PRACTICE PROBLEMS

The following information relates to Questions 1–5

Cinnamon, Inc. is a diversified manufacturing company headquartered in the United Kingdom. It complies with IFRS. In 2017, Cinnamon held a 19 percent passive equity ownership interest in Cambridge Processing. In December 2017, Cinnamon announced that it would be increasing its ownership interest to 50 percent effective 1 January 2018 through a cash purchase. Cinnamon and Cambridge have no intercompany transactions.

Peter Lubbock, an analyst following both Cinnamon and Cambridge, is curious how the increased stake will affect Cinnamon's consolidated financial statements. He asks Cinnamon's CFO how the company will account for the investment, and is told that the decision has not yet been made. Lubbock decides to use his existing forecasts for both companies' financial statements to compare the outcomes of alternative accounting treatments.

Lubbock assembles abbreviated financial statement data for Cinnamon (Exhibit 1) and Cambridge (Exhibit 2) for this purpose.

Exhibit 1 Selected Financial Statement Information for Cinnamon, Inc. (£ Millions)

Year ending 31 December	2017	2018*
Revenue	1,400	1,575
Operating income	126	142
Net income	62	69
31 December	**2017**	**2018***
Total assets	1,170	1,317
Shareholders' equity	616	685

* Estimates made prior to announcement of increased stake in Cambridge.

Exhibit 2 Selected Financial Statement Information for Cambridge Processing (£ Millions)

Year ending 31 December	2017	2018*
Revenue	1,000	1,100
Operating income	80	88
Net income	40	44
Dividends paid	20	22
31 December	**2017**	**2018***

(continued)

Exhibit 2 (Continued)

Year ending 31 December	2017	2018*
Total assets	800	836
Shareholders' equity	440	462

* Estimates made prior to announcement of increased stake by Cinnamon.

1 In 2018, if Cinnamon is deemed to have control over Cambridge, it will *most likely* account for its investment in Cambridge using:
   - **A** the equity method.
   - **B** the acquisition method.
   - **C** proportionate consolidation.

2 At 31 December 2018, Cinnamon's total shareholders' equity on its balance sheet would *most likely* be:
   - **A** highest if Cinnamon is deemed to have control of Cambridge.
   - **B** independent of the accounting method used for the investment in Cambridge.
   - **C** highest if Cinnamon is deemed to have significant influence over Cambridge.

3 In 2018, Cinnamon's net profit margin would be *highest* if:
   - **A** it is deemed to have control of Cambridge.
   - **B** it had not increased its stake in Cambridge.
   - **C** it is deemed to have significant influence over Cambridge.

4 At 31 December 2018, assuming control and recognition of goodwill, Cinnamon's reported debt to equity ratio will *most likely* be highest if it accounts for its investment in Cambridge using the:
   - **A** equity method.
   - **B** full goodwill method.
   - **C** partial goodwill method.

5 Compared to Cinnamon's operating margin in 2017, if it is deemed to have control of Cambridge, its operating margin in 2018 will *most likely* be:
   - **A** lower.
   - **B** higher.
   - **C** the same.

The following information relates to Questions 6–10

Zimt, AG is a consumer products manufacturer headquartered in Austria. It complies with IFRS. In 2017, Zimt held a 10 percent passive stake in Oxbow Limited. In December 2017, Zimt announced that it would be increasing its ownership to 50 percent effective 1 January 2018.

Franz Gelblum, an analyst following both Zimt and Oxbow, is curious how the increased stake will affect Zimt's consolidated financial statements. Because Gelblum is uncertain how the company will account for the increased stake, he uses his existing forecasts for both companies' financial statements to compare various alternative outcomes.

Gelblum gathers abbreviated financial statement data for Zimt (Exhibit 1) and Oxbow (Exhibit 2) for this purpose.

Exhibit 1 Selected Financial Statement Estimates for Zimt AG (€ Millions)

Year ending 31 December	2017	2018*
Revenue	1,500	1,700
Operating income	135	153
Net income	66	75
31 December	**2017**	**2018***
Total assets	1,254	1,421
Shareholders' equity	660	735

* Estimates made prior to announcement of increased stake in Oxbow.

Exhibit 2 Selected Financial Statement Estimates for Oxbow Limited (€ Millions)

Year ending 31 December	2017	2018*
Revenue	1,200	1,350
Operating income	120	135
Net income	60	68
Dividends paid	20	22
31 December	**2017**	**2018***
Total assets	1,200	1,283
Shareholders' equity	660	706

* Estimates made prior to announcement of increased stake by Zimt.

6 At 31 December 2018, Zimt's total assets balance would *most likely* be:

A highest if Zimt is deemed to have control of Oxbow.

B highest if Zimt is deemed to have significant influence over Oxbow.

C unaffected by the accounting method used for the investment in Oxbow.

7 Based on Gelblum's estimates, if Zimt is deemed to have significant influence over Oxbow, its 2018 net income (in € millions) would be *closest* to:

A €75.

B €109.

C €143.

8 Based on Gelblum's estimates, if Zimt is deemed to have joint control of Oxbow, and Zimt uses the proportionate consolidation method, its 31 December 2018 total liabilities (in € millions) will *most likely* be *closest* to:

A €686.

B €975.

C €1,263.

9 Based on Gelblum's estimates, if Zimt is deemed to have control over Oxbow, its 2018 consolidated sales (in € millions) will be *closest* to:

A €1,700.

B €2,375.

C €3,050.

10 Based on Gelblum's estimates, Zimt's net income in 2018 will *most likely* be:

A highest if Zimt is deemed to have control of Oxbow.

B highest if Zimt is deemed to have significant influence over Oxbow.

C independent of the accounting method used for the investment in Oxbow.

The following information relates to Questions 11–16

Burton Howard, CFA, is an equity analyst with Maplewood Securities. Howard is preparing a research report on Confabulated Materials, SA, a publicly traded company based in France that complies with IFRS 9. As part of his analysis, Howard has assembled data gathered from the financial statement footnotes of Confabulated's 2018 Annual Report and from discussions with company management. Howard is concerned about the effect of this information on Confabulated's future earnings.

Information about Confabulated's investment portfolio for the years ended 31 December 2017 and 2018 is presented in Exhibit 1. As part of his research, Howard is considering the possible effect on reported income of Confabulated's accounting classification for fixed income investments.

Exhibit 1 Confabulated's Investment Portfolio (€ Thousands)

Characteristic	Bugle AG	Cathay Corp	Dumas SA
Classification	FVPL	FVOCI	Amortized cost
Cost*	€25,000	€40,000	€50,000
Market value, 31 December 2017	29,000	38,000	54,000
Market value, 31 December 2018	28,000	37,000	55,000

* All securities were acquired at par value.

In addition, Confabulated's annual report discusses a transaction under which receivables were securitized through a special purpose entity (SPE) for Confabulated's benefit.

11 The balance sheet carrying value of Confabulated's investment portfolio (in € thousands) at 31 December 2018 is *closest* to:

A 112,000.

B 115,000.

C 118,000.

12 The balance sheet carrying value of Confabulated's investment portfolio at 31 December 2018 would have been higher if which of the securities had been reclassified as FVPL security?

A Bugle.

B Cathay.

C Dumas.

13 Compared to Confabulated's reported interest income in 2018, if Dumas had been classified as FVPL, the interest income would have been:

A lower.

B the same.

C higher.

14 Compared to Confabulated's reported earnings before