Required

a. Prepare the income statement for the year ended April 30, 2018.
b. Prepare the balance sheet as of April 30, 2018.
c. Prepare the statement of cash flows for the year ended April 30, 2018.
d. Compute ROA.
e. Compute profit margin (PM).
f. Compute asset turnover (AT).
g. Compute ROE.

LO6 ABBOTT LABORATORIES INC (ABT)

P1-47. Using Historical Numbers to Forecast Financial Statement Items

Abbott Laboratories reports the following revenue for fiscal years 2006 through 2019.

Year	Revenue in $ millions	Year	Revenue in $ millions
2006	$22,476	2013	$21,848
2007	25,914	2014	20,247
2008	29,528	2015	20,405
2009	30,765	2016	20,853
2010	35,167	2017	27,390
2011	38,851	2018	30,578
2012	39,874	2019	31,904

Required

a. Calculate year-over-year change in Revenue for 2007 through 2019.
b. Assume that an analyst uses the most current year's revenue growth to forecast next year's revenue. Use that method to forecast 2012 revenue for Abbott Labs.
c. Assume that an analyst uses the average of the prior five years' revenue growth to forecast next year's revenue. Use that method to forecast 2012 revenue for Abbott Labs.
d. Compare the forecasts from part *b* and part *c*, above. Which method provided the better forecast?
e. Consider revenue growth in 2013. Suggest two reasons for what we observe.
f. In 2016, Abbott Labs announced that it would acquire another pharmaceutical company in 2017. How would this affect an analyst's forecast of 2017 revenue?

LO3 WINNEBAGO INDUSTRIES INC. (WGO)

Homework MBC

P1-48. Formulating a Statement of Stockholders' Equity from Raw Data

Winnebago Industries Inc. reports the following selected information for its fiscal year ended August 25, 2018 ($ thousands).

Contributed capital, August 26, 2017	$ 106,289
Treasury stock, August 26, 2017	(342,730)
Retained earnings, August 26, 2017	679,138
Accumulated other comprehensive (loss) income, August 26, 2017	(1,023)

During fiscal year 2018, Winnebago reported the following.

Issuance of stock	$ 5,822	Cash dividends	$12,738
Repurchase of stock for resale	4,644	Other comprehensive income (loss)	1,915
Net income	102,416		

Required

Use this information to prepare the statement of stockholders' equity for Winnebago's fiscal year ended August 25, 2018.

LO5 LOGITECH INTER-NATIONAL (LOGI)

Homework MBC

P1-49. Computing, Analyzing, and Interpreting Return on Equity and Return on Assets

Following are summary financial statement data for Logitech International for 2016 through 2018.

$ thousands	2018	2017	2016
Sales	$2,566,863	$2,221,427	$2,018,100
Net income	208,542	205,876	119,317
Total assets	1,743,157	1,498,677	1,324,147
Equity	1,050,557	856,111	759,948

Required

a. Compute the return on assets (ROA) for 2018 and 2017.
b. Compute the profit margin (PM) for 2018 and 2017.
c. Compute the asset turnover (AT) for 2018 and 2017.

Review 1-5---Solution

a.

$ millions	
Net sales	$265,595
Net income	59,531
Average assets	370,522
ROA = Net income / Average assets = $59,531 / $370,522	16.1%
Asset turnover (AT) = Net sales / Average assets = $265,595 / $370,522	0.72
Profit margin (PM) = Net income / Net sales = $59,531 / $265,595	22.4%

b. ROE = Net income/Average stockholders' equity = $59,531/$120,597 = 49.4%.

Review 1-4---Solution

1. *a.* II
b. I
c. III
d. I
e. II
f. III

2. Both of these companies are strong, but Apple's ROA is higher than Samsung's. While asset turnover rates are comparable, Apple's profitability is higher.

$ millions	Apple	Samsung
Average assets	$370,522	₩320,555
Revenue	265,595	243,771
Net income	59,531	44,345
ROA = Net income / Average assets	16.1%	13.8%
Asset turnover (AT) = Revenue / Average assets	0.72	0.76
Profit margin (PM) = Net income / Revenue	22.4%	18.2%

Review 1-6—Solution

a. Analysts might be concerned by the significant drop in other non-operating income from 3 billion KRW to 1.5 billion KRW. Questions would include: What sort of items are included in other non-operating income? What happened during the year to cause the drop? Is the item expected to return to 2017 levels?

b. We forecast the financial statements in the following order: income statement, balance sheet, and statement of cash flow.

c. We forecast revenue first because it affects many other income statement accounts and various balance sheet accounts as well.

d. Cost of sales is directly related to revenue, the expense is the cost of the revenue earned and the two items generally move in tandem.

e. Accounts receivable on the balance sheet is directly related to revenue. Inventory is directly related to cost of sales on the income statement.

Review 1-7—Solution

a. Beyond Meat has potential for tremendous growth and the market values that. More and more people are adopting a plant-based diet and retailers that have added Beyond Burgers and Impossible Burgers to their menus have struggled to meet demand. Analysts and investors are counting future revenue, profits, and cash flow and are willing to pay now for those future rewards.

b. The contract announced in September likely had no effect on current year GAAP revenue or profits. But investors understand that future revenue and profits will be positively impacted and, thus, increase their valuation of the company, which increases its stock price.

c. The future cash flow is more certain for Huntington Ingalls because a five-year government contract is legally enforceable and the future amounts are known, whereas hoped-for future retail burger sales could come in lower or higher than expected.

continued from previous page

Balance Sheet, June 30, 2017

Assets	
Cash	$ 7,663
Noncash assets	242,649
Total assets	$250,312
Liabilities and equity	
Total liabilities	$162,601
Equity	
Contributed capital	69,315
Retained earnings	17,769
Other stockholders' equity	627
Liabilities and equity	$250,312

Income Statement, For Year Ended June 30, 2018

Revenues	$110,360
Expenses	93,789
Net income	$ 16,571

Statement of Cash Flows, For Year Ended June 30, 2018

Operating cash flows	$43,884
Investing cash flows	(6,061)
Financing cash flows	(33,540)
Net change in cash	4,283
Cash balance, June 30, 2017	7,663
Cash balance, June 30, 2018	$11,946

Notes: 1. Stock issuances for the year are $1,908.
2. Dividends for the year are $12,917.
3. Other decreases in retained earnings are $7,741.
4. Change in other stockholders' equity for the year is $(2,814).
5. Total assets at June 30, 2018 are $258,848.

Solution on p. 2-55.

ANALYZING TRANSACTIONS AND ADJUSTMENTS

Financial statements report on the financial performance and condition of a business. Those statements are tied to a period or point in time. The period of time is referred to as the accounting cycle, and each cycle consists of four steps.

LO6 Explain the accounting cycle and apply the financial statement effects template to analyze accounting transactions.

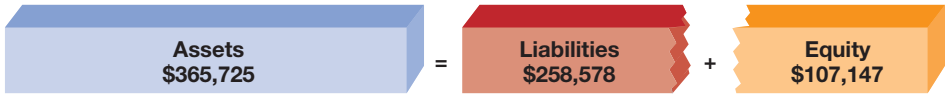
Four-Step Accounting Cycle

- **Step 1** Record transactions in the accounting records. Each transaction is the result of an external or internal transaction or event, such as a sale to a customer or the payment of wages to employees.
- **Step 2** Prepare accounting adjustments, which recognize a number of events that have occurred but that have not yet been recorded. These might include the recognition of wage expense and the related wages payable for those employees who have earned wages but have not yet been paid or of depreciation expense for buildings and equipment.
- **Step 3** Construct the financial statements.
- **Step 4** Close the books in anticipation of the start of a new accounting cycle.

The purpose of this section is to review the accounting cycle. We use Apple's financials to illustrate the four steps in the accounting cycle. Understanding the financial statement preparation process requires an understanding of the language used to record business transactions in accounting records. The recording and statement preparation processes are readily understood once we learn that language (of financial statement effects) and its mechanics (entries and posting). Even if we never post a transaction or prepare a financial statement, understanding the accounting process aids us in analyzing and interpreting accounting reports. Understanding the accounting language also facilitates our communication with business professionals within a company and with members of the business community outside of a company.

Financial Statement Effects Template

As of its 2018 year-end, Apple reports total assets of $365,725 million, total liabilities of $258,578 million, and equity of $107,147 million. The accounting equation for Apple follows ($ millions).



P2-54. Analyzing Transactions and Adjustments Using the Financial Statement Effects Template LO6, 7

Following are selected transactions of Mogg Company. Record the effects of each using the financial statement effects template.

1. Shareholders contribute $10,000 cash to the business in exchange for common stock.
2. Employees earn $500 in wages that have not been paid at period-end.
3. Inventory of $3,000 is purchased on credit.
4. The inventory purchased in transaction 3 is sold for $4,500 on credit.
5. The company collected the $4,500 owed to it per transaction 4.
6. Equipment is purchased for $5,000 cash.
7. Depreciation of $1,000 is recorded on the equipment from transaction 6.
8. The supplies account had a $3,800 balance at the beginning of this period; a physical count at period-end shows that $800 of supplies are still available. No supplies were purchased during this period.
9. The company paid $12,000 cash toward the principal on a note payable; also, $500 cash is paid to cover this note's interest expense for the period.
10. The company received $8,000 cash in advance for services to be delivered next period.

P2-55. Analyzing Transactions Using the Financial Statement Effects Template LO6, 8

Hanlon Advertising Company began the current month with the following balance sheet.

Cash	$ 80,000	Liabilities	$ 70,000
Noncash assets	135,000	Contributed capital	110,000
		Earned capital	35,000
Total assets	$215,000	Total liabilities and equity	$215,000

Following are summary transactions that occurred during the current month.

1. The company purchased supplies for $5,000 cash; none were used this month.
2. Services of $2,500 were performed this month on credit.
3. Services were performed for $10,000 cash this month.
4. The company purchased advertising for $8,000 cash; the ads will run next month.
5. The company received $1,200 cash as partial payment on accounts receivable from transaction 2.
6. The company paid $3,400 cash toward the accounts payable balance reported at the beginning of the month.
7. The company paid $3,500 cash toward this month's wages expense.
8. The company declared and paid dividends of $500 cash.

Required

a. Record the effects of each transaction using the financial statement effects template.
b. Prepare the income statement for this month and the balance sheet as of month-end.

P2-56. Use Compustat Data and Data Visualization Software to Interpret Key Financial Metrics LO2, 4

APPLE INC. (AAPL)
ENTERGY CORP (ETR)

Consider the bottom-most graphic in P2-57. It depicts dividends, net income, and stock buybacks (repurchases) for **Apple** from 2010 to 2018. Access the Excel file of Compustat data available at the MBC website and use data visualization software such as Power BI or Tableau, to answer the required.

Required

a. Recreate the bottom-most graphic in P2-57, for all firms in the Utilities industry (NAICS three-digit code 221) for all years in the dataset. Graphically depict the average amount each year.
b. Compare the Utilities industry graphic to the Apple graphic in P2-57. What differences or similarities do you note?
c. Display the graphic for **Entergy Corp** (ticker ETR) a firm in the Utilities industry. Compare the Entergy graphic to the graphic for the entire Utilities industry. What differences or similarities do you note?

We can disaggregate ROE into operating and nonoperating components.

ROE = Operating return (via RNOA) + Nonoperating return

Boston Scientific's ROE of 21.24% consists of an operating return of 12.37% (via RNOA) and nonoperating return of 8.87% (ROE – RNOA).

Financial Leverage As we discussed earlier in the module, financial leverage relates to the degree to which the company uses borrowed money, rather than shareholder equity investment, to fund operations and the acquisition of assets. The accounting equation (Assets = Liabilities + Equity) highlights the concept well. Holding total assets constant, as the amount of liabilities increases, means that stockholders' equity decreases, and consequently, financial leverage increases.

We are interested in financial leverage because it is an important measure of the risk a company is incurring with its reliance on debt. As debt increases so does the risk that the company is unable to pay the interest and principal payments on the debt. Financial leverage quantifies this risk.

While financial leverage increases risk, it also increases the return to shareholders *but only if the borrowing rate on the debt is less than the yield on the assets*. Thinking again about the accounting equation, if assets are yielding 12% and liabilities (debt) cost 10%, leverage is a positive force. If the spread between the asset returns and the debt cost is high, then, stockholders benefit even more from the borrowed money (debt). There is a trade-off, however, between the added return and the added risk created by debt. At some level of debt, the risk of default is too high and lenders will demand a higher rate and stockholders will no longer benefit from financial leverage. Continuing with the example, if the assets continue to yield 12% and additional debt costs 13%, leverage is a negative force.

While both the DuPont and Operating approaches consider the impact of financial leverage on ROE, they measure that impact in markedly different ways:

- **DuPont** approach measures the impact of financial leverage on ROE using only balance sheet numbers:

$$\text{FL} = \frac{\text{Average total assets}}{\text{Average stockholders' equity}} \qquad (\text{and ROE} = \text{ROA} \times \text{FL})$$

- **Operating** approach measures the impact of financial leverage on ROE using **nonoperating returns**, which captures effects from both the balance sheet and the income statement. Recall, ROE – RNOA = Nonoperating returns. Nonoperating returns, therefore, provide a way to measure the impact of financial leverage on ROE. (In Appendix 3B we discuss financial leverage with an operating focus; that definition of financial leverage is labeled FLEV.)

In the table above, the DuPont approach measures the ratio of ROA/ROE as 39.3% and the Operating approach measures the ratio of RNOA/ROE as 58.2%. The DuPont approach ascribes a much smaller proportion of ROE to operating activities (as the effect of financial leverage is greater) than does the Operating approach. The Operating approach shows that much more of Boston Scientific's ROE is due to operating activities that make up its core business.

EXHIBIT 3.7 Key Ratio and Acronym Definitions

Ratio		Definition
ROE:	Return on equity	Net income attributable to controlling interest/Average equity attributable to controlling interest
NOA:	Net operating assets	Operating assets – Operating liabilities
NOPBT:	Net operating profit before tax	Revenue – Operating expenses including COGS
NNE:	Net nonoperating expense after tax	Pretax net nonoperating expense × (1 – Tax%)
NOPAT:	Net operating profit after tax	NOPBT – Tax on operating profit Or: Net income + NNE
RNOA:	Return on net operating assets	NOPAT / Average NOA

Return on equity for Home Depot over the three-year period ended February 3, 2019, follows.

