

LOWE'S COMPANIES, INC. Consolidated Balance Sheets (In millions, except par value)		
	Feb. 1, 2013	Feb. 3, 2012
Assets		
Current assets		
Cash and cash equivalents	\$ 541	\$ 1,014
Short-term investments	125	286
Merchandise inventory, net	8,600	8,355
Deferred income taxes, net	217	183
Other current assets	301	234
Total current assets	9,784	10,072
Property, less accumulated depreciation	21,477	21,970
Long-term investments	271	504
Other assets	1,134	1,013
Total assets	<u>\$32,666</u>	<u>\$33,559</u>
Liabilities and Shareholders' Equity		
Current liabilities		
Current maturities of long-term debt	\$ 47	\$ 592
Accounts payable	4,657	4,352
Accrued compensation and employee benefits	670	613
Deferred revenue	824	801
Other current liabilities	1,510	1,533
Total current liabilities	7,708	7,891
Long-term debt, excluding current maturities	9,030	7,035
Deferred income taxes—net	455	531
Deferred revenue—extended protection plans	715	704
Other liabilities	901	865
Total liabilities	18,809	17,026
Shareholders' equity		
Preferred stock—\$5 par value, none issued	—	—
Common stock—\$0.50 par value; shares issued and outstanding, 2/3/2012: 1,241; 2/1/2013: 1,110	555	621
Capital in excess of par value	26	14
Retained earnings	13,224	15,852
Accumulated other comprehensive income	52	46
Total shareholders' equity	13,857	16,533
Total liabilities and shareholders' equity	<u>\$32,666</u>	<u>\$33,559</u>

Required

Compute the following liquidity, solvency, and coverage ratios for Lowe's Companies. Interpret and assess these ratios for Lowe's relative to those for Home Depot, above. For 2013, Lowe's statement of cash flows reported cash from operations of \$3,762 million and capital expenditures of \$1,211 million. Assume Lowe's marginal tax rate is 37%.

1. Return on net operating assets
2. Return on equity
3. Times interest earned
4. EBITDA coverage
5. Operating cash flow to debt
6. Free cash flow to debt
7. Current ratio
8. Quick ratio
9. Liabilities-to-equity ratio
10. Total debt-to-equity ratio

The solution is on page 4-49.

PREDICTING BANKRUPTCY RISK

Bankruptcy is a worst-case scenario for creditors. Accordingly, creditors are very interested in assessing the likelihood that a company will go bankrupt.

Altman Z-Score

Professor Edward Altman is a leader in this area, which sprung from his study on the use of financial ratios to predict corporate bankruptcy risk (Altman, E., “Financial Ratios, Discriminant Analysis and the Prediction of Corporate Bankruptcy,” *Journal of Finance*, September 1968). He developed a model for *scoring* a company based on various financial indicators and a way to apply that score (called Z-score) to assess a company’s bankruptcy risk. To derive the model, Altman used data from many bankrupt and non-bankrupt public companies along with a statistical methodology called Multiple Discriminant Analysis. Altman’s weighted model to predict a company’s **Z-score** follows:

LO5 Explain bankruptcy prediction models, and compute and interpret measures of bankruptcy risk.

$$\text{Z-Score} = \left[1.2 \times \frac{\text{Working Capital}}{\text{Total Assets}} \right] + \left[1.4 \times \frac{\text{Retained Earnings}}{\text{Total Assets}} \right] + \left[3.3 \times \frac{\text{EBIT}}{\text{Total Assets}} \right] + \left[0.6 \times \frac{\text{Market Value of Equity}}{\text{Total Liabilities}} \right] + \left[0.99 \times \frac{\text{Sales}}{\text{Total Assets}} \right]$$

Each variable in the Z-score model relates to financial strength. The first variable provides a measure of liquidity, while the second and third variables measure long-term and short-term profitability. The fourth variable captures the company’s levered status, while the fifth variable reflects its total asset efficiency.

By comparing Z-scores of bankrupt and non-bankrupt companies, Altman derived the following interpretations in Exhibit 4.8.

EXHIBIT 4.8 Z-Scores and Their Interpretation	
Z-score	Interpretation
Z-score > 3.00	Company is healthy and there is low bankruptcy potential in the short term
2.99 > Z-score > 1.80	Gray area—company is exposed to some risk of bankruptcy; caution is advised
1.80 > Z-score	Company is in financial distress and there is high bankruptcy potential in short term

The cut-offs in this exhibit are shown to predict bankruptcy reasonably accurately up to two years in advance. The model is 95% accurate in the first year and 72% accurate in the second year. For years beyond the second year, the model’s predictive ability declines sharply.

