis. Include in your analysis:

1. Full description of the stock: Include some of the information from the following screens:

<ul style="list-style-type: none"> <li>• DES              Description</li> </ul>	
<ul style="list-style-type: none"> <li>• RELS            Related securities (e.g., debt, preferred stocks)</li> </ul>	
<ul style="list-style-type: none"> <li>• CF               Company Filings (10-K)</li> </ul>	
<ul style="list-style-type: none"> <li>• HDS             Major holders of the stock</li> </ul>	
<ul style="list-style-type: none"> <li>• OWN            Equity Ownership</li> </ul>	
<ul style="list-style-type: none"> <li>• SPLC           Supply Chain</li> </ul>	
<ul style="list-style-type: none"> <li>• ISSD           Issuer Description</li> </ul>	
<ul style="list-style-type: none"> <li>• DDIS           Debt Distribution</li> </ul>	
<ul style="list-style-type: none"> <li>• AGGD           Debt Holders</li> </ul>	
<ul style="list-style-type: none"> <li>• BRC            Research on Company</li> </ul>	
<ul style="list-style-type: none"> <li>• RSKC           Risk</li> </ul>	
<ul style="list-style-type: none"> <li>• DRSK           Credit Risk</li> </ul>	
<ul style="list-style-type: none"> <li>• LITI           Litigation</li> </ul>	
<ul style="list-style-type: none"> <li>• CACS           Corporate Actions</li> </ul>	
<ul style="list-style-type: none"> <li>• HRA or Beta    Characteristic Line</li> </ul>	

2. Brief description of the stock's sector trends (Bloomberg BI screen) and comparison of the stock relative to a sector index and the market (SPX). Use Bloomberg's Comp Sheets screen found on the BI platform.
3. Relative analysis of the company's growth rate. Compare the company's growth rate and its components (retention rate and ROE or DuPont ratios) with a selected index. Use RV, FA, and/or GF.
4. Relative analysis of the company's risk: liquidity risk, business risk, financial risk, and bankruptcy risk. Use RV, FA, and/or GF.
5. Relative analysis of the company's P/e. Compare the company's historical P/e ratio with a peer index and the market (SPX). Use GF.

6. Use your analysis of growth rates, risk, and relative *P/e* ratios to determine the stock's equilibrium *P/e*.
  7. Make a forecast of the company's *EPS*. Suggestion:  $EPS(1 + g)$  or you can try the Excel multiplier program: the *EPS\_PE\_Estimator* Excel program.
  8. Compare your forecast with analysts' forecast (EE and ERN screens).
  9. Determine the stock's intrinsic value using the *P/e* multiplier approach:  $V = (P/e)(E(eps))$ .
  10. Make a forecast of the company's sales per share. Compare your forecast with analysts' forecast (EE and ERN screens).
  11. Determine the stock's intrinsic value using the *P/S* multiplier approach:  $V = (P/S)(E(SPS))$ .
  12. Determine if the stock is underpriced or overpriced.
  13. Use Bloomberg DDM model to determine the stock's value. Change assumptions from Bloomberg's default assumption if you believe they are warranted. Compare your DDM value with the market price to see if the stock is underpriced or overpriced.
  14. Make a buy, hold, or sell recommendation.
  15. Compare your recommendation with other analysts' recommendations (ANR screen).
  16. Check the news on the stock and comment on your conviction about buying or not buying the stock.
  17. Launchpad: Create a Launchpad with useful screens for analyzing and monitoring your stock and its peers.
8. Excel Exercise: Create Excel tables for analyzing a group of stocks, portfolio, or index using the Bloomberg Excel Add-In. For a guide, see the Bloomberg exhibit box: "Bloomberg Excel Add-In." Possible Excel tables are:
1. Different Bloomberg *P/e* Ratios: [Exhibit 12.2](#).
  2. Different Multipliers: Exhibit 12.11.
  3. DDM, Price, and Value Added: Exhibit 12.14.
  4. Duration Growth Model: Exhibit 12.15.
  5. DuPont Ratios, Growth: Exhibit 12.16.
  6. Business, Financial, Liquidity, and Bankruptcy Risks: Exhibit 12.16.
9. Excel Exercise: Create an Excel table of time series information needed to conduct a multiplier valuation on a stock of interest using the Bloomberg Excel Add-in. For a guide, see the Bloomberg exhibit box: "Bloomberg Excel Add-In." Variables to consider: *P/e*, *P/S*, *SPS*, profit margins, *EPS*, and *DPS*. See Exhibit 12.4 for a guide.