	2019	2018	2017
Return on equity (ROE) for 2019: $10,866 / [($1,454 – $1,878)/2]	(5,125.5)%	298.3%	149.4%
Return on assets (ROA) for 2019: $10,866 / [($44,003 + $44,529)/2]	24.5%	19.7%	18.7%
Financial leverage (FL) for 2019: [($44,003 + $44,529)/2] / [($1,454 – $1,878)/2]	(208.8)	15.1	8.0

Return on equity is a **negative** 5,125.5%, a ratio that is uninterpretable. It certainly does not imply that the company is reporting losses of $51.25 for every dollar of equity. The negative ratio is caused by Home Depot's negative stockholders' equity owing to large levels of treasury stock. This also causes the ROE in prior years to be high, when treasury stock reduced stockholders' equity to a small number and inflated the ROE ratio. An outsized treasury stock account is not unique to Home Depot. In recent years many firms have returned value to shareholders via stock repurchases (buybacks). This has created an analysis challenge: interpreting negative and massive ratios.

As discussed in Analyst Adjustments 3.1, one way to handle this analysis challenge is to add back the treasury stock balance to both equity and total assets. Under this approach the ROE for Home Depot over the three-year period ended February 3, 2019, follows.

	2019	2018	2017
Restated ROE for 2019: $10,866 / [($1,454 – $1,878 + $58,196 + $48,196)/2]	20.5%	18.3%	18.9%
Restated ROA for 2019: $10,866 / [($44,003 + $44,529 + $58,196 + $48,196)/2]	11.1%	9.8%	10.1%
Restated FL for 2019: [($44,003 + $44,529 + $58,196 + $48,196)/2] / [($1,454 – $1,878 + $58,196 + $48,196)/2]	1.84	1.87	1.88

ROE is in the 20% range over all three years, increasing slightly in 2019 as ROA improved from 9.8% to 11.1%. We conclude that the company's profitability is strong and sustained. The company's financial leverage is holding steady and is below 2.0, which is a reasonable level for a company such as Home Depot. We return to the issue of leverage below.

Expanded ROE Disaggregation A second method of ROE disaggregation distinguishes between operating and nonoperating returns. (See Module 3 for additional details.) Operating return, as measured by return on net operating assets (RNOA) is an aggregate measure of the return from Home Depot's main operating activities and is a comprehensive profitability measure that is not affected by the company's leverage or treasury stock activity. We use the reported balance sheet numbers and the adjusted 52-week income statement numbers to further disaggregate RNOA into profitability and productivity components as follows.

$$\text{RNOA} = \frac{\text{NOPAT}}{\text{Average NOA}} = \frac{\text{NOPAT}}{\text{Sales}} \times \frac{\text{Sales}}{\text{Average NOA}}$$

Net operating profit margin (NOPM) | Net operating asset turnover (NOAT)

As shown below, RNOA for Home Depot has steadily increased over the three-year period ended February 3, 2019. These returns are high especially compared to other U.S. retail firms. Further, this increase is due to both profitability and productivity—both NOPM and NOAT are increasing each year. These increases are steady and are positive signals about cost and asset management.

	2019	2018	2017
Marginal tax rate	22%	37%	37%
Return on net operating assets (RNOA)	46.1%	36.8%	33.7%
Net operating profit margin (NOPM)	11.0%	9.2%	9.0%
Net operating asset turnover (NOAT)	4.21	4.01	3.73

2019 NOPAT = $10,866 + ($974 × (1 – 22%))

2019 Average NOA = [$44,003– $1,778 – ($45,881 – $1,339 – $1,056 – $26,807) + $44,529 – $3,595 – ($43,075 – $1,559 – $1,202 – $24,267)]/2

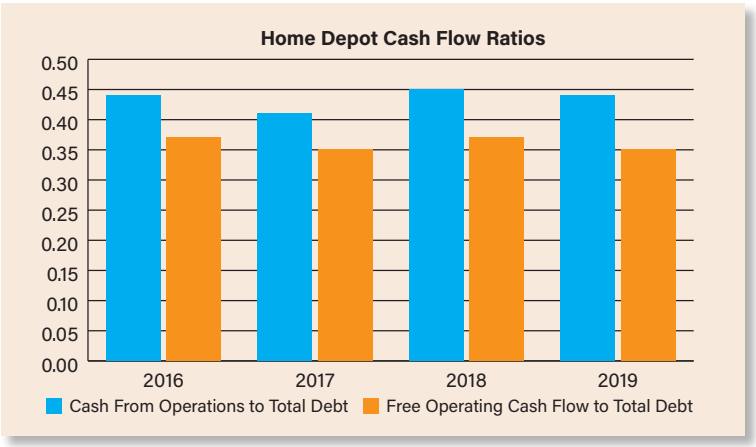
Based on this analysis, our overall conclusion is positive; Home Depot has strong profitability and favorable trends.

For the year ended February 3, 2019, Home Depot's statement of cash flows (not included here) reported cash from operations of $13,038 million for the 53-week fiscal year. We compute the 52-week operating cash flow as: $13,038 million × 52/53 = $12,792 million. Home Depot's cash from operations to total debt ratio was 0.44 in 2019, computed as $12,792 million/($1,339 million + $1,056 million + $26,807 million). This ratio has held steady in the past several years shown in the graphic that follows.

Free Operating Cash Flow to Total Debt Companies must replace tangible assets each year to continue operations. Any excess operating cash flow after cash spent on capital expenditures (CAPEX) is considered "free" cash flow in that the company is free to use the cash for other purposes including debt repayments. Some creditors use the following free cash flow measure as another coverage ratio.

$$\text{Free operating cash flow to total debt} = \frac{\text{Cash from operations} - \text{CAPEX}}{\text{Short-term debt} + \text{Long-term debt}}$$

The free operating cash flow to total debt ratio is argued to reflect a company's ability to repay debt from the cash flows remaining after CAPEX. For the year ended February 3, 2019, Home Depot's statement of cash flows reported cash spent for capital expenditures of $2,442 million, which is the number reported on the statement of cash flows (we assume CAPEX is determined annually and not on a weekly basis). Thus, its free operating cash flow to total debt ratio is 0.35 calculated as ($12,792 million − $2,442 million)/($1,339 million + $1,056 million + $26,807 million). This ratio held steady over the past four years, which is a sign that Home Depot is managing its debt levels while growing and maintaining its historically strong operating cash flow (see following graphic).



Liquidity Analysis

Liquidity refers to cash availability: how much cash a company has, and how much it can generate on short notice. In this section, we discuss several of the most common liquidity measures: the current ratio, working capital, and the quick ratio.

Current Ratio Current assets are assets that a company expects to convert into cash within the next operating cycle, which is typically a year. Current liabilities are those liabilities that come due within the next year. An excess of current assets over current liabilities (Current assets − Current liabilities), is known as net working capital or simply working capital. Positive working capital implies more expected cash inflows than cash outflows in the short run. The current ratio expresses working capital as a ratio and is computed as follows:

$$\text{Current ratio} = \frac{\text{Current assets}}{\text{Current liabilities}}$$

> Because of control transferring over time, revenue is recognized based on the extent of progress towards completion of the performance obligation. . . We generally use the cost-to-cost measure of progress for our contracts because it best depicts the transfer of control to the customer which occurs as we incur costs on our contracts. Under the cost-to-cost measure of progress, the extent of progress towards completion is measured based on the ratio of costs incurred to date, to the total estimated costs at completion of the performance obligation. Revenues, including estimated fees or profits, are recorded proportionally as costs are incurred.

To illustrate accounting for long-term contracts using the *cost-to-cost* approach, assume Raytheon signs a $10 million contract to develop a prototype for a defense system. Raytheon estimates construction will take two years and will cost $7,500,000. This means the contract yields an expected gross profit of $2,500,000 over two years. The following table summarizes costs incurred each year and the revenue Raytheon recognizes.

	Costs Incurred	Percentage Complete	Revenue Recognized
Year 1	$4,500,000	$\frac{\$4,500,000}{\$7,500,000} = 60\%$	$10,000,000 × 60% = $6,000,000
Year 2	$3,000,000	$\frac{\$3,000,000}{\$7,500,000} = 40\%$	$10,000,000 × 40% = $4,000,000

This table reveals Raytheon would report $6 million in revenue and $1.5 million ($6 million – $4.5 million) in gross profit on the project in the first year; it would report $4 million in revenue and $1 million ($4 million – $3 million) in gross profit in the second year.

The following template captures the recognition of revenue and expense over this two-year period (M indicates millions).

	Balance Sheet						Income Statement			
Transaction	Cash Asset	+ Noncash Assets	= Liabilities	+ Contrib. Capital	+ Earned Capital		Revenues	– Expenses	= Net Income	
Year 1: Record $4.5M costs	–4.5M Cash		=		–4.5M Retained Earnings			– +4.5M Cost of Sales	= –4.5M	COGS . . . . 4.5M Cash . . . . . 4.5M COGS | 4.5M Cash | 4.5M
Year 1: Recognize $6M revenue on partly completed contract		+6M Accounts Receivable	=		+6M Retained Earnings		+6M Revenue	–	= +6M	AR . . . . 6M REV . . . . . 6M AR | 6M REV | 6M
Year 2: Record $3M costs	–3M Cash		=		–3M Retained Earnings			– +3M Cost of Sales	= –3M	COGS . . 3M Cash . . . . . 3M COGS | 3M Cash | 3M
Year 2: Recognize $4M revenue for completed contract		+4M Accounts Receivable	=		+4M Retained Earnings		+4M Revenue	–	= +4M	AR . . . . 4M Rev . . . . . 4M AR | 4M Rev | 4M

Accounting for Accounts Receivable

To account for uncollectible amounts, companies use an allowance account similar to the ones discussed above for sales returns and other allowances. The *allowance for uncollectible accounts* (also called the allowance for doubtful accounts) reduces the gross amount of receivables that are reported on the balance sheet.

To illustrate, assume the company sells goods on account for $100,000 and, at the end of the accounting period, performs an aging analysis and establishes the allowance for uncollectible accounts in the amount of $2,900. Our financial statement effects for the sale and the estimate of uncollectible accounts receivable are as follows.

	Balance Sheet						Income Statement			
Transaction	Cash Asset	+ Noncash Assets	= Liabilities	+ Contrib. Capital	+ Earned Capital		Revenues	− Expenses	= Net Income	
Sale on account		100,000 Accounts Receivable	=		100,000 Retained Earnings		100,000 Sales	−	=	100,000
Establish allowance and record bad debts expense		−2,900 Allowance for Uncollectible Accounts	=		−2,900 Retained Earnings			+ 2,900 − Bad Debts Expense	=	−2,900

AR. 100,000
Rev. 100,000

AR	
100,000	

	Rev
	100,000

BDE 2,900
AU 2,900

BDE	
2,900	

	AU
	2,900

The allowance for uncollectible accounts is subtracted from the gross accounts receivable, and the net amount collectible is reported on the balance sheet.

Accounts receivable (gross amount owed)	$100,000
Less: Allowance for uncollectible accounts	(2,900)
Accounts receivable, net (reported on balance sheet)	$ 97,100

Companies typically report the allowance for uncollectible accounts along with accounts receivable as follows.

Accounts receivable, less allowance for uncollectible accounts of $2,900	$97,100

By setting up the allowance, the company has established a reserve, or a cushion, that it can use to absorb credit losses as they occur. To see how this works, assume a customer who owes $500 files for bankruptcy. If the company determines the receivable is now uncollectible, it must write off the receivable. This is absorbed by the allowance for uncollectible accounts as follows.

	Balance Sheet						Income Statement			
Transaction	Cash Asset	+ Noncash Assets	= Liabilities	+ Contrib. Capital	+ Earned Capital		Revenues	− Expenses	= Net Income	
Write off $500 of uncollectible accounts receivable		500 Allowance for Uncollectible Accounts −500 Accounts Receivable	=					−	=	

AU. 500
AR 500

AU	
500	

	AR
	500

The write-off of the uncollectible account receivable results in the following balances at the end of the period.

Part II

1. Revenue = $3,000,000 × ($500,000/$2,500,000) = $600,000.
   Gross profit = $600,000 – $500,000 = $100,000.
2. The cost of $500,000 exceeds the billing of $400,000, and the excess of $100,000 is reported as a current asset (such as construction in progress).

Review 5-2—Solution

1. "Charged to costs and expenses" represents the amount of returns allowances recorded during fiscal 2018 for sales during that year. This amount is included in Tiffany's income statement for the fiscal year.
2. "Deductions" is the dollar value of actual returns offset by the value of the merchandise returned (that reduces COGS by the same amount). The actual returns number is $10.1 million, which is close to the estimated amount charged to costs and expenses of $12.6 million. This indicates that **Tiffany & Co** is fairly accurate in its estimation process.

3. *a.*

$ millions	2019	2018	2017
Net sales	$4,442.1	$4,169.8	$4,001.8
Charged to costs and expenses	12.6	7.5	2.5
Gross sales	$4,454.7	$4,177.3	$4,004.3
Allowance at year end	$17.5	$15	$9.6
Allowance/Gross sales	0.39%	0.36%	0.24%

The sales return allowance is small at year end, compared to gross sales, likely because sales returns are made quickly after the purchase so the balance outstanding at any time is small. In fact, the amount outstanding is roughly equal to one day's sales ($4,442.1/365 days = $12.2).The amount has been increasing over time but is not of concern given its magnitude.

b.

$ millions	2019	2018	2017
Charged to costs and expenses	$ 12.6	$ 7.5	$ 2.5
Gross sales	$4,454.7	$4,177.3	$4,004.3
% returned merchandise	0.28%	0.18%	0.06%

The % of merchandise that Tiffany estimates will be returned has steadily increased over the three years, but the amount is so low as to be immaterial. There is no cause for concern here.

c. Tiffany's sales returns allowance seems a bit high considering the following ratio of actual to estimate.

$ millions	2019	2018	2017
Estimated returns for the year	$12.6	$7.5	$2.5
Actual returns during the year	$10.1	$2.1	$1.2
Adequacy	125%	357%	208%

Review 5-3—Solution

The amount of cash received from the customers is the amount added to the liability.