Application of Z-Score

To compute a Z-score for **Home Depot**, we use the financial statement information shown in Exhibit 4.9 and as reported (in millions) for the year ended February 3, 2013, from Exhibits 4.1 and 4.3.

EXHIBIT 4.9 Financial Statement Information for Home Depot			
Current assets	\$15,372	Shares outstanding, in millions	1,484
Current liabilities	11,462	× Price per share*	\$ 67.30
Working capital (WC)	\$ 3,910	Market value of equity (MVE)	\$99,873
Total assets (TA)	\$41,084	Total liabilities (TL)	\$23,307
Retained earnings (RE)	\$20,038	Sales	\$73,344
EBIT	\$ 7,706		

*February 3, 2013, was a Sunday, so we use the closing price of \$67.30 from Friday February 1, 2013.

Home Depot’s Z-score is computed as 5.704, which is detailed in Exhibit 4.10. Its **5.754** Z-score exceeds the 3.00 lower cut-off for “safe” companies. Thus, we conclude that there is a low risk of Home Depot going bankrupt in the short term.

EXHIBIT 4.10 Z-Score Computation for Home Depot

Variable	Financial Ratio	Weight	Score
WC/TA	(\$3,910/\$41,084) ×	1.2	= 0.114205
RE/TA	(\$20,038/\$41,084) ×	1.4	= 0.682825
EBIT/TA	(\$7,706/\$41,084) ×	3.3	= 0.618971
MVE/TL	(\$99,873/\$23,307) ×	0.6	= 2.571064
Sales/TA	(\$73,344/\$41,084) ×	0.99	= 1.767368
Z-score =			5.754433

Bankruptcy Prediction Errors

Predictions are imperfect and errors occur. Two types of errors can arise from the Z-score model: **Type I error** (a false negative) and **Type II error** (a false positive). In Altman's Z-score model, a "positive" indicates bankruptcy. Thus, a Type I error occurs when a company's Z-score indicates the company is healthy, yet the company goes bankrupt. This can happen if, for example, a pending lawsuit was not recognized in the financial statements, or a sudden downturn in the industry forced the company to fail despite adequate recent performance. A Type II error occurs when a company's Z-score indicates the company is likely to go bankrupt, yet the company remains solvent. This can happen if the company is rebounding from a small downturn in business or has recently gone public and its ratios are weak because of the company's age. Exhibit 4.11 shows both types of error.

EXHIBIT 4.11 Z-Score Prediction Errors

		Predicted Classification	
		Bankrupt	Non-Bankrupt
True Classification	Bankrupt	Correct prediction	Type I error
	Non-Bankrupt	Type II error	Correct prediction

Given the potential for both Type I and Type II errors, a Z-score must be viewed as only one piece of evidence for assessing bankruptcy risk.

Altman twice revised the Z-score model to allow for different industries and firm-age, as well as for privately-held firms. These models are more accurate when applied to those types of companies. Altman and other researchers also developed the ZETA analysis, which adds new variables for the persistence of earnings, the interest coverage ratio (EBIT/interest payments), the current ratio, the company capitalization (MVE/total capital), and the company size (natural logarithm of total assets)—see E. Altman, R. Haldeman, and P. Narayanan, "ZETA Analysis: A New Model to Identify Bankruptcy Risk of Corporations," *Journal of Banking and Finance*, June 1977. With the ZETA analysis, Altman et al. recommend adjustments to financial statement numbers to reflect the true underlying economics. The ZETA model performs similarly with Z-scores in short-term predictive accuracy, but it yields better long-term predictions (up to 70% prediction accuracy five years before bankruptcy).

Ratio (\$ in millions)	Home Depot	Lowe's Companies
Quick ratio	$\frac{\$2,494 + \$1,395}{\$11,462} = 0.34$	$\frac{\$541 + \$125}{\$7,708} = 0.09$
Liabilities to Equity	$\frac{\$23,307}{\$17,777} = 1.31$	$\frac{\$18,809}{\$13,857} = 1.36$
Total debt to Equity	$\frac{\$9,475 + \$1,321}{\$17,777} = 0.61$	$\frac{\$47 + \$9,030}{\$13,857} = 0.66$

Interpretation: Home Depot's profitability metrics are stronger than Lowe's: both RNOA and ROE are significantly higher. In addition, nonoperating return that Home Depot earns (6.71%) is more than twice as big as that of Lowe's (2.85%). This implies that Home Depot is better able to use debt to achieve higher returns for shareholders. Home Depot's coverage ratios are stronger than Lowe's and we see a similar pattern for the cash flow metrics. Looking at the current and quick ratios, we see that Home Depot is slightly more liquid. The companies are about equally solvent but noted earlier, ratios with equity in the denominator were negatively affected by both companies' recent stock buybacks. Both companies carry significant debt but appear able to make interest and debt payments as they fall due.