Advanced Billings and Customer Deposits ($ millions)	
Balance at 1/1/2018	$26,656
+ Cash prepayments by customers during the year	??
– Revenue recognized during the year	(55,078)
= Balance at 12/31/2018	$32,720

Cash prepayments by customers during the year = $32,720 + $55,078 – $26,656 = $61,142

FIFO equivalents. Once we convert CAT's inventory and its total assets to FIFO (by adding the LIFO reserve, as explained above), we find that the company holds 17% of total assets as inventory, a greater difference than first noted.

Balance Sheet Adjustments for a LIFO Reserve In general, to adjust for LIFO on the balance sheet, we must make three modifications and then recompute balance sheet totals and subtotals (current assets, total assets, and total equity).

- Increase inventories by the LIFO reserve.
- Increase tax liabilities by the tax rate applied to the LIFO reserve.
- Increase retained earnings for the difference.

As an example, to adjust CAT's 2018 balance sheet, we would:

- Increase inventories by $2,009 million.
- Increase tax liabilities by $693 million (see our computation on page 6-8).
- Increase retained earnings by the difference of $1,316 million (computed as $2,009 million – $693 million).

Income Statement Adjustments for a LIFO Reserve To compare the income statements of companies that use LIFO, we must adjust cost of goods sold from LIFO to FIFO. Recall that: Cost of Goods Sold = Beginning Inventories + Purchases – Ending Inventories. To determine FIFO COGS, we must use the *change* in the LIFO reserve as follows.

FIFO COGS = LIFO COGS – Increase in LIFO Reserve (or + Decrease)

During 2018, the change in CAT's LIFO reserve was $75 million ($2,009 million – $1,934 million). Had CAT *always used* FIFO, its 2018 COGS would have been $75 million lower (meaning gross profit and pretax income would be $75 million higher), and the company would have paid $16 million ($75 million × 21%) more in taxes. This does not make much difference either in dollar or percentage terms for CAT in 2018 because the LIFO reserve increased only slightly during the year. But in other years, and for other companies, the impact can be great.

LIFO Liquidations

When LIFO companies acquire inventory at different costs, they are required to account for each cost level as a separate inventory pool or layer (for example, there are the $100 and $150 units in our **Exhibit 6.3** illustration). When companies reduce inventory levels, older inventory costs flow to the income statement. These older LIFO costs are often markedly lower than current inventory costs, assuming an inflationary environment. The net effect is that the LIFO cost of sales is lower than the equivalent FIFO cost of sales (the reverse of the typical situation). The liquidation boosts gross profit as older, lower costs are matched against current selling prices on the income statement.

The increase in gross profit resulting from a reduction of inventory quantities in the presence of rising costs is called **LIFO liquidation**. The effect of LIFO liquidation is evident in the following footnote from **Rite Aid**'s 10-K for the fiscal year ended March 2, 2019 (which Rite Aid labels fiscal 2019).

> **Inventory** (in $000s) At March 2, 2019 and March 3, 2018, inventories were $604,444 and $581,090, respectively, lower than the amounts that would have been reported using the first-in, first-out ("FIFO") cost flow assumption. . . During fiscal 2019, 2018 and 2017, a reduction in non-pharmacy inventories resulted in the liquidation of applicable LIFO inventory quantities carried at lower costs in prior years. This LIFO liquidation resulted in a $5,884, $2,707 and $2,375 cost of revenues decrease, with a corresponding reduction to the adjustment to LIFO for fiscal 2019, fiscal 2018 and fiscal 2017, respectively.

continued from previous page

ANALYST ADJUSTMENTS 6.3 Continued

Employee termination costs

Income Statement Adjustments ($ millions)	2016	2017	2018†
Tax rate	22%	22%	22%
Reversal			
Employee termination costs (reversal of 2018 costs)			–$459
Pretax income			+459
Tax expense			+101
Net income			+358
Allocation			
Wages expense (2018 costs allocated: $459/3 years)	+$153	+$153	+153
Pretax income	–153	–153	–153
Tax expense	–34	–34	–34
Net income	–119	–119	–119
Total net income (reversal + allocation)	–$119	–$119	+$239

Balance Sheet Adjustments ($ millions)	2016	2017	2018†
Wages payable (2018 costs)	+$153	+$306	No adjustment*
Deferred tax assets	+34	+68	No adjustment*
Retained earnings	–$119	–$238	No adjustment*

* No adjustment is required at current year-end because the year-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).

The two tables below show our adjustments for the 2018 asset impairment charges. The adjustments increase net income by $155 million in 2018 but decrease net income by $45 million in the prior four years. The total effect from both termination and impairment charges for 2018 is to increase net income by $420 million ($239 million + $181 million), which is about 4% of Pfizer's 2018 net income.

Asset impairment charges

Income Statement Adjustments ($ millions)	2014	2015	2016	2017	2018†
Tax rate	22%	22%	22%	22%	22%
Reversal					
Asset impairment charges (reversal of 2018 costs)					–$290
Pretax income					+290
Tax expense					+64
Net income					+226
Allocation					
Depreciation expense (2018 charge allocated: $290/5 years)	+$58	+$58	+$58	+$58	+58
Pretax income	–58	–58	–58	–58	–58
Tax expense	–13	–13	–13	–13	–13
Net income	–45	–45	–45	–45	–45
Total net income (reversal + allocation)	–$45	–$45	–$45	–$45	+$181

Balance Sheet Adjustments ($ millions)	2014	2015	2016	2017	2018†
Accumulated depreciation (related to 2018 charge)	+$58	+$116	+$174	+$232	No adjustment*
Deferred tax assets	+13	+25	+38	+51	No adjustment*
Retained earnings	–$45	–$ 91	–$136	–$181	No adjustment*

* No adjustment is required at current year-end because the year-end balance sheet reflects all prior and current year cost allocations.

† 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

Assignments with the MBC logo in the margin are available in myBusinessCourse.
See the Preface of the book for details.

MINI EXERCISES

M6-13. Computing Cost of Goods Sold and Ending Inventory Under FIFO, LIFO, and Average Cost LO1

Assume that Madden Company reports the following initial balance and subsequent purchase of inventory.

Inventory balance at beginning of year	1,300 units @ $150 each	$195,000
Inventory purchased during the year	1,700 units @ $180 each	306,000
Cost of goods available for sale during the year	3,000 units	$501,000

Assume that 2,000 units are sold during the year. Compute the cost of goods sold for the year and the inventory on the year-end balance sheet under the following inventory costing methods.

a. FIFO *b.* LIFO *c.* Average Cost

M6-14. Computing Cost of Goods Sold and Ending Inventory Under FIFO, LIFO, and Average Cost LO1

Wong Corporation reports the following beginning inventory and inventory purchases.

Inventory balance at beginning of year	400 units @ $12 each	$ 4,800
Inventory purchased during the year	700 units @ $14 each	9,800
Cost of goods available for sale during the year	1,100 units	$14,600

Wong sells 600 of its inventory units during the year. Compute the cost of goods sold for the year and the inventory on the year-end balance sheet under the following inventory costing methods.

a. FIFO *b.* LIFO *c.* Average Cost

M6-15. Computing and Evaluating Inventory Turnover for Two Companies LO3

PRICESMART (PSMT) JW NORDSTROM (JWN)

PriceSmart and Nordstrom report the following information in their respective ~~January 2016~~ 10-K reports relating to their two most recent fiscal years.

	PriceSmart ($ thousands)			Nordstrom ($ millions)		
	Sales	Cost of Goods Sold	Inventories	Sales	Cost of Goods Sold	Inventories
2018	$3,053,754	$2,610,111	$321,025	$15,480	$10,155	$1,978
2017	2,910,062	2,487,146	310,946	15,137	9,890	2,027

a. Compute the 2018 inventory turnover for each of these two retailers.
b. Discuss any difference we observe in inventory turnover between these two companies. Does the difference confirm our expectations given their respective business models? Explain. (*Hint:* Nordstrom is a higher-end retailer and PriceSmart operates no-frills, warehouse stores.)
c. Describe ways that a retailer can improve its inventory turnover.

M6-16. Adjusting Balance Sheet and Income Statement for LIFO to FIFO ANALYST ADJUSTMENTS 6.1 LO2

LYONDELL-BASELL INDUSTRIES (LYB)

In its December 2019 10-K, LyondellBasell Industries reported the following information ($ millions).

Cost of Goods Sold	Inventories	LIFO Reserve	Decrease in LIFO Reserve	Total Assets	Net Income
$29,301	$4,588	$670	$128	$30,435	$3,397

Adjust the account balance for the following financial statement items assuming the company used FIFO instead of LIFO for its inventory costing method. The company has a 22% tax rate.

a. Inventories *b.* Total assets *c.* Cost of goods sold *d.* Net income

M6-17. Computing Depreciation LO4

A delivery van costing $37,000 is expected to have a $2,900 salvage value at the end of its useful life of five years. Assume that the truck was purchased on January 1. Compute the depreciation expense for the first two calendar years under the straight-line depreciation method.

c. Compute inventory turnover and days average inventory outstanding for 2018.
d. Based on the metrics in parts *a*, *b*, and *c*, how do we assess the two companies' inventory management?

LO5, 6 **I6-50. Estimating Useful Life, Percent Used Up, and Gain or Loss on Disposal**

HUSKY ENERGY (HSE)

Homework MBC

Husky Energy is one of Canada's largest integrated energy companies. Based in Calgary, Alberta, Husky is publicly traded on the Toronto Stock Exchange. The Company operates in Western and Atlantic Canada, the United States and the Asia Pacific Region with upstream and downstream business segments. The company uses IFRS to prepare its financial statements. During 2018, the company reported depreciation expense of $2,591 million. The property and equipment footnote follows.

Property, Plant and Equipment (in C$ millions)	Oil and Gas Properties	Processing, Transportation and Storage	Upgrading	Refining	Retail and Other	Total
Cost						
December 31, 2017	$ 41,815	$ 86	$ 2,599	$ 9,191	$ 2,930	$ 56,621
Additions	2,465	12	62	744	151	3,434
Acquisitions	64	—	—	3	—	67
Transfers from exploration and evaluation	79	—	—	—	—	79
Intersegment transfers	—	—	—	(5)	5	—
Changes in asset retirement obligations	43	2	(2)	(5)	7	45
Disposals and derecognition	(632)	—	—	(10)	(1)	(643)
Exchange adjustments	362	1	—	773	3	1,139
December 31, 2018	$ 44,196	$101	$ 2,659	$10,691	$3,095	$ 60,742
Accumulated depletion, depreciation, amortization, and impairment						
December 31, 2017	$(26,016)	$ (47)	$(1,462)	$ (3,176)	$(1,842)	$(32,543)
Depletion, depreciation, amortization, and impairment	(1,811)	(2)	(123)	(503)	(152)	(2,591)
Disposals and derecognition	586	—	—	10	—	596
Exchange adjustments	(138)	(1)	—	(264)	(1)	(404)
December 31, 2018	$(27,379)	$ (50)	$(1,585)	$ (3,933)	$(1,995)	$(34,942)
Net book value						
December 31, 2017	$15,799	$ 39	$ 1,137	$ 6,015	$ 1,088	$ 24,078
December 31, 2018	16,817	51	1,074	6,758	1,100	25,800

Required

a. Compute the average useful life of Husky Energy's depreciable assets in 2018. Assume that land is 10% of "Refining."
b. Estimate the percent used up of Husky Energy's depreciable assets in 2018. How do we interpret this figure?
c. Consider the disposals and derecognition during the year. This refers to assets that were sold and removed from the balance sheet during 2018. Calculate the net book value of the total PPE disposed during the year. Assume that Husky Energy received $4 million cash proceeds for the year. Determine the gain or loss on the disposal.

ANALYSIS DISCUSSION POINTS

LO3, 6 **D6-51. Managing Operating Asset Reduction**

Return on net operating assets (RNOA = NOPAT/Average NOA, see Module 3) is commonly used to evaluate financial performance. If managers cannot increase NOPAT, they can still increase this return by reducing the amount of net operating assets (NOA). List specific ways that managers could manage the following operating items.

a. Inventories *b.* Plant, property and equipment *c.* Accounts payable

Review 6-3—Solution

$ millions	2019	2018	2017
1. Gross profit margin	$\frac{\$22,915}{\$71,309} = 32.1\%$	$\frac{\$22,434}{\$68,619} = 32.7\%$	$\frac{\$21,674}{\$65,017} = 33.3\%$
2. Days inventory outstanding	$\frac{365}{\left[\frac{\$48,394}{\frac{\$12,561+\$11,393}{2}}\right]} = 90.3$	$\frac{365}{\left[\frac{\$46,185}{\frac{\$11,393+\$10,458}{2}}\right]} = 86.3$	
3. Days payable outstanding	$\frac{365}{\left[\frac{\$48,394}{\frac{\$8,279+\$6,590}{2}}\right]} = 56.1$	$\frac{365}{\left[\frac{\$46,185}{\frac{\$6,590+\$6,651}{2}}\right]} = 52.3$	
4. Cash conversion cycle	0 + 90.3 – 56.1 = 34.2	0 + 86.3 – 52.3 = 34.0	
Analysis:	Cash conversion cycle did not improve; the cycle got longer (worsened), going from 34.0 days to 34.2 days.		
5.	Δ Cash = Δ Cash Conversion Cycle Days × (COGS/365) = -0.2 days × ($48,394/365 days) = $(26.5) million		

Review 6-4—Solution

1. Straight-line depreciation expense = ($95,000 − $10,000)/5 years = $17,000 per year
2. The HD subsidiary reports equipment on its balance sheet at its net book value of $44,000.

Equipment, cost	$95,000
Less accumulated depreciation ($17,000 × 3)	51,000
Equipment, net (end of Year 3)	$44,000

Review 6-5—Solution

Part 1.

a. The equipment is impaired since the undiscounted expected cash flows of $40,000 are less than the $44,000 net book value of the equipment. The HD subsidiary must write down the equipment to its fair value of $36,000. The effect of this write-down is to reduce the net book value of the equipment by $8,000 ($44,000 − $36,000) and recognize a loss in the income statement.

b. The HD subsidiary must report a gain on this sale of $6,000, computed as proceeds of $50,000 less the net book value of the equipment of $44,000 (see Review 6-4, part 2).

Part 2.

a. Coca-Cola's restructuring expense for 2018 is the increase in the restructuring liability of $508 million.

b. Coca-Cola reports a restructuring liability of $90 million on its 2018 balance sheet.

Review 6-6—Solution

$ millions	2019	2018	
PPE turnover	$\frac{\$71,309}{\left(\frac{\$18,432+\$19,721}{2}\right)} = 3.7$	$\frac{\$68,619}{\left(\frac{\$19,721+\$19,949}{2}\right)} = 3.5$	
Average useful life	$\frac{(\$18,052 + \$10,090 + \$18,521 + \$10,475) / 2}{\$1,454} = 19.6$	$\frac{(\$18,521 + \$10,475 + \$18,147 + \$10,978) / 2}{\$1,540}$	= 18.9
Percent used up	$\frac{\$17,431}{(\$18,052 + \$10,090 + \$18,521 + \$10,475) / 2} = 61\%$	$\frac{\$17,219}{(\$18,521 + \$10,475 + \$18,147 + \$10,978) / 2}$	= 59%

LO1
AMGEN INC. (AMGN)

M9-14. Interpreting Disclosures of Investment Securities

Amgen Inc. reports the following disclosure relating to its accumulated other comprehensive income.

$ millions	Foreign Currency Translation	Cash Flow Hedges	Available-for-Sale Securities	Other	AOCI
Balance as of December 31, 2017	$(529)	$(6)	$ (144)	$—	$(679)
Cumulative effect of change in accounting principle, net of tax	—	—	(9)	—	(9)
Foreign currency translation adjustments	(141)	—	—	—	(141)
Unrealized (losses) gains	—	61	(556)	—	(495)
Reclassification adjustments to income	—	262	365	—	627
Other	—	—	—	(2)	(2)
Income taxes		(76)	6	—	(70)
Balance as of December 31, 2018	$(670)	$241	$(338)	$ (2)	$(769)

a. Amgen reports unrealized gains and losses on available-for-sale securities as part of AOCI. Which of the following types of investments could be included in this account? Select all that apply.
- i. Bonds issued by US corporations.
- ii. Common stock traded on US stock exchange.
- iii. Common stock traded on foreign stock exchange.
- iv. Debt securities issued by a foreign government.
- v. Municipal bonds.
- vi. U.S. Treasury bills.

b. Consider the securities held in the available-for-sale portfolio at December 31, 2018. Which of the following is true?
- i. At December 31, 2018, the fair value of the securities was $338 million less than their amortized cost.
- ii. At December 31, 2018, the fair value of the securities was $338 million greater than their amortized cost.
- iii. At December 31, 2018, the fair value of the securities was $338 million lower than their value at December 31, 2017.
- iv. At December 31, 2018, the fair value of the securities was $194 million lower than their value at December 31, 2017

c. Consider the securities held in the available-for-sale portfolio at December 31, 2018. During the year, by how much did the market value of those securities increase or decrease?
- i. Decreased by $338 million.
- ii. Decreased by $556 million.
- iii. Increased by $556 million.
- iv. Decreased by $191 million.

d. Amgen increased AOCI by $365 million for reclassification adjustments to income. Which of the following best describes what this line item means?
- i. During 2018, Amgen sold available-for-sale securities and realized a loss of $365 million.
- ii. During 2018, Amgen sold available-for-sale securities and realized a gain of $365 million.
- iii. During 2018, Amgen sold available-for-sale securities that had unrealized gains of $365 million at December 31, 2017.
- iv. During 2018, Amgen sold available-for-sale securities that had unrealized losses of $365 million at December 31, 2017.

LO4
AMGEN INC. (AMGN)

M9-15. Analyzing Derivatives and Hedging

Refer to the information for **Amgen** in M9-14. This information reports activity related to Amgen's cash flow hedges.

a. Explain how this type of hedging works. Provide an example of how Amgen might use this type of hedging strategy.

b. How did the hedges affect net income for 2018?

c. If these same hedges had instead been fair value hedges, what amount would have been added to AOCI for the year?

Required

a. What sort of risks does Ford hedge?

b. Ford describes its hedging strategy. What sort of hedges are these, cash flow or fair value? Explain.

c. The statement of comprehensive income discloses a line item labeled "Derivative instruments." What does this line item represent?

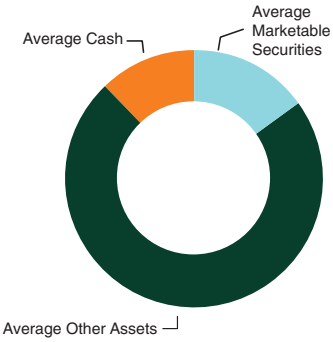
d. The comprehensive income (loss) from derivatives instruments is $219 million for 2016, $(265) million for 2017, and $183 million for 2018. What can we conclude about the fair value of the derivatives for each of these years?

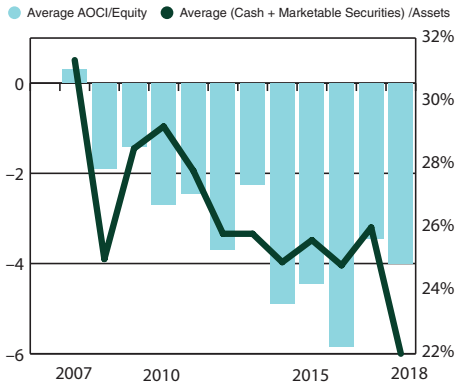
LO1 **E9-47. Interpreting Graphical Data to Analyze Investments**

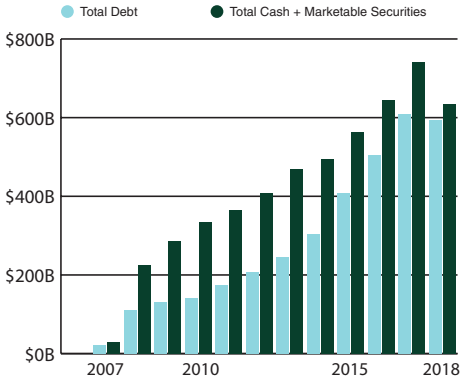
Homework MBC

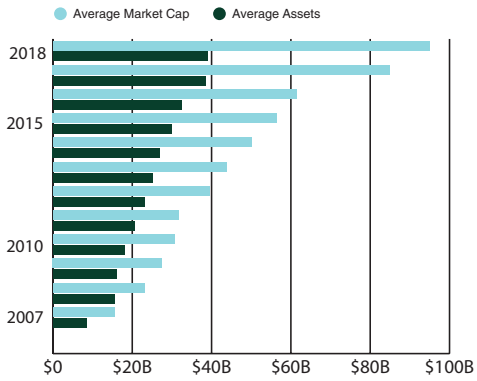
Data Analytics

The graphics below include data for all S&P 500 information-technology companies with positive equity for 2007 to 2018. Access the dashboard at the **myBusinessCourse** website to answer the requirements.









Required

a. Consider the pie chart. Explain what the graph depicts. What is included in the black portion of the graphic? In what year is the proportion of Cash the smallest? *Hint*: Interact with data in the dashboard to answer this question.

b. The bar-line graphic (top right panel) reports the average AOCI as a proportion of equity, by year. What do we observe about the magnitude of AOCI across the 12 years? Does the average firm have unrealized gains or losses? What does the line in this graphic measure? Does it reveal any deeper understanding about the magnitude of AOCI?

c. Consider the vertical bar chart that depicts total debt and total liquid assets (the aggregate for all the companies in the data set) (bottom left panel). In what year was the total debt outstanding at its peak? What amount of debt was outstanding?

d. Consider the vertical bar chart (bottom left panel) and compare the aggregate total debt and total liquid assets. Interpret the trend. What two or three conclusions can we make from this graphic? Does the relation between the two measures hold true for all firms in the dataset?

e. The horizontal bar graph (bottom right panel) plots total assets and market cap over time. What trend do we observe over time? What is the relation between the two metrics over time? Provide two or three explanations for what we observe.

disclosed includes cash advances to the joint venture partners of $249.0 million. The net $203.9 million represents the equity method investment.

c. Do you believe the liabilities of these joint venture entities represent actual obligations of General Mills? Explain.

d. What potential problem(s) does equity method accounting present for analysis purposes?

LO3 CUMMINS INC. (CMI) Homework MBC

P9-49. Financial Analysis for Equity Method Investments ANALYST ADJUSTMENTS 9.1

Refer to the financial information for the equity method investments of **Cummins** in E9-36. Make the following assumptions about those data.

- All assets are operating assets.
- All current liabilities are operating liabilities.
- Non-current liabilities are loans that bear interest at 8%.
- EMI (Equity Method Investments) investees' tax rate is 22%.

The following information is derived from the 2018 form 10-K for Cummins Inc., the investor company.

$ millions	2018
Revenue	$23,771
Net operating profit after tax (NOPAT)	2,213
Net nonoperating expense (NNE)	26
Net income attributable to Cummins Inc.	2,141
Net operating assets (NOA)	9,210
Net nonoperating obligations (NNO)	951
Equity of Cummins Inc. shareholders	7,348

Required

a. Compute net operating profit after tax (NOPAT) for the EMI investees.

b. Compute net operating assets (NOA) and net nonoperating obligations (NNO) for the EMI investees.

c. Following the process in Analyst Adjustments box 9.1, reformulate the following ratios for Cummins for 2018. For simplicity only, use year-end balance sheet numbers provided instead of averages.

1. RNOA
2. NOPM
3. NOAT
4. ROE
5. Financial leverage (FLEV)

d. Does the equity method of accounting for these investments obscure the economic picture? Explain.

LO3 SNAP-ON INCORPORATED (SNA)

P9-50. Analyzing and Interpreting Disclosures on Consolidations

Snap-on Incorporated consists of two business units: the manufacturing company (parent corporation) and a wholly-owned finance subsidiary. These two units are consolidated in Snap-on's 10-K report. Following is a supplemental disclosure Snap-on includes in its 10-K report that shows the separate balance sheets of the parent and the subsidiary. This supplemental disclosure is not mandated under GAAP but is voluntarily reported by Snap-on as useful information for investors and creditors. Using this disclosure, answer the following questions.

Required

a. Do the parent and subsidiary companies each maintain their own financial statements? Explain. Why does GAAP require consolidation instead of separate financial statements of individual companies?

b. What is the balance of Investments in Financial Services as of December 31, 2018, on the parent's balance sheet? What is the equity balance of the financial services subsidiary to which this relates as of December 31, 2018? Do you see a relation? Will this relation always exist?

c. Refer to your answer for part *a*. How does the equity method of accounting for the investment in the subsidiary obscure the actual financial condition of the parent company as compared with the consolidated financial statements?

d. Recall that the parent company uses the equity method of accounting for its investment in the subsidiary and that this account is eliminated in the consolidation process. What is the relation between consolidated net income and the net income of the parent company? Explain.

e. What is the implication for the consolidated balance sheet if the fair value of the financial services subsidiary (subsequent to acquisition) is greater than the book value of its stockholders' equity?

- **Operating leases** transfer **control of the use of the lease asset**, but not the asset itself. Any lease of more than 12 months not classified as a finance lease is classified as an operating lease.

As they adopt the new standard, companies must choose between two transition options.

1. **Retroactive adoption:** implement the new standard in the current year and restate all prior periods presented in the financial statements. This means that the current-year financial statements and the comparative financial statements (the prior year balance sheet and the two prior years' income statements) all conform to the new standard.
2. **Prospective adoption:** implement the new standard without restatement of the prior periods. This means that the company reports current-period leasing activities under the *new* accounting standard and leasing activities in the prior periods under the *old* standard.

Microsoft chose the first (retroactive) approach and restated its prior year's financial statements in the year of adoption. Consequently, Microsoft's current balance sheet reports both operating and finance leases under the current lease accounting standard for both years. Thus, we can directly compare the financial statements in the current 10-K, across the years presented.

Delta Airlines chose the second (prospective) approach. (See the Business Insight box "Delta Airlines Prospective Adoption of the 2019 Lease Accounting Standard.") As a result of its prospective adoption of the new standard, Delta's fiscal 2019 financial statements include both the new lease-accounting standard (2019 numbers) and the old standard (2018 and 2017 numbers). Unlike for Microsoft, we cannot directly compare the financial statement in Delta's current 10-K, across the years.

Because companies were free to decide whether they would use the retroactive approach or the prospective approach, financial statements will reflect a mix of old and new standards for the next few years. Consequently, it's important for us to understand both lease standards and this module addresses both.

We begin with a general discussion of lease accounting and then use Microsoft Corporation to illustrate the accounting mechanics.

Lessee Reporting Example—Microsoft Corporation

Companies report all leases on the balance sheet as both lease assets and lease liabilities. As companies describe their leases in footnotes, they distinguish between operating and finance leases. Microsoft provides the following lease disclosure in its 2019 10-K.

> **Leases** We have operating and finance leases for datacenters, corporate offices, research and development facilities, retail stores, and certain equipment. Our leases have remaining lease terms of 1 year to 20 years, some of which include options to extend the leases for up to 5 years, and some of which include options to terminate the leases within 1 year… We determine if an arrangement is a lease at inception. Operating leases are included in operating lease right-of-use ("ROU") assets, other current liabilities, and operating lease liabilities in our consolidated balance sheets. Finance leases are included in property and equipment, other current liabilities, and other long-term liabilities in our consolidated balance sheets. ROU assets represent our right to use an underlying asset for the lease term and lease liabilities represent our obligation to make lease payments arising from the lease. Operating lease ROU assets and liabilities are recognized at commencement date based on the present value of lease payments over the lease term. As most of our leases do not provide an implicit rate, we generally use our incremental borrowing rate based on the estimated rate of interest for collateralized borrowing over a similar term of the lease payments at commencement date. The operating lease ROU asset also includes any lease payments made and excludes lease incentives. Our lease terms may include options to extend or terminate the lease when it is reasonably certain that we will exercise that option. Lease expense for lease payments is recognized on a straight-line basis over the lease term.

Lease Accounting

The first step in lease accounting is to determine whether a lease is operating or financing. If the lease is economically similar to the purchase of an asset, the company must classify the lease as financing. In particular, finance leases meet one or more of the following criteria.

- **Transfer of ownership.** The lease transfers ownership of the underlying asset to the lessee by the end of the lease term.
- **Purchase option.** The lease grants the lessee an option to purchase the underlying asset that the lessee is reasonably certain to exercise.
- **Lease term.** The lease term is for a major part of the remaining economic life of the underlying asset.
- **Present value.** The present value of the sum of the lease payments and any residual value guaranteed by the lessee that is not already included in the lease payments equals or exceeds substantially all of the fair value of the underlying asset.
- **Specialized asset.** The underlying asset is of such a specialized nature that it is expected to have no alternative use to the lessor at the end of the lease term.