Module-End Review

Solution

a.

Current assets	\$ 9,784	Shares outstanding, in millions	1,110
Current liabilities	7,708	× Price per share	\$ 38.56
Working capital (WC)	\$ 2,076	Market value of equity (MVE)	\$42,802
Total assets (TA)	\$32,666	Total liabilities (TL)	\$18,809
Retained earnings (RE)	\$13,224	Sales	\$50,521
EBIT (\$3,137 + \$423)	\$ 3,560		

	Variable		Weight		Score
WC/TA	(\$2,076/\$32,666)	×	1.2	=	0.076263
RE/TA	(\$13,224/\$32,666)	×	1.4	=	0.566754
EBIT/TA	(\$3,560/\$32,666)	×	3.3	=	0.359640
MVE/TL	(\$42,802/\$18,809)	×	0.6	=	1.365355
Sales/TA	(\$50,521/\$32,666)	×	0.99	=	1.531127
			Z-score =		3.899139

Lowe's Z-score is greater than 3.0, which means the company is not likely to go bankrupt in the near term.

- b. Home Depot's Z-score of **5.754** is markedly larger than Lowe's score of 3.899. Both companies have high Z-scores, which means that neither company faces any substantial bankruptcy risk in the near term.

ANALYST ADJUSTMENTS 5.2 Adjusting for Restructuring Costs

Restructuring costs consist mainly of two components: employee severance/relocation and asset write-downs. If the company reporting such costs had perfect foresight, it would likely have expensed such costs over the periods that benefited from the employee services and asset usage. As companies do not have perfect foresight, they must expense such costs when they meet the criteria established by GAAP. However, analysts are not bound by GAAP and they have an interest in formulating financial statements that are most useful for analysis and predictive purposes. In this case, analysts have at least two options:

1. Do nothing. Accept that prior period income statements likely understate employee and asset usage costs, meaning income is overstated, and that prior period balance sheets likely overstate asset book values because of the understated asset usage costs. (Or, simply delete the costs and ignore them for analysis purposes.)
2. Adjust prior periods' financial reports by allocating the understated employee and asset usage costs to the periods applicable to the relevant employee group(s) and asset classes.

Option 1 is to accept known distortions in the financial statements—either we do nothing and analyze the company with the reported restructuring costs, or we ignore them and act as if those costs never really existed. Alternatively, option 2 is to address these costs head on. To illustrate, assume that a company reports \$230 million in 2014 restructuring costs that consist of \$30 million in employee severance and \$200 million in asset write-downs. The analyst obtains all available information and decides to allocate the \$30 million over the prior 3 years (including the current year), and the \$200 million over the prior 5 years (including the current year). It is important that an analyst search all available information in footnotes and other releases to gain an understanding of the source of those costs to best estimate the period over which they benefited earnings. We show the adjustments in two parts: (1) For the \$30 million severance costs, we estimate that reported pretax income was overstated by \$10 million each year from unrecognized employee costs (computed as $\$30/3$ years). Accordingly, we increase wages expense by \$10 million per year and decrease pretax income by the same \$10 million. Assuming a 30% tax rate, the full set of adjustments follows.

\$ millions	2012	2013	2014 (current year)*
	+\$10 wages expense	+\$10 wages expense	+\$10 wages expense
	−\$3 tax expense	−\$3 tax expense	−\$3 tax expense
Income statement adjustments	−\$7 net income	−\$7 net income	−\$7 net income
			−\$30 severance costs
			+\$9 tax expense
			+\$21 net income
	+\$10 wages payable	+\$20 wages payable	No adjustment required at
	+\$3 deferred tax assets	+\$6 deferred tax assets	current year-end (as the year-
Balance sheet adjustments	−\$7 retained earnings	−\$14 retained earnings	end balance sheet reflects all
			prior and current year cost
			allocations)

* The computation assumes that the severance occurs near year-end (assuming a mid-year severance would mean the current year numbers are cut by one-half, and similarly for other fractions of a year).