Any lease of more than 12 months not classified as a finance lease is classified as an operating lease.

Lease Accounting and the Balance Sheet

Both operating and finance leases are recognized on the balance sheet.

- **Lease liability** is recognized at the present value of the remaining lease payments (see below).
- **Right-of-use asset** is recognized at an amount calculated as follows.

	Amount of the lease obligation
+	Lease payments made to the lessor at or before the lease commencement date
–	Lease incentives received from the lessor
+	Initial direct costs of right-of-use asset incurred by the lessee
=	Right-of-use asset

This means the right-of-use asset will often be greater than the related lease liability at inception of the lease. (The difference is the net cash paid for the upfront costs.) The year the company adopts the new accounting standard is considered to be the year of inception for preexisting operating leases.

The balance sheet presents lease liabilities and right-of-use assets separately (not the net amount). Finance lease assets are typically included in PPE, and lease liabilities are included with debt. Operating lease assets and liabilities are each reported in a separate line item if material.

The amount reported on the balance sheet for the lease obligation and right-of-use lease asset relates to the payments that the company will make under the lease terms. Footnotes also disclose a schedule of such lease payments for both operating and finance leases. For example, Microsoft discloses the following in its 2019 10-K.

Maturities of lease liabilities were as follows:

Year Ending June 30 (In millions)	Operating Leases	Finance Leases
2020	$1,678	$ 591
2021	1,438	616
2022	1,235	626
2023	1,036	631
2024	839	641
Thereafter	2,438	5,671
Total lease payments	8,664	8,776
Less imputed interest	(961)	(2,202)
Total	$7,703	$6,574

Total forecasted lease payments for operating leases are $8,664 million in FY2019. However, Microsoft's balance sheet includes liabilities of $7,703 million (current liability of $1,515 million relating to payments to be made in the upcoming year and long-term liability of $6,188 million), which is the present value of the forecasted lease payments discounted at 3.15%. **Exhibit 10.1** illustrates the present value calculation. The Business Insight box below explains the discount rate. (The 3.15% discount rate used in this example is consistent with the assumed payment stream, an approach commonly used in practice. Microsoft's actual discount rate is 3%, as disclosed in its 2019 10-K.)

EXHIBIT 10.1 Present Value of Operating Lease Payments ($ millions)

	A	B	C	D	E
1	**Year**	**Operating Lease Payment**	**Discount Factor (i = 0.0315)**	**Present Value**	**Cell Formula**
2	1	$1,678	0.96946	$1,627	=PV(B10,A2,0,–B2)
3	2	1,438	0.93986	1,352	=PV(B10,A3,0,–B3)
4	3	1,235	0.91116	1,125	=PV(B10,A4,0,–B4)
5	4	1,036	0.88333	915	=PV(B10,A5,0,–B5)
6	5	839	0.85636	718	=PV(B10,A6,0,–B6)
7	>5	$2,438 ($839 × 2.906 years)	2.73602 × 0.85636	1,966	=PV(B10,B9,–B6,0,0)*PV(B10,A6,0,–1)
8	Total payments	$8,664		$7,703	=SUM(D2:D7)
9	Remaining life	2.906			=B7/B6
10	Discount rate	3.15%			

The total *operating* lease liability of $7,703 million consists of a portion maturing in the next year, which is reported as a current liability and the remainder, reported as a long-term liability, as highlighted in Microsoft's balance sheet above. The table above shows a current portion of $1,627 million, slightly higher than the $1,515 million Microsoft reports in its footnotes. The difference arises because Microsoft uses a specific discount rate for each lease, whereas we use an average of 3.15% for all leases.

BUSINESS INSIGHT Imputed Discount Rate Computation for Leases

Microsoft reports total undiscounted minimum operating lease payments of $8,664 million and a discounted value for those lease payments of $7,703 million. Using Excel, we can use the IRR function to estimate the *implicit* discount rate that Microsoft used for its ~~capital~~ lease computations. The following spreadsheet lays out the calculations.

Amounts in cells B2 through G2 are from Microsoft's lease footnote shown earlier in this section. Cells H2 through J2 sum to $2,438 million, the total lease payments due after 2023 (year 5). We assume that Microsoft continues to pay $839 million per year (the same as in 2023) with a final payment of $760 million, until the $2,438 million is used up. The IRR function estimates that Microsoft used a discount rate of 3.15% to capitalize its operating leases in its FY2019 balance sheet.

In this method we make assumptions about the remaining useful life of the lease assets (total remaining payments divided by the payment in year 5). Many firms disclose the weighted average discount rate and the weighted average remaining lease term used to determine the present value of future lease payments. If provided, these assumptions are a more exact way to corroborate the disclosed present value or implicit interest rates.

B3 ⋮ × ✓ *fx* =IRR(B2:J2,0.1)

	A	B	C	D	E	F	G	H	I	J
1	N	0	1	2	3	4	5	6	7	8
2	Amount	(7,703)	1,678	1,438	1,235	1,036	839	839	839	760
3	IRR*	3.15%								
4									=2,438	
5		*Formula for cell B3 is =IRR(B2:J2,0.1), as shown in the formula bar at the top of the sheet								

continued from previous page

For **capital leases**, both the lease asset and lease liability were reported on the balance sheet. In the income statement, depreciation of the lease asset and interest expense on the lease liability were reported instead of rent expense. Further, although the cash payments to the lessor are identical whether or not the lease is capitalized on the balance sheet, the cash flows were classified differently for capital leases—that is, each payment was part interest (operating cash flow) and part principal (financing cash flow). Consequently, operating cash flows were greater when a lease was classified as a capital lease.

The benefits of applying the operating method for leases were obvious to managers (including better Du Pont ratios). Thus, some managers actively avoided capital lease treatment. Moreover, the pre-2019 rigid capitalization rules created an unintended negative consequence: managers seeking off-balance-sheet financing could, and routinely did, deliberately structure their leases around GAAP rules so as to avoid capital lease treatment. Analysts and other financial statement users objected to the pre-2019 rules that skewed ratios and created hidden leverage.

Summary of Lease Accounting and Reporting

A summary of the effects of the new standard on the balance sheet, the income statement, and the statement of cash flows follows.

	Operating Lease	Finance Lease
Balance Sheet (same for both operating and finance leases)	• All leases are recognized on the balance sheet (except leases with a term of 12 months or less). • Lease asset is reported as either PPE or a "right-of-use" asset that is amortized over the lease life. • Lease liability is reduced by principal payments each period, like a mortgage. • Accounting treatment is similar to recording a PPE asset that is purchased and financed with borrowed money (both the asset and liability are reported on the balance sheet).	
Income Statement	• Rent expense is recognized for the straight-line amortization of the total lease payments plus up-front costs.	• Straight-line amortization expense of the right-of-use asset, *plus* • Interest expense is recognized on the lease liability.
Statement of Cash Flows	• Lease payments are classified as operating cash flow.	• Interest portion of lease payments is classified as operating cash flow. • Principal portion of lease payments is classified as financing cash flow.

For both operating and financing leases, the balance sheet treatment is identical. However, the income statement and statement of cash flows presentation depend on the lease classification (operating versus financing).

- Income statement
  - Operating leases: Level rent expense recorded each period (an operating item).
  - Finance leases: Amortization expense recorded each period (an operating item) and interest expense accrued on the lease liability (a nonoperating item). The expense decreases each year because the total expense includes a level asset amortization expense plus a decreasing interest expense (lower in later years because the interest accrual is calculated on a decreasing lease liability).
- Statement of cash flows
  - Operating leases: Rent expense is reported in net income and, thus, is included in net cash from operating activities. The amortization of direct costs (non-cash portion of rent expense) is added back as a reconciling item.
  - Finance leases: Amortization expense is an add-back in net cash from operating activities. Interest expense is reported in net income and, thus, is included in net cash from operating activities. Repayment of the lease obligation is classified as a financing activity.

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ANALYST ADJUSTMENTS 10.2 Concluded

$ millions	2015	2016	2017	2018	2019
Cash contributions to pension plan	$783	$768	$2,115	$2,631	$1,125
Cash contributions at 5-year average. . .	1,140	1,437	1,515	1,633	1,697
Adjustment (to level out amounts)	+357	+669	–600	–998	+572

To adjust the financial statements, we note that cash contributions have no income statement effect (which is different from most other adjustments). Instead, the cash flow statement is impacted via operating cash flows and the balance sheet is impacted via pension assets. Because cash contributions to pension plans are deductible for tax purposes (whereas pension expense is recorded in the income statement) there is a deferred tax effect related to the pension contribution adjustment. We assume a tax rate of 22% and adjust the financial statements as follows.

Adjustments ($ millions)	2015	2016	2017	2018	2019
Statement of cash flows adjustments					
Cash contribution	+$357	+$669	–$600	–$998	+$572
Cash from operations	–357	–669	+600	+998	–572
Balance sheet adjustments					
Cash balance	–357	–669	+600	+998	–572
Pension plan assets.	+357	+669	-600	-998	+572
Deferred tax liabilities at 22%.	-78	-147	+132	+220	-126
Retained earnings.	+78	+147	-132	-220	+126

Other Post-Employment Benefits (OPEB)

In addition to pension benefits, many companies provide healthcare and insurance benefits to retired employees. These benefits are referred to as **other post-employment benefits (OPEB)**. These benefits present reporting challenges similar to pension accounting. However, companies most often provide these benefits on a "pay-as-you-go" basis and it is rare for companies to make contributions in advance for OPEB. As a result, this liability, known as the **accumulated post-employment benefit obligation (APBO)**, is largely, if not totally, unfunded. GAAP requires that the unfunded APBO liability, net of any unrecognized amounts, be reported in the balance sheet and the annual service costs and interest costs be accrued as expenses each year. This requirement is controversial for two reasons. First, future healthcare costs are especially difficult to estimate, so the value of the resulting APBO (the present value of the future benefits) is fraught with error. Second, these benefits are provided at the discretion of the employer and can be altered or terminated at any time. Consequently, employers argue that without a legal obligation to pay these benefits, the liability should not be reported in the balance sheet. (For a more complete discussion of OPEB issues, see: **https://www.pwc.com/us/en/corporate-governance/assets/pension-paper.pdf.**)

RESEARCH INSIGHT Valuation of Nonpension Post-Employment Benefits

The FASB requires employers to accrue the costs of all nonpension post-employment benefits, known as *accumulated post-employment benefit obligation* (APBO). These benefits consist primarily of healthcare and insurance. This requirement is controversial due to concerns about the reliability of the liability estimate. Research finds that the APBO (alone) is associated with company value. However, when other pension-related variables are included in the research, the APBO liability is no longer useful in explaining company value. Research concludes that the pension-related variables do a better job at conveying value-relevant information than the APBO number alone, which implies that the APBO number is less reliable.

These other post-employment benefits can produce large liabilities. For example, **Deere**'s footnotes report a funded status for the company's healthcare obligation of $(4,753) million in 2018, consisting of an APBO liability of $5,472 million and OPEB plan assets of $719 million. Our analysis of cash flows related to pension obligations can be extended to other post-employment benefit obligations. For example, in addition to its pension payments, Deere discloses that it is obligated to make healthcare payments to retirees totaling about $320 million to $345 million

FORECASTING THE INCOME STATEMENT

eLectures MBC **LO2** Forecast revenues and the income statement.

Exhibit 11.2 presents the FY2019 income statement for Procter & Gamble together with our forecast of the statements for FY2020.

Overview Here is a high-level overview—computational details follow.

- **Sales estimate.** The forecasting process begins with an estimate of the sales growth rate. For our illustration, we assume a 3.5% growth rate, informed by P&G's guidance. Given the assumed 3.5% growth in sales, forecasted 2020 sales are $70,053 million ($67,684 million × 1.035).
- **Expense estimates.** To estimate operating expenses (cost of goods sold and selling, general, and administrative [SG&A] expenses) we apply a percentage of sales ratio to forecasted sales. For nonoperating expenses (such as interest expense and interest revenue), we initially assume they will not change ("no change") unless we believe interest rates are likely to shift greatly during the forecast period. (In Appendix 11B, we relax the "no change" assumption because we add debt to achieve a desired level of cash. Additional debt causes interest expense to increase. We discuss these additional steps in Appendix 11B.)
- **One-time item estimates.** One-time items such as asset impairments and discontinued operations, are, by definition, not expected to recur. We forecast these items to be $0.
- **Tax estimate.** Income tax expense is forecasted based on PG's guidance of 17.5% of pretax income.
- **Noncontrolling interest estimate.** A common assumption is no change in the ratio of noncontrolling interest to consolidated net income. For our P&G illustration, we adopt that assumption.

For each line item in the income statement, we summarize our forecasting assumptions in the rightmost column of **Exhibit 11.2**, and we discuss those assumptions in depth in the following sections.

EXHIBIT 11.2 Forecast of P&G's FY2020 Income Statement

$ millions	FY2019 Actual	% of Net Sales	Computations	FY2020 Est.	% of Net Sales	Explanation
Net sales	$67,684	100.0%	$67,684 × 1.035	**$70,053**	100.0%	Use P&G's guidance that sales will increase about 3.5%. Sales forecast equals current sales × (1 + growth rate %).
Cost of products sold	34,768	51.4%	$70,053 × 51.4%	**36,007**	51.4%	Assume COGS as % of sales will remain unchanged from FY2019.
Selling, general, and administrative expense	19,084	28.2%	$70,053 × 28.2%	**19,755**	28.2%	Assume SG&A as % of sales will remain unchanged from FY2019.
Goodwill & indefinite lived intangibles impairment charges	8,345	12.3%	none	**0**		The Goodwill impairment charge is a transitory item and we eliminate that expense in FY2020.
Operating income	5,487	8.1%	subtotal	**14,291**	20.4%	
Interest expense	509	0.8%	computed	**483**	0.7%	Interest expense is discussed below.
Interest income	220	0.3%	no change	**220**	0.3%	Assume no change in interest revenue.
Other nonoperating income, net	871	1.3%	none	**0**	0.0%	FY2019 nonoperating income relates to the dissolution of a partnership and early extinguishment of debt, and we assume none for FY2020 given no evidence of planned divestitures or debt retirement.
Earnings from continuing operations before income taxes	6,069	9.0%	subtotal	**14,028**	20.0%	
Income taxes on continuing operations	2,103	3.1%	$14,028 × 17.5%	**2,455**	3.5%	Assume effective tax rate of 17.5% per P&G guidance.
Net earnings	3,966	5.9%	subtotal	**11,573**	16.5%	
Less: Net earnings attributable to noncontrolling interests	69	0.1%	$11,573 × 1.7%	**197**	0.3%	Assume noncontrolling interests as % of net earnings (1.7%) continues.
Net earnings attributable to P&G	$ 3,897	5.8%	subtotal	**$11,376**	16.2%	

million/$30,689 million). P&G begins the FY2020 year with $30,092 million ($9,697 million + $20,395 million) of short-term and long-term debt and predicts contractual payments of $3,388 for FY2020, yielding an anticipated debt balance of $26,704 for FY2020 ($30,092 – $3,388). For the initial forecast, we assume no additional borrowing during the year (we relax that assumption in Appendix 11B when we perform a multiyear forecast). Our forecast for FY2020 interest expense is $483 million calculated as 1.7% × ($30,092 + $26,704)/2.