- (2) For the \$200 million in asset write-downs, we estimate that reported pretax income was overstated by \$40 million each year from unrecognized depreciation (computed as $\$200/5$ years). Accordingly, we increase depreciation by \$40 million per year and decrease pretax income by the same \$40 million. Assuming a 30% tax rate, the full set of adjustments follows.

\$ millions	2010	2011	2012	2013	2014 (current year)*
	+\$40 depreciation	+\$40 depreciation	+\$40 depreciation	+\$40 depreciation	+\$40 depreciation
	−\$12 tax expense	−\$12 tax expense	−\$12 tax expense	−\$12 tax expense	−\$12 tax expense
Income statement adjustments	−\$28 net income	−\$28 net income	−\$28 net income	−\$28 net income	−\$28 net income
					−\$200 write-down
					+\$60 tax expense
					+\$140 net income
	+\$40 accumulated depreciation	+\$80 accumulated depreciation	+\$120 accumulated depreciation	+\$160 accumulated depreciation	No adjustment required at current
	+\$12 deferred tax assets	+\$24 deferred tax assets	+\$36 deferred tax assets	+\$48 deferred tax assets	year-end (as the
Balance sheet adjustments	−\$28 retained earnings	−\$56 retained earnings	−\$84 retained earnings	−\$112 retained earnings	year-end balance sheet reflects all prior
					and current year cost
					allocations)

* Computed from elimination of \$200 write-down plus \$40 depreciation; the computation assumes that the write-down occurs near year-end (assuming a mid-year write-down would mean the current year numbers are cut by one-half, and similarly for other fractions of a year).

(continued)

MID-MODULE REVIEW 2

Refer to the **Merck & Co., Inc.**, 2012 income statement in Mid-Module Review 1. Merck provides the following additional information in footnotes to its 10-K.

Taxes on income consisted of:

Years Ended December 31 (\$ in millions)	2012	2011	2010
Current provision			
Federal	\$1,346	\$ 859	\$ 399
Foreign	651	1,568	1,446
State	(226)	52	(82)
	<u>1,771</u>	<u>2,479</u>	<u>1,763</u>
Deferred provision			
Federal	749	(584)	764
Foreign	(323)	(683)	(1,777)
State	243	(270)	(79)
	<u>669</u>	<u>(1,537)</u>	<u>(1,092)</u>
	<u>\$2,440</u>	<u>\$ 942</u>	<u>\$ 671</u>

Required

1. What is the total income tax expense that Merck reports in its 2012 income statement?
2. What amount of its total tax expense did (or will) Merck pay in cash (that is, what amount is currently payable)?
3. Explain how Merck calculates its income tax expense.

The solution is on page 5-68.

Foreign Currency Translation Effects

L04 Explain how foreign currency fluctuations affect the income statement.

Many companies conduct international operations and transact business in currencies other than \$US. It is common for companies to purchase assets in foreign currencies, borrow money in foreign currencies, and transact business with their customers in foreign currencies. Increasingly many companies have subsidiaries whose balance sheets and income statements are prepared in foreign currencies.

Financial statements prepared according to U.S. GAAP must be reported in \$US. This means that the financial statements of any foreign subsidiaries must be translated into \$US before consolidation with the U.S. parent company. This translation process can markedly alter both the balance sheet and income statement. We discuss income statement effects of foreign currency translation in this module; we discuss the effects on stockholders' equity in Module 8.

Effects of Foreign Currency Transactions on Income

A change in the strength of the \$US vis-à-vis foreign currencies has a direct effect on the \$US equivalent for revenues, expenses, and income of the foreign subsidiary because revenues and expenses are translated at the average exchange rate for the period. Exhibit 5.7 shows those financial effects.

EXHIBIT 5.7 Income Statement Effects from Foreign Currency Movements			
Revenues	—	Expenses	= Net Income (or Loss)
\$US Weakens Increase		Increase	Increase
\$US Strengthens Decrease		Decrease	Decrease

Specifically, when the foreign currency strengthens (implying \$US weakens), the subsidiary's revenues and expenses translate into more \$US and, thus, reported income is higher than if the

understand that the appreciation in the value of the nutrition business did not occur only in the current year. Consequently, in our analysis, we might consider spreading the gain out over the prior years during which the nutrition business was owned by Pfizer.

The footnote also points out that Pfizer segregates the assets and liabilities relating to this business unit on its consolidated balance sheet. Companies do not frequently provide the same segregation of the assets and liabilities of the discontinued operation that they do in the income statement. Typically, information about these assets and liabilities of the discontinued operations are provided in footnotes. GAAP prescribes that this disclosure must be made, but allows for disclosure in the balance sheet or in the footnotes.

An additional note about the discontinued nutrition business: from January 1, 2012, until the date of sale, November 30, 2012, these operations generated an after-tax net income of \$297 million. Discontinued operations resulted in net income of \$350 million for 2011 and a loss of \$19 million for 2010. Some of the prior year results relate to the nutrition business that was discontinued in 2012 so that the income statement columns are comparable. Segregating net income from continuing operations allows analysts to better focus on the income and cash flow that will likely continue into the future.

Extraordinary Items

To simplify the income statement presentation, in 2015 the FASB issued an Update to eliminate the disclosure of *extraordinary items*. Instead, those items, which are both unusual and infrequent, are now treated the same as items classified as unusual in nature *or* infrequent in occurrence. This Update was effective for fiscal years beginning after December 15, 2015 (affecting annual reports filed in late-2016 and all filings for 2017 and thereafter).

For analysis of annual reports issued prior to late-2016, we present a brief discussion. Historically, **extraordinary items** referred to events that were both unusual *and* infrequent. Their effects were reported following income from continuing operations. Management would determine whether an event was unusual and infrequent (with auditor approval) for financial reporting purposes. Further, management would often have incentives to classify unfavorable items as extraordinary because they would be reported separately, after income from continuing operations (*below-the-line*). These incentives derived from managers' beliefs that investors tend to focus more on items included in income from continuing operations and less on nonrecurring items that are not included in continuing operations. More specifically, GAAP provided the following guidance in determining whether an item was extraordinary:

- **Unusual nature.** The underlying event or transaction must possess a high degree of abnormality and be clearly unrelated to, or only incidentally related to, the ordinary activities of the entity.
- **Infrequency of occurrence.** The underlying event or transaction must be of a type that would not reasonably be expected to recur in the foreseeable future.

Again, historically, extraordinary items were reported separately (net of tax) and below income from continuing operations on the income statement. However, going forward, this is not the case, and those items are treated the same as items that are unusual *or* infrequent.

IFRS INSIGHT Extraordinary Items and IFRS

IFRS does not permit the reporting of income and expense items as “extraordinary.” The IASB justified its position in IAS 1 as follows: “The Board decided that items treated as extraordinary result from the normal business risks faced by an entity and do not warrant presentation in a separate component of the income statement. The nature or function of a transaction or other event, rather than its frequency, should determine its presentation within the income statement. Items currently classified as ‘extraordinary’ are only a subset of the items of income and expense that may warrant disclosure to assist users in predicting an entity’s future performance” (IAS 1).



M5-14. Assessing Risk Exposure to Revenue Recognition (LO1)

BannerAD Corporation manages a Website that sells products on consignment from sellers. It pays these sellers a portion of the sales price, and charges a commission. Identify two potential revenue recognition problems relating to such sales.

MODCLOTH, INC.

M5-15. Estimating Revenue Recognition with Right of Return (LO1)

ModCloth, Inc. offers an unconditional return policy. It normally expects 2% of sales at retail selling prices to be returned before the return period expires. Assuming that ModCloth records total sales of \$10 million for the current period, what amount of *net* sales should it record for this period?

 ABBOTT
LABORATORIES
(ABT)
M5-16. Assessing Research and Development Expenses (LO2)

Abbott Laboratories reports the following (summary) income statement.

Year Ended December 31 (\$ millions)	2012
Net sales.	\$39,874
Cost of products sold.	(15,120)
Research and development*	(4,610)
Selling, general and administrative	(12,059)
Pretax operating earnings	<u>\$ 8,085</u>

* Includes acquired in process research and development.

- Compute the percent of net sales that Abbott Laboratories spends on research and development (R&D). Compare this level of expenditure with the percentages for other companies that are discussed in the Business Insight box on page 5-15. How would you assess the appropriateness of its R&D expense level?
- Describe how accounting for R&D expenditures affects Abbott Laboratories' balance sheet and income statement.


 BRISTOL-MYERS
SQUIBB
(BMY)
M5-17. Interpreting Foreign Currency Translation Disclosure (LO4)

Bristol-Myers Squibb (BMY) reports the following table in its 10-K report relating to the change in sales from 2011 to 2012.