Income Tax Expense Income tax expense (labeled "Income taxes on continuing operations" by P&G) is often a large expense item. We estimate tax expense by applying an estimated tax rate to pretax income. For FY2020, we use an effective tax rate of 17.5% as provided in PG's guidance. In the absence of company guidance, we can use disclosures in the income tax footnote to get a tax rate estimate. Following is the effective tax rate disclosure in P&G's FY2019 10-K.

Years Ended June 30 ($ millions)	2019	2018	2017
U.S. federal statutory income tax rate	21.0%	28.1%	35.0%
Country mix impacts of foreign operations	(0.5)%	(4.7)%	(6.8)%
Changes in uncertain tax positions	(0.3)%	(0.3)%	(2.0)%
Excess tax benefits from the exercise of stock options	(3.8)%	(0.4)%	(1.3)%
Goodwill impairment	22.8%	—%	—%
Net transitional impact U.S. Tax Act	—%	4.5%	—%
Other	(4.5)%	(1.2)%	(1.8)%
Effective income tax rate	34.7%	26.0%	23.1%

The aim of reviewing the tax table in the footnotes is to determine the tax rate to use for our forecasts. We look for any transitory items that affect the company's tax rate and we exclude such items in our forecast. In FY2019, for example, P&G's effective tax rate increased by 22.8 percentage points due to the Goodwill impairment that reduced pre-tax profit without a consequent reduction of income tax expense (Goodwill write-offs are generally not a tax-deductible expense). Given that the Goodwill impairment is a one-time occurrence, we would forecast a tax rate of 11.9% (34.7% effective tax rate less 22.8%). In addition, the line item labeled as "Other" increased by 2 to 3 percentage points over the previous two years. Adding that amount, then, results in an estimate of the effective tax rate that is close to the 17.5% rate in P&G's guidance.

Impact of Acquisitions When one company acquires another, the revenues and expenses of the acquired company are consolidated, but only from the date of acquisition onward (we discuss the consolidation process in an earlier module). Acquisitions can greatly impact the acquirer's income statement, especially if the acquisition occurs toward the beginning of the acquirer's fiscal year. In FY2019 P&G did not have any material acquisitions. Therefore, we use P&G's acquisition of **Gillette** in October 2005 as an example. In its June 30, 2006, fiscal year-end income statement (ending eight months following the acquisition), P&G reported the following for sales.

Years Ended June 30 ($ millions)	2006	2005	2004
Net sales	$68,222	$56,741	$51,407

These net sales amounts include Gillette product sales from October 2005 onward (for fiscal 2006), and none of Gillette's sales is reported in fiscal 2005 or fiscal 2004. P&G's 2006 sales growth of 20.2% ([$68,222 million/$56,741 million] – 1) was, therefore, not P&G's organic growth, and we would have been remiss in forecasting a 20.2% increase for fiscal 2007.

Importantly, until all three annual income statements in the 10-K include the acquired company, the acquirer is required to disclose what revenue and net income would have been had the acquired company been consolidated for all three years reported in the current annual report. This "what if" disclosure is called *pro forma* disclosure. Procter & Gamble's pro forma disclosure in the footnotes to its 2006 10-K includes the following discussion and table.

EXHIBIT 11.3 Forecast of P&G's FY2020 Balance Sheet

$ millions, except per share amounts	2019 Actual	% of Sales	Computations	2020 Est.	% of Sales	Explanation
Current assets						
Cash and cash equivalents	$ 4,239	6.3%	Plug	**$ (1,550)**	0.1%	Plug to balance the balance sheet.*
Available-for-sale investment securities	6,048	8.9%	no change	**6,048**	8.6%	Assume no change.
Accounts receivable	4,951	7.3%	$70,053 × 7.3%	**5,114**	7.3%	Forecast working capital accounts as a % of sales using prior year's % unless information suggests otherwise.**
Inventories	5,017	7.4%	$70,053 × 7.4%	**5,184**	7.4%	
Prepaid expenses and other current assets	2,218	3.3%	$70,053 × 3.3%	**2,312**	3.3%	
Total current assets	22,473	33.2%	subtotal	**17,108**	26.7%	
Property, plant, and equipment, net	21,271	31.4%	$3,328 – $2,604	**21,995**	31.4%	CAPEX estimates are from P&G guidance, and depreciation expense is computed as a % of prior year PPE, gross.
Goodwill	40,273	59.5%	no change	**40,273**	57.5%	Assume no changes because goodwill is not amortized.
Trademarks and other intangible assets, net	24,215	35.8%	($359)	**23,856**	34.1%	Apply estimated amortization expense from footnotes of P&G.
Other noncurrent assets	6,863	10.1%	no change	**6,863**	9.8%	Assume no change.
Total assets	$115,095	170.0%	subtotal	**$110,095**	159.5%	
Current liabilities						
Accounts payable	$ 11,260	16.6%	$70,053 × 16.6%	**$ 11,629**	16.6%	Forecast working capital accounts as % of sales unless information suggests otherwise.
Accrued and other liabilities	9,054	13.4%	$70,053 × 13.4%	**9,387**	13.4%	
Debt due within one year	9,697	14.3%	($3,388) + $2,009	**8,318**	16.1%	Use footnotes to get current maturities of long-term debt. Assume other debt remains unchanged.
Total current liabilities	30,011	44.3%	subtotal	**29,334**	46.1%	
Long-term debt	20,395	30.1%	($2,009)	**18,386**	24.3%	Use footnotes to get current maturities of long-term debt to be repaid.
Deferred income taxes	6,899	10.2%	$70,053 × 10.2%	**7,145**	10.2%	Assume no change as a % of sales.
Other noncurrent liabilities	10,211	15.1%	$70,053 × 15.1%	**10,578**	15.1%	Assume no change as a % of sales.
Total liabilities	67,516	99.8%	subtotal	**65,443**	95.7%	
Shareholders' equity						
Convertible Class A preferred stock	928	1.4%	no change	**928**	1.3%	Assume no change in paid-in capital accounts.
Nonvoting Class B preferred stock	0	0.0%	no change	**0**	0.0%	
Common stock, stated value $1 per share	4,009	5.9%	no change	**4,009**	5.7%	
Additional paid-in capital	63,827	94.3%	no change	**63,827**	91.1%	
Reserve for ESOP debt retirement	(1,146)	(1.7)%	no change	**(1,146)**	(1.6)%	Assume no change.
Accumulated other comprehensive income (loss)	(14,936)	(22.1)%	no change	**(14,936)**	(21.3)%	Assume no change.
Treasury stock	(100,406)	(148.3)%	($7,000)	**(107,406)**	(153.3)%	Use P&G guidance.
Retained earnings	94,918	140.2%	$11,376 – $7,500	**98,794**	141.0%	Increased by forecasted net income less forecasted dividends.
Noncontrolling interest	385	0.6%	+ $197	**582**	0.8%	Increased by net income allocated to noncontrolling interests.
Total shareholders' equity	47,579	70.3%	subtotal	**44,652**	63.7%	
Total liabilities and shareholders' equity	$115,095	170.0%	subtotal	**$110,095**	159.5%	

* $(1,561) = $110,084 – $6,048 – $5,114 – $5,184 – $2,312 – $21,995 – $40,273 – $23,856 – $6,863.

** To simplify, we forecast accounts as a percent of sales, including inventories and accounts payable. Analysts sometimes use a percent of COGS for inventory and for accounts payable estimates because both are expressed in input (not output) costs. Either approach is reasonable if used consistently. One could also forecast working capital accounts using turnover rates or days as follows:

Forecasted account balance = Forecasted revenues (or COGS)/Turnover rate, or = Forecasted days outstanding × [Forecasted revenues (or COGS)/365]

P&G's 2019 statement of cash flows reports CAPEX of $3,347 million, which yields an historical rate of 4.9% of sales ($3,347 million/$67,684 million). This is consistent with the 4.5% to 5% range provided in P&G's guidance.

Depreciation Expense. Depreciation expense is usually reported in the statement of cash flows (or in the notes). (*Note:* If depreciation expense is combined with amortization expense, we can isolate the depreciation component by subtracting amortization expense, which is frequently

reported separately in footnotes—or, if not separately reported, we may use the change in accumulated amortization.) It is common to estimate depreciation as:

$$\text{Forecasted depreciation expense} = \frac{\text{Current year depreciation expense}}{\text{Prior year PPE, gross}} \times \text{Current year PPE, gross}$$

P&G's 2019 statement of cash flows reports depreciation and amortization expense of $2,824 million. Footnotes report amortization expense in 2019 of $349 million. Thus, we calculate 2019 depreciation expense as $2,475 million ($2,824 million − $349 million). The PPE footnote reports 2018 PPE, gross of $41,487 million, and 2019 PPE, gross of $43,393 million. We calculate a depreciation expense forecast assumption of 6.0% ($2,475 million expense/$41,487 million PPE, gross) and an estimated 2020 depreciation expense of $2,604 million (6.0% × $43,393 million).

PPE, net. Drawing on the forecasted CAPEX and forecasted depreciation above, the PPE, net is forecasted as:

$$\text{Forecasted PPE, net} = \text{Current PPE, net} + \text{Forecasted CAPEX} - \text{Forecasted depreciation expense}$$

Forecasted 2020 PPE, net is $21,995 million, computed as $21,271 million + $3,328 million − $2,604 million.

Intangible Assets Intangible assets, other than goodwill, are typically forecasted to decrease during the year by the amount of amortization (it is common to assume no change in amortization expense).

$$\text{Forecasted intangible assets} = \text{Current year intangible assets} - \text{Forecasted amortization expense}$$

Alternatively, the company might provide guidance. Footnotes to the P&G's FY2019 Form 10-K provide the following schedule of expected amortization expense that we use for its FY2020 forecast. We forecast that intangible assets will decrease by $359 million in FY2020.

Years Ending June 30 ($ millions)	2020	2021	2022	2023	2024
Estimated amortization expense	**$359**	$309	$290	$278	$267

Long-Term Debt (LTD) Companies report maturities of long-term debt for the next five years in the long-term debt footnote. We use this disclosure to forecast long-term debt:

$$\text{Forecasted LTD} = \text{Current year LTD} - \text{Current maturities of LTD}$$

Footnotes to P&G's FY2019 Form 10-K provide the following schedule of maturities of LTD that we use in our forecasts.

Years Ending June 30 ($ millions)	2020	2021	2022	2023	2024
Debt maturities	**$3,388**	**$2,009**	$2,840	$2,465	$2,461

P&G's balance sheet does not separately report current maturities of long-term debt. Instead, the current maturities amount is aggregated with other short-term debt and reported as "Debt due within one year." To forecast current maturities, we subtract $3,388 million from debt due within one year to reflect the amount that matures and will be paid in FY2020. We then add $2,009 million, the amount that comes due in FY2021. We subtract $2,009 million from long-term debt to reflect the reclassification from long-term to current.

Retained Earnings We forecast retained earnings as follows.

$$\text{Forecasted retained earnings} = \text{Current year retained earnings} + \text{Forecasted net income} - \text{Forecasted dividends}$$

Dividends. Companies frequently provide guidance as to expected dividends. If not, a common approach is to estimate dividends using the dividend payout ratio.

$$\text{Forecasted dividends} = \frac{\text{Current year dividends}}{\text{Current year net income}} \times \text{Forecasted net income}$$

This method will be less exact if a company reports significant one-time items. In that case, we exclude the one-time item in the payout ratio calculation. P&G's dividend payout ratio for FY2019, computed on earnings before the intangibles impairment expense, is 60.9% ($7,498 million dividends paid in FY2019 divided by $12,311 million in FY2019 net income before intangibles impairment expense). We estimate FY2020 dividends by applying the FY2019 payout ratio to forecasted net income ($11,365 million × 60.9% = $6,921 million). P&G's guidance is for dividends of "$7.5B+" (see the Company Guidance section). The forecasted dividends of $6,921 million are just slightly below that guidance. We include the guidance in our forecast because it is more precise.

Treasury Stock Many companies have multiyear stock repurchase programs, which are disclosed in footnotes or in the MD&A section of the 10-K. Often, in the year-end press release, companies provide guidance and/or disclosures about their planned treasury stock activity. Absent explicit disclosures or guidance, we can forecast future repurchases using historic data, either from the most recent year or by looking for a trend over the past two or three years. For P&G, we use the midpoint of guidance provided by managers and forecast $7B of additional repurchases in FY2020.

The forecasting process estimates the balances of all assets *other than cash*, all liabilities, and all equity accounts. The last step is to compute the amount of cash needed to balance the balance sheet (the *plug*).

Cash Plug (the *plug*) The **plug** is computed as total assets (equal to total liabilities and equity) less all other asset balances. We assess the forecasted cash balance and determine if it deviates from its historical norm. We use the current year cash-to-sales percentage as a *normal* level of cash. This assumes the amount reported in the current balance sheet represents an appropriate level of cash the company needs to conduct its operations.

Estimating the Normal Cash Level P&G's cash balance in 2019 is $4,239 million or 6.3% of 2019 sales. Applying that percentage to our forecasted sales of $70,053 million yields a normal level of cash of $4,413 million ($70,053 million × 6.3%). Our forecasted cash balance of $(1,550) million in **Exhibit 11.3** is, therefore, too low.

When Cash Plug Deviates from Norm When the forecasted cash level deviates from the target cash balance, we can consider adjusting the forecasted cash balance in two ways.

- **Cash balance much HIGHER than normal** This indicates the company is generating more cash than expected, most typically from operations. Our forecasts might assume that such excess liquidity can be invested in marketable securities, used to pay down debt, repurchase stock, increase dividend payments, or any combination of these actions.
- **Cash balance much LOWER than normal** This indicates the company is not generating sufficient cash, usually as a result of net losses, significant dividend payments, stock repurchases, and/or operating assets increasing more than operating liabilities; remember, we are assuming no changes in debt and equity levels for our initial forecast. To return cash to normal levels, we might expect the company would borrow money, sell stock, and/or liquidate marketable securities. Under those assumptions, we would adjust the forecasted balance sheet by increasing cash to a normal level and adjust debt or equity to reflect the means by which additional cash was raised. Alternatively, we might expect the company would reduce dividends, cut capital expenditures, slash inventory and/or take other operating action. Raising cash in this way likely has serious costs and, for that reason, we rarely make assumptions of this sort. It is more likely the company would raise cash through investing and financing activities.

In Appendix 11B, we illustrate a method to achieve a target level of cash in our multiyear forecasts. The method involves adding debt to the balance sheet and adjusting interest expense on the income statement as needed.

Maintaining the Capital Structure When we adjust cash by forecasting an increase or decrease in debt and/or stock, we might inadvertently impact the company's capital

any noncash expenses or revenues, and then recognizes the cash flow effect of changes in working capital followed by changes in the remaining asset, liability, and equity items. A common method is to compute changes in each of the line items on the forecasted balance sheet and then classify those changes to either the operating, investing, or financing sections of the forecasted statement of cash flows.

Exhibit 11A.1 shows the forecasted statement of cash flows for **Procter & Gamble**. It reveals operating cash flows of $15,427 million, investing cash outflows of $3,328 million, and a large financing cash outflow of $17,888 million.

EXHIBIT 11A.1 One-Year Forecast of P&G's Statement of Cash Flows

Statement of Cash Flows
For Fiscal Year Ended 2020

$ millions	Computations	2020 Est.
Cash flow from operating activities		
Net income		$11,573
Add: Depreciation		2,604
Add: Amortization		359
Change in accounts receivable	$4,951 – $5,114	(163)
Change in inventories	$5,017 – $5,184	(167)
Change in prepaid expenses and other current	$2,218 – $2,312	(94)
Change in accounts payable	$11,629 – $11,260	369
Change in accrued other liabilities	$9,387 – $9,054	333
Change in deferred income taxes	$7,145 – $6,899	246
Change in other noncurrent liabilities	$10,578 – $10,211	367
Net cash from operating activities		15,427
Capital expenditures	$70,053 × 4.75%	(3,328)
Change in available-for-sale securities	no change	0
Net cash from investing activities including noncontrolling interest		(3,328)
Dividends		(7,500)
Decrease in short-term debt		(1,379)
Decrease in long-term debt		(2,009)
Purchase of treasury shares		(7,000)
Net cash from financing activities		(17,888)
Net change in cash		(5,789)
Beginning cash		4,239
Ending cash		$ (1,550)

The forecasted statement of cash flows highlights financing cash outflows as the main cause for the forecasted decline in cash. While operating cash flows continue to be strong, P&G's guidance includes plans to continue to repurchase common stock (approximately $7,000 million), pay dividends (approximately $7,500 million), and purchase CAPEX (approximately $3,328 million). In this first forecasting iteration, we forecast a decrease in cash of $(5,789) million, which reduces P&G's cash balance from $4,239 million to $(1,550) million. The drop in cash arises due to the planned outflows for CAPEX, the payment of dividends, and the repurchase of stock with no borrowings forecasted at this point. Such a low cash balance is not plausible. In Appendix 11B, we discuss how to modify the forecasts to derive an appropriate cash balance.

BUSINESS INSIGHT Do Currency Fluctuations Affect Cash Flow?

A stronger $US vis-à-vis other world currencies results in less income as foreign currency-denominated revenues are translated into fewer $US. As sales decline, so do profits. Because net income is the first line in the statement of cash flows, it is reasonable to ask whether the profit decline resulting from a strengthening $US implies P&G's cash flows will also decline. If so, we would expect such a decline to affect P&G's stock price. The short answer is that it is unlikely that P&G's cash flows will be greatly affected.

continued

continued from previous page

$ millions, except par value	July 27, 2019	July 28, 2018
Liabilities and equity		
Current liabilities		
Short-term debt	$10,191	$ 5,238
Accounts payable	2,059	1,904
Income taxes payable	1,149	1,004
Accrued compensation	3,221	2,986
Deferred revenue	10,668	11,490
Other current liabilities	4,424	4,413
Total current liabilities	31,712	27,035
Long-term debt	14,475	20,331
Income taxes payable	8,927	8,585
Deferred revenue	7,799	8,195
Other long-term liabilities	1,309	1,434
Total liabilities	64,222	65,580
Equity		
Cisco shareholders' equity		
Preferred stock, no par value: 5 shares authorized; none issued and outstanding	—	—
Common stock and additional paid-in capital, $0.001 par value: 20,000 shares authorized; 4,250 and 4,614 shares issued and outstanding at July 27, 2019, and July 28, 2018, respectively	40,266	42,820
(Accumulated deficit) Retained earnings	(5,903)	1,233
Accumulated other comprehensive income (loss)	(792)	(849)
Total Cisco shareholders' equity	33,571	43,204
Total equity	33,571	43,204
Total liabilities and equity	$97,793	$108,784

Required

a. Compute net operating assets (NOA) for 2019.

b. Compute net operating profit after tax (NOPAT) for 2019, assuming a federal and state statutory tax rate of 22%. Assume that all items on the 2019 income statement will persist.

c. Use the parsimonious forecast method, as shown in Analysis Insight box on page 13-5, to forecast Cisco's sales, NOPAT, and NOA for 2020 through 2023 *and* the terminal period using the following assumptions.

Sales growth 2020–2023	5%
Terminal growth	1%
Net operating profit margin	2019 rate rounded to three decimal places
Net operating asset turnover	2019 rate rounded to three decimal places

d. Estimate the value of a share of Cisco common stock using the discounted cash flow (DCF) model as of July 27, 2019; assume a discount rate (WACC) of 7.6%, common shares outstanding of 5,029 million, and net nonoperating obligations (NNO) of $(8,747) million (NNO is negative, which means that Cisco has net nonoperating investments).

e. Cisco stock closed at $48.42 on September 5, 2019, the date the Form 10-K was filed with the SEC. How does your valuation estimate compare with this closing price? What do you believe are some reasons for the difference? What investment decision is suggested from your results?

P13-15. Estimating Share Value Using the DCF Model

LO2

AT&T INC. (T)

Homework MBC

Following are forecasted sales, NOPAT, and NOA for AT&T for 2019 through 2022.

$ millions	Reported 2018	Forecast Horizon Period 2019	2020	2021	2022
Sales	$170,756	$181,001	$191,861	$203,373	$215,576
NOPAT	20,895	22,082	23,407	24,812	26,300
NOA	369,039	390,931	414,387	439,251	465,607

FY2019 net sales	$30,557
Forecasted FY2020 net income including noncontrolling interest	$4,927 million
Forecasted FY2020 net sales	$33,002 million
Accounts receivable, less allowance	20.4% of net sales
Inventories, net	12.3% of net sales
Other current assets	7% of net sales
Goodwill	No change
Tax assets	5% of net sales
Other assets	3.3% of net sales
Accounts payable	6.4% of net sales
Accrued compensation (current liability)	7.2% of net sales
Accrued compensation and retirement benefits (noncurrent liability)	No change
Accrued income taxes (current liability)	1.9% of net sales
Other accrued expenses	9.6% of net sales
Accrued income taxes (noncurrent liability)	9.3% of net sales
Deferred tax liabilities	4.2% of net sales
Other liabilities	2.5% of net sales
Ordinary shares	No change
Accumulated other comprehensive loss	No change
Net income attributable to noncontrolling interest	$19 million
Dividends in FY2020	$2,853 million
CAPEX in FY2019 (to be forecast as % of net sales)	$1,134 million
Depreciation expense in FY2020	$950 million
Amortization expense in FY2020	$1,914 million
Debt due in FY2020	$838 million
Debt due in FY2021	$2,058 million
Investments	No Change

M11-17. Adjust the Income Statement

LO2

HONEYWELL INTERNATIONAL INC. (HON)

Following is information from the tax footnote from the 2018 10-K for **Honeywell International**.

Years Ended December 31	2018	2017	2016
The U.S. federal statutory income tax rate is reconciled to our effective income tax rate as follows:			
U.S. federal statutory income tax rate	21.0%	35.0%	35.0%
Taxes on non-U.S. earnings	0.2	(12.8)	(8.0)
U.S. state income taxes	1.6	1.4	1.1
Reserves for tax contingencies	0.3	1.6	1.2
Employee share-based payments	(0.7)	(2.9)	(2.0)
U.S. tax reform	(5.8)	56.0	—
Reduction on taxes on unremitted earnings	(14.2)	—	—
Separation tax costs	5.5	—	—
All other items—net	0.9	(1.1)	(2.5)
	8.8%	77.2%	24.8%

The **effective tax rate for 2018** was lower than the U.S. federal statutory rate of 21% primarily attributable to internal restructuring initiatives that resulted in a reduction of accrued withholding taxes of approximately $1.1 billion related to unremitted foreign earnings. In addition, we recorded a tax benefit of approximately $440 million as a reduction to our 2017 provisional estimate of impacts from what is commonly referred to as the U.S. Tax Cuts and Jobs Act.

The effective tax rate for 2017 was higher than the U.S. federal statutory rate of 35% primarily from the estimated impacts of U.S. Tax Reform of approximately $3.8 billion, partially offset by lower tax rates on non-U.S. earnings.

a. What adjustments, if any, should we consider before forecasting Honeywell's 2020 income?
b. Adjust Honeywell's effective tax rate for each of the three years to reflect persistent factors.

QUESTIONS

Q14-1. In general, what role do expectations play in pricing equity securities? What is the relation between security prices and expected returns (the discount rate, or WACC, in this case)?

Q14-2. Define the weighted average cost of capital (WACC).

Q14-3. Define net operating profit after tax (NOPAT).

Q14-4. Define net operating assets (NOA).

Q14-5. Define the concept of residual operating income (ROPI). How is residual operating income used in pricing equity securities?

Q14-6. What insight does disaggregation of RNOA into net operating profit margin and net operating asset turnover provide for managing a company?

Q14-7. Explain what is meant by the phrase "steady state" when applied to equity valuation models.

Q14-8. What is one way to refine equity valuation models for companies that have not achieved steady state?

Assignments with the MBC logo in the margin are available in myBusinessCourse. See the Preface of the book for details.

MINI EXERCISES

LO1 FACEBOOK INC. (FB)

M14-9. Interpreting Earnings Announcement Effects on Stock Prices

On November 2, 2016, **Facebook Inc.** announced its 2016 third quarter results. Revenues were up nearly 50% from 2015 and earnings were up a whopping 180% ($5,944 million compared to $2,127 million). Yet, in the ensuing days, Facebook's stock value fell 7% according to **CNBC**. Why do you believe that the company's stock price fell despite the good news?

LO2 HOME DEPOT INC. (HD)

Homework MBC

M14-10. Computing Residual Operating Income (ROPI)

Home Depot reports net operating profit after tax (NOPAT) of $12,073 million for the fiscal year ended February 3, 2019. Its net operating assets at the beginning of the fiscal year are $24,887 million. Assuming a 7.85% weighted average cost of capital (WACC), what is Home Depot's residual operating income for the fiscal year ended February 3, 2019? Show computations.

LO2 CISCO SYSTEMS (CSCO)

Homework MBC

M14-11. Computing, Analyzing, and Interpreting Residual Operating Income (ROPI)

In its annual report for the fiscal year ended July 27, 2019, **Cisco Systems** reports net operating income after tax (NOPAT) of $11,346 million. As of the beginning of the fiscal year it reports net operating assets of $22,225 million.

a. Did Cisco earn positive residual operating income (ROPI) if its weighted average cost of capital (WACC) is 7.6%? Explain.

b. At what level of WACC would Cisco not report positive residual operating income for the year? Explain.

LO1, 2 TARGET CORPORATION (TGT)

Homework MBC

M14-12. Estimating Share Value Using the ROPI Model

Following are forecasts of **Target Corporation**'s sales, net operating profit after tax (NOPAT), and net operating assets (NOA) as of February 2, 2019, which we label fiscal year 2018.

$ millions	Reported 2018	Forecast Horizon Period 2019	2020	2021	2022	Terminal Period
Sales	$75,356	$79,124	$83,080	$87,234	$91,596	$93,428
NOPAT	3,269	3,402	3,572	3,751	3,939	4,017
NOA	23,020	24,197	25,407	26,677	28,011	28,571

Answer the following requirements assuming a terminal period growth rate of 2%, a discount rate (WACC) of 7.63%, common shares outstanding of 517.8 million, and net nonoperating obligations (NNO) of $11,723 million.

a. Estimate the value of a share of Target common stock using the residual operating income (ROPI) model as of February 2, 2019.

b. Target Corporation (TGT) stock closed at $77.12 on March 13, 2019, the date the 10-K was filed with the SEC. How does your valuation estimate compare with this closing price? What do you believe are some reasons for the difference?

EXERCISES

LO2 **E14-18. Estimating Share Value Using the ROPI Model**

ILLINOIS TOOL WORKS INC. (ITW)

Homework MBC

Following are forecasts of **Illinois Tool Works Inc.** sales, net operating profit after tax (NOPAT), and net operating assets (NOA) as of December 31, 2018.

$ millions	Reported 2018	Forecast Horizon Period 2019	2020	2021	2022	Terminal Period
Sales	$14,768	$15,654	$16,593	$17,589	$18,644	$19,017
NOPAT	2,711	2,880	3,053	3,236	3,430	3,499
NOA	9,462	10,028	10,630	11,268	11,944	12,183

Answer the following requirements assuming a discount rate (WACC) of 7.35%, a terminal period growth rate of 2%, common shares outstanding of 328.1 million, and net nonoperating obligations (NNO) of $6,204 million.

a. Estimate the value of a share of Illinois Tool Works Inc. common stock using the residual operating income (ROPI) model as of December 31, 2018.

b. Illinois Tool Works stock closed at $144.21 on February 15, 2019, the date the 10-K was filed with the SEC. How does your valuation estimate compare with this closing price? What do you believe are some reasons for the difference?