Net Sales	Total Change	Analysis of % Change		
		Volume	Price	Foreign Exchange
United States ^(a)	(26)%	(30)%	4%	—
Europe ^(b)	(4)%	6%	(3)%	(7)%
Rest of the World ^(c)	(1)%	2%	(1)%	(2)%
Total	(17)%	(17)%	2%	(2)%

^(a) Includes Puerto Rico.

^(b) Includes Russia and Turkey.

^(c) Includes Japan, China, Canada, Australia and Brazil, among other countries.

~~— Change in excess of 100%.~~

- Did U.S. net sales increase or decrease during the year? By what percentage? How much of this change is attributable to volume versus price changes?
- By what percentage did foreign net sales change during the year? How much of this change is attributable to volume versus price changes?
- Why does the change in total net sales (17%) not equal the sum of the changes in U.S. of (26%), Europe net sales of (4)% and "Rest of the World" net sales of (1)%?

M5-18. Analyzing Income Tax Disclosure (LO3)

Dell Inc. reports the following footnote disclosure to its 2013 10-K report (\$ millions).

 DELL INC.
(DELL)

PROBLEMS

P6-38. Evaluating Turnover Rates for Different Companies (LO1, 2, 3)

Following are asset turnover rates for accounts receivable; inventory; and property, plant, and equipment (PPE) for **Best Buy Co., Inc.** (BBY) (retailer), **Caterpillar Inc.** (CAT) (manufacturer of heavy equipment), **Dell Inc.** (DELL) (computers), **Verizon Communications, Inc.** (VZ) (communications), and **Walmart Stores, Inc.** (WMT) (department store).

Company	Accounts Receivable Turnover	Inventory Turnover	Plant, Property and Equipment Turnover
Best Buy Co.	18.06	5.60	13.38
Caterpillar Inc.	3.57	3.13	4.27
Dell	8.69	32.13	26.80
Verizon	9.51	45.93	1.31
Walmart	73.85	8.34	4.20

BEST BUY CO., INC.
(BBY)
CATERPILLAR INC.
(CAT)
DELL INC.
(DELL)
VERIZON COMMUNICATIONS
(VZ)
WALMART STORES, INC.
(WMT)

Required

- Interpret and explain difference in receivables turnover for the retailer (Best Buy) vis-à-vis that for the manufacturer (Caterpillar). What reason can you give for a 73.85 turnover for Walmart?
- Interpret and explain the difference in inventory turnover for Dell versus Caterpillar.
- Why is the PPE turnover for Verizon low compared with other companies on this list?
- What are some general observations you might draw regarding the relative levels of these turnover rates across the different industries?

P6-39. Interpreting Accounts Receivable and Related Footnote Disclosure (LO1)

Following is the current asset section from the **W.W. Grainger, Inc.**, balance sheet.

As of December 31 (\$ 000s)	2012	2011	2010
Cash and cash equivalents	\$ 452,063	\$ 335,491	\$ 313,454
Accounts receivable (less allowances for doubtful accounts of \$19,449, \$18,801, respectively)	940,020	888,697	762,895
Inventories—net	1,301,935	1,268,647	991,577
Prepaid expenses and other assets	110,414	100,081	87,125
Deferred income taxes	55,967	47,410	44,627
Prepaid income taxes	40,241	54,574	38,393
Total current assets	<u>\$2,900,640</u>	<u>\$2,694,900</u>	<u>\$2,238,071</u>

and \$24,552



W.W. GRAINGER
(GWW)

Grainger reports the following footnote relating to its receivables.

Allowance for Doubtful Accounts The following table shows the activity in the allowance for doubtful accounts.

For Years Ended December 31 (\$ 000s)	2012	2011	2010
Balance at beginning of period	\$18,801	\$24,552	\$25,850
Provision for uncollectible accounts	9,504	4,761	6,718
Write-off of uncollectible accounts, net of recoveries ..	(9,100)	(8,138)	(8,302)
Business acquisitions, foreign currency and other	244	(2,374)	286
Balance at end of period	<u>\$19,449</u>	<u>\$18,801</u>	<u>\$24,552</u>

Required

- What amount do customers owe Grainger at each of the year-ends 2010 through 2012?
- What percentage of its total accounts receivable does Grainger deem uncollectible? (Hint: Percentage of uncollectible accounts = Allowance for uncollectible accounts/Gross accounts receivable)

Specifically, financial leverage is 51% of equity using adjusted figures versus 3% of equity using reported figures. Financial leverage is, therefore, revealed to play a greater role in ROE in partially offsetting the lower spread. In sum, Southwest's adjusted figures reveal a company with a **higher** ROE and with more assets and more financial leverage than was apparent from reported figures.