LO2 **E14-19. Estimating Share Value Using the ROPI Model**

HUMANA (HUM)

Homework MBC

Following are forecasts of sales, net operating profit after tax (NOPAT), and net operating assets (NOA) as of December 31, 2018, for **Humana**.

$ millions	Reported 2018	Forecast Horizon Period 2019	2020	2021	2022	Terminal Period
Sales	$56,912	$57,766	$58,632	$59,512	$60,404	$61,008
NOPAT	2,492	2,542	2,580	2,619	2,658	2,684
NOA	4,032	4,097	4,158	4,221	4,284	4,327

Answer the following requirements assuming a discount rate (WACC) of 7.8%, a terminal period growth rate of 1%, common shares outstanding of 135.6 million, net nonoperating obligations (NNO) of $(6,129) million, which is negative because Humana's nonoperating assets exceed its nonoperating liabilities, and no noncontrolling interest (NCI) on the balance sheet.

a. Estimate the value of a share of common stock using the residual operating income (ROPI) model as of December 31, 2018.

b. Humana (HUM) stock closed at $307.56 on February 21, 2019, the date the 10-K was filed with the SEC. How does your valuation estimate compare with this closing price? What do you believe are some reasons for the difference?

LO2 **E14-20. Identifying and Computing ROPI Model Inputs**

HOME DEPOT INC. (HD)

Homework MBC

Following are the balance sheets and statement of earnings for **Home Depot Inc.** for fiscal year ended February 3, 2019, which the company labels fiscal year 2018.

THE HOME DEPOT INC.
Consolidated Balance Sheets

$ millions, except par value	February 3, 2019	January 28, 2018
Assets		
Current assets		
Cash and cash equivalents	$ 1,778	$ 3,595
Receivables, net	1,936	1,952
Merchandise inventories	13,925	12,748
Other current assets	890	638
Total current assets	18,529	18,933
Net property and equipment	22,375	22,075
Goodwill	2,252	2,275
Other assets	847	1,246
Total assets	$44,003	$44,529

continued

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$ millions, except par value	July 27, 2019	July 28, 2018
Liabilities and equity		
Current liabilities		
Short-term debt	$10,191	$ 5,238
Accounts payable	2,059	1,904
Income taxes payable	1,149	1,004
Accrued compensation	3,221	2,986
Deferred revenue	10,668	11,490
Other current liabilities	4,424	4,413
Total current liabilities	31,712	27,035
Long-term debt	14,475	20,331
Income taxes payable	8,927	8,585
Deferred revenue	7,799	8,195
Other long-term liabilities	1,309	1,434
Total liabilities	64,222	65,580
Equity:		
Cisco shareholders' equity		
Preferred stock, no par value: 5 shares authorized; none issued and outstanding	—	—
Common stock and additional paid-in capital, $0.001 par value: 20,000 shares authorized; 4,250 and 4,614 shares issued and outstanding at July 27, 2019, and July 28, 2018, respectively	40,266	42,820
(Accumulated deficit) Retained earnings	(5,903)	1,233
Accumulated other comprehensive income (loss)	(792)	(849)
Total Cisco shareholders' equity	33,571	43,204
Total equity	33,571	43,204
Total liabilities and equity	$97,793	$108,784

Required

a. Compute net operating assets (NOA) for 2019.

b. Compute net operating profit after tax (NOPAT) for 2019, assuming a federal and state statutory tax rate of 22%. Assume that all items on the 2019 income statement will persist.

c. Use the parsimonious forecast method, as shown in the Analysis Insight box on page 14-5 and in **Exhibit 14.2**, to forecast Cisco's sales, NOPAT, and NOA for 2020 through 2023 *and* the terminal period using the following assumptions.

Sales growth 2020–2023	5%
Terminal growth	1%
Net operating profit margin	2019 rate rounded to three decimal places
Net operating asset turnover	2019 rate rounded to three decimal places

d. Estimate the value of a share of Cisco common stock using the residual operating income (ROPI) model as of July 27, 2019 ; assume a discount rate (WACC) of 7.6%, common shares outstanding of 5,029 million, and net nonoperating obligations (NNO) of $(8,747) million (NNO is negative, which means that Cisco has net nonoperating investments).

e. Cisco stock closed at $48.42 on September 5, 2019, the date the Form 10-K was filed with the SEC. How does your valuation estimate compare with this closing price? What do you believe are some reasons for the difference? What investment decision is suggested from your results?

P14-27. Estimating Share Value Using the ROPI Model

Following are forecasted sales, NOPAT, and NOA for AT&T for 2019 through 2022.

AT&T INC. (T)

$ millions	Reported 2018	Forecast Horizon Period 2019	2020	2021	2022
Sales	$170,756	$181,001	$191,861	$203,373	$215,576
NOPAT	20,895	22,082	23,407	24,812	26,300
NOA	369,039	390,931	414,387	439,251	465,607

Required

a. Forecast the terminal period values for Sales, NOPAT, and NOA, assuming a 2% terminal period growth rate.

Required

a. Compute net operating assets (NOA) and net nonoperating obligations (NNO) for 2019. The company's NNO is negative because cash exceeds debt.

b. Compute net operating profit after tax (NOPAT) for 2019 assuming a federal and state statutory tax rate of 22%.

c. Use the parsimonious forecast method, as shown in the Analysis Insight box on page 14-5 and in **Exhibit 14.2**, to forecast sales, NOPAT, and NOA for 2020 through 2023 using the following assumptions.

Sales growth	8%
Net operating profit margin (NOPM)	2019 ratios rounded to three decimal places
Net operating asset turnover (NOAT), year-end	2019 ratios rounded to three decimal places

Forecast the terminal period value assuming a 2% terminal period growth and using the NOPM and NOAT assumptions above.

d. Estimate the value of a share of Nike common stock using the residual operating income (ROPI) model as of May 31, 2019. ; assume a discount rate (WACC) of 6.8% and common shares outstanding of 1,682 million. For simplicity, prepare your forecasts in $ millions.

e. Nike's stock closed at $86.70 on July 23, 2019, the date the Form 10-K was filed with the SEC. How does your valuation estimate compare with this closing price? What do you believe are some reasons for the difference? What investment decision is suggested from your results?

P14-29. Estimating Share Value Using the ROPI Model LO2, 3

COLGATE-PALMOLIVE COMPANY (CL)

Homework MBC

Following are forecasted sales, NOPAT, and NOA for **Colgate-Palmolive Company** for 2019 through 2022.

Colgate Palmolive (CL) $ millions	Reported 2018	Forecast Horizon Period 2019	2020	2021	2022
Sales	$15,544	$16,010	$16,491	$16,985	$17,495
NOPAT	2,737	2,818	2,902	2,989	3,079
NOA	5,837	6,012	6,193	6,378	6,570

Required

a. Forecast the terminal period values for Sales, NOPAT, and NOA, assuming a 1% terminal period growth rate.

b. Estimate the value of a share of Colgate-Palmolive common stock using the residual operating income (ROPI) model. Assume a discount rate (WACC) of 5.7%, common shares outstanding of 862.9 million, net nonoperating obligations (NNO) of $5,640 million, and noncontrolling interest (NCI) from the balance sheet of $299 million.

c. Colgate-Palmolive stock closed at $66.70 on February 21, 2019, the date the Form 10-K was filed with the SEC. How does your valuation estimate compare with this closing price? What do you believe are some reasons for the difference? What investment decision is suggested from your results?

d. The forecasts assumed a terminal growth rate of 1%. If the terminal growth rate had been 2%, what would the estimated stock price have been?

e. What would WACC need to be to warrant the actual stock price on February 21, 2019?

ANALYSIS DISCUSSION POINT

D14-30. Management Application: Operating Improvement versus Financial Engineering LO4

Assume that you are the CEO of a small publicly traded company. The operating performance of your company has fallen below market expectations, which is reflected in a depressed stock price. At your direction, your CFO provides you with the following recommendations that are designed to increase your company's return on net operating assets (RNOA) and your operating cash flows, both of which will, presumably, result in improved financial performance and an increased stock price.

1. To improve net cash flow from operating activities, the CFO recommends that your company reduce inventories (raw material, work-in-progress, and finished goods) and receivables (through selective credit granting and increased emphasis on collection of past due accounts).
2. The CFO recommends that your company lengthen the time taken to pay accounts payable (lean on the trade) to increase net cash flows from operating activities.

EXHIBIT 15.4 Data for Valuation Using Income Statement Multiples

In millions	Dollar General	Dollar Tree	Big Lots
From market: Company assumed value	—	$27,035	$2,256
From market: Equity assumed value	—	$23,020	$1,254
From financial statements: Net operating profit after tax (NOPAT)	$1,668	$ 1,428*	$ 165
From financial statements: Net income	$1,589	$ 1,136*	$ 157
Common shares outstanding	268.7 shares	238.1 shares	40.0 shares

* To reflect persistent numbers, as appropriate for valuation, we adjust net income and NOPAT for an after-tax goodwill impairment of $2,727 million.

Valuation Using a Net Operating Profit After Tax (NOPAT) Multiple

We use the data from **Exhibit 15.4** to compute a market multiple based on net operating profit after tax (NOPAT) to estimate the value of Dollar General. We begin by determining the NOPAT market multiple for both Dollar Tree and Big Lots, which is computed as company assumed value divided by NOPAT. **Exhibit 15.5** reports the results of this computation. Big Lots' NOPAT market multiple is 13.67 computed as $2,256 million/$165 million. Dollar Tree's NOPAT multiple is 18.93 computed as $27,035 million/$1,428 million. We use the average of the two multiples, 16.30, as the NOPAT multiple to estimate the company intrinsic value of Dollar General as follows ($ in millions).

EXHIBIT 15.5 Estimating Intrinsic Value Using a Net Operating Profit after Tax Multiple

In millions, except per share amounts	Dollar General	Dollar Tree	Big Lots
Company assumed value	—	$27,035	$2,256
Net operating profit after tax (NOPAT)	$ 1,668	$ 1,428	$ 165
Common shares outstanding	268.7 shares	238.1 shares	40.0 shares
NOPAT market multiple	16.30	18.93	13.67
Company intrinsic value	$27,188		
Equity intrinsic value	$24,559		
Equity intrinsic value per share	$ 91.40		

Company intrinsic value = Net operating profit after tax × NOPAT market multiple

$27,188 = $1,668 × 16.3

To obtain Dollar General's equity intrinsic value we subtract from the company intrinsic value, the net nonoperating obligations (in **Exhibit 15.1**) including the fair value of any preferred stock outstanding ($0 for Dollar General). We then divide the equity intrinsic value by shares outstanding to get the per share intrinsic value of its common equity.

Equity intrinsic value = Company intrinsic value – Net nonoperating obligations

$24,559 = $27,188 – $2,629

Then,

$$\text{Equity intrinsic value per share} = \frac{\text{Equity intrinsic value}}{\text{Common shares outstanding}}$$

$$\$91.40 = \frac{\$24,559}{268.7 \text{ shares}}$$

This estimate suggests that Dollar General was overvalued with respect to its $115.04 closing price at its fiscal year-end (and vis-à-vis its $117.47 price on the filing date).

Valuation Using a Net Income (NI) Multiple

We can repeat the analysis above using a net income multiple as the basis for valuing the company. This approach produces the intrinsic value of the equity, not of the entire company. This method relies on different data and, as such, we will not get the same intrinsic values computed in the prior section.

EXHIBIT 15.6 Estimating Intrinsic Value Using a Net Income Multiple

In millions, except per share amounts	Dollar General	Dollar Tree	Big Lots
Equity assumed value	—	$23,020	$1,254
Net income available to common shareholders	$ 1,589	$ 1,136	$ 157
Common shares outstanding	268.7 shares	238.1 shares	40.0 shares
NI market multiple	14.13	20.26	7.99
Equity intrinsic value	$22,453		
Equity intrinsic value per share	$ 83.56		

We begin by computing the net income market multiple for both Dollar Tree and Big Lots, which is computed as equity assumed value divided by net income available to common shareholders. **Exhibit 15.6** shows the results of this computation. Big Lots' net income market multiple is 7.99, computed as $1,254 million/$157 million. Dollar Tree's NI multiple is 20.26 computed as $23,020 million/$1,136 million. We use the average of the two multiples, 14.13, as the NI market multiple to estimate the equity intrinsic value of Dollar General as follows:

$$\text{Equity intrinsic value} = \text{Net income} \times \text{NI market multiple}$$

$$\$22{,}453 = \$1{,}589 \times 14.1$$

To obtain Dollar General's equity intrinsic value per share we divide by shares outstanding as follows:

$$\text{Equity intrinsic value per share} = \frac{\text{Equity intrinsic value}}{\text{Common shares outstanding}}$$

$$\$83.56 = \frac{\$22{,}453}{268.7 \text{ shares}}$$

The $83.56 stock price estimate suggests that Dollar General stock was markedly overvalued based on a $115.04 closing price at its fiscal year-end (and vis-à-vis its $117.47 price on the filing date).

It is again useful for us to compare estimates of Dollar General's intrinsic value of equity using the NOPAT multiple vis-à-vis the NI multiple. Using the NOPAT multiple, we estimated the intrinsic value of a share of Dollar General to be $91.40, while the NI market multiple gave an estimate of $83.56. How do we assess the quality of the different estimates? The estimate using the NOPAT market multiple is likely better (for the same reasons that the NOA multiple was superior to the BV multiple for balance sheet methods). That is, we did not select comparables with similar capital structures. When selecting comparables, we should select firms that are similar on profitability, growth, and risk. Although the comparables do control for operating risk, by choosing companies in the same industry, we did not control for financial risk. Consequently, because financial risk affects the equity value, but not the company value, we prefer the NOPAT multiple because they are unaffected by a firm's choice of capital structure. But, when using net income multiples to estimate intrinsic value, it is important to select comparables with similar capital structures.

The estimates of equity value we have computed for Dollar General thus far using multiples highlight the first issue we raised about the use of this method. The two methods based on net operating assets and book value market multiples yielded more similar values of $71.49 and $70.33 per share respectively. The two methods based on NOPAT and net income market multiples yielded less similar values of $91.40 and $83.56 per share respectively. Given the wide disparity among the balance sheet and the income statement based estimates, we are faced with the question: which performance measure is the right one? Again, this question has no answer. Often