Adjusted assets and liabilities arguably present a more realistic picture of the invested capital required to operate Southwest Airlines and of the amount of leverage represented by its leases. Similarly, operating profitability is revealed to be higher than reported, since a portion of Southwest's rent payments represents repayment of the lease liability (a nonoperating cash outflow) rather than operating expense.

ANALYST ADJUSTMENTS 10.1 Adjusting for Operating Leases

Returning to the Southwest Airlines information above, assume the analyst wishes to reformulate the financial statements for examination and prediction purposes. The analysis in Exhibits 10.3, 10.4 and 10.5 uses the operating lease payments from Year 1 to approximate the current period rent expense for operating leases. This approach also uses the computed present value of future lease payments (from Step 2) to compute the depreciation and interest expense for capital leases. Another approach is to set the rent expense in Step 1 equal to the depreciation plus interest computed in Step 2. Under this approach, the rent expense removed in Step 1 would equal \$535 million (\$342 million + \$193 million) instead of \$688 million. This approach means that net income is unchanged and only adjusts the allocation of rent expense between depreciation (operating) and interest (nonoperating); it also maintains the equality of the balance sheet equation. Using this alternate and simpler approach, the necessary adjustments follow.

Reformulations for the 2012 balance sheet:

2012 assets:	Add \$3,403 to lease assets.
2012 liabilities:	Add \$3,403 to lease liabilities.
2012 equity:	Unchanged.

Reformulations for the 2012 income statement:

2012 depreciation expense:	Add \$342 to depreciation expense.
2012 interest expense:	Add \$193 to interest expense.
2012 rent expense:	Deduct \$535 from rent expense (\$342 depreciation + \$193 interest).
2012 income tax expense and net income:	Unchanged.

To adjust additional prior years' statements, the analyst would apply the same approach above using the footnote disclosures from those prior years.

MID-MODULE REVIEW

Following is the leasing footnote disclosure from **United Parcel Service's (UPS)** 2012 10-K report.

We lease certain aircraft, facilities, land, equipment and vehicles under operating leases, which expire at various dates through 2038. Certain of the leases contain escalation clauses and renewal or purchase options. Rent expense related to our operating leases was \$619, \$629 and \$615 million for 2012, 2011 and 2010, respectively. The following table sets forth the aggregate minimum lease payments under capital and operating leases (in millions).

continued

SOLUTIONS TO REVIEW PROBLEMS

Mid-Module Review

Solution

- Its beta value of 1.6 indicates that IBM is more volatile than the market index (in the case of **Finance.yahoo.com**, the index is the S&P 500). A beta of 1.6 implies that IBM's stock price would change as much as 160%, both up and down, with changes in the overall market index.
- Its after-tax cost of debt capital is 4.9%, computed as $7.5\% \times (1 - 0.35)$.
- Its cost of equity capital is 12.6%, computed as $4.6\% + (1.6 \times 5\%)$.
- Its weighted average cost of capital is 12%, computed as:

$$r_w = \left(0.049 \times \frac{\$12.08 \text{ billion}}{\$155.56 \text{ billion}} \right) + \left(0.126 \times \frac{\$143.48 \text{ billion}}{\$155.56 \text{ billion}} \right) = 0.12$$

Module-End Review

Solution

- Its after-tax cost of debt capital is estimated using Equation 12.4.

$$r_d = \text{Pretax average borrowing rate for debt} \times (1 - \text{Marginal [statutory] income tax rate})$$

$$r_d = 0.09 \times (1 - 0.35)$$

$$r_d = 0.0585$$

- Its cost of equity capital is estimated using the CAPM following Equation 12.1.

$$r_e = r_f + \beta \times (r_m - r_f)$$

$$r_e = 0.046 + [1.42 \times (0.096 - 0.046)]$$

$$r_e = 0.117$$

- Its weighted average cost of capital is estimated using Equation 12.5 (B is billions).

$$r_w = \left(r_d \times \frac{IV_{\text{Debt}}}{IV_{\text{Firm}}} \right) + \left(r_e \times \frac{IV_{\text{Equity}}}{IV_{\text{Firm}}} \right)$$

$$r_w = \left(0.0585 \times \frac{\$0.04B}{\$18.30B} \right) + \left(0.117 \times \frac{\$18.26B}{\$18.30B} \right)$$

$$r_w = 0.0001 + 0.1167$$

$$r_w = 0.1168$$

- Since its payoffs (dividends) are paid to equity holders, the proper discount factor for the dividend discount model is the cost of equity capital. If intrinsic value is estimated assuming that dividend payments continue in perpetuity, its intrinsic value follows:

$$IV_{\text{per share}} = \frac{\$0.84}{0.117} = \$7.18$$

- Here we assume that intrinsic value is estimated assuming that the dividend payments continue to grow at 1% beginning in Year 3 and thereafter. The present value of the dividend payments for the first two years is treated as lump-sum payments. The present value of the increasing perpetuity is computed using the Gordon growth model; we obtain the present value of this perpetuity as of the end of year two, which we must then discount back two years to the present.

$$IV_{\text{per share}} = \frac{\$0.84}{1.117} + \frac{\$0.84}{(1.117)^2} + \frac{\$0.8484^*}{(1.117)^2}$$

$$IV_{\text{per share}} = \$0.75 + \$0.67 + \$6.35$$

$$IV_{\text{per share}} = \$7.77$$

* Year 3 dividend payment at 1% growth rate: $\$0.84 + (\$0.84 \times 0.01) = \$0.8484$

Note: Module 14 describes the steady state more completely and provides an example.

Summary. In summary, the DCF model is frequently used in valuation due to the appeal of relying on actual cash flows; a readily understandable concept. The model appears to avoid the need to understanding accounting's intricacies. However, it is not possible to forecast cash flows without also forecasting accounting numbers because cash flows and accounting accruals are simultaneously determined. For example, in Exhibit 13.1, we began by forecasting sales as a first step in implementing DCF, and some of those sales are in cash whereas some are on credit. A serious implementation issue with DCF is the choice of forecast horizon and terminal growth rate. The farther out the forecast horizon, the less reliable forecasts tend to be. Still, we demand a long enough forecast horizon to reach steady state so we can identify an appropriate terminal growth rate. This balance can make cash-flow-based valuation a difficult process to implement as FCFF often requires a very long horizon.



ANALYZING GLOBAL REPORTS

There are no differences in the method or technique of valuing equity securities using IFRS financial statements. We can use the DCF method with IFRS data as inputs and determine intrinsic values. Regarding other inputs, it is important to note that WACC varies across countries. This is readily apparent when we recognize that the risk-free rate used to compute WACC is country specific; for example, following is the yield on 10-year government debt for several countries as of October 2013 (www.bloomberg.com/markets/rates-bonds). In comparison to countries such as Japan and Germany, the countries such as Greece and Brazil are riskier because of their debt levels and economic troubles. The higher the country risk, the higher the yield demanded on that country's debt.

Country	Yield to Maturity
Japan	0.79%
Germany	1.66%
United States	2.71%
United Kingdom	2.40%
Australia	3.66%
Brazil	4.36%
Greece	9.69%

MODULE-END REVIEW

Following are forecasts of **Procter & Gamble's** sales, net operating profit after tax (NOPAT), and net operating assets (NOA). These are taken from Exhibit 11.10 in Module 11 and we assume a terminal growth rate of 4%.

(In millions)	Reported 2013	Horizon Period				Terminal Period
		2014	2015	2016	2017	
Sales growth.		1.5%	4.0%	4.0%	4.0%	4.0%
Sales (unrounded)	\$84,167	\$85,429.51	\$88,846.69	\$92,400.56	\$96,096.58	\$99,940.44
		(\$84,167 × 1.015)	(\$85,429.51 × 1.04)	(\$88,846.69 × 1.04)	(\$92,400.56 × 1.04)	(\$96,096.58 × 1.04)
Sales (rounded)	\$84,167	\$85,430	\$88,847	\$ 92,401	\$ 96,097	\$ 99,940
NOPAT	\$11,174	\$11,362	\$11,817	\$ 12,289	\$ 12,781	\$ 13,292
NOA	\$94,305	\$95,989	\$99,828	\$103,821	\$107,974	\$112,292

Use the forecasts above to compute P&G's **residual operating income (ROPI)** and an estimate of its stock value using the DCF model. Make the following assumptions: discount rate (WACC) of 7% (Bloomberg estimate as of August, 2013), shares outstanding of 2,742.3 million, net nonoperating obligations (NNO) of \$25,596 million, and noncontrolling interest (NCI) from the balance sheet of \$645 million.

The solution is on page 13-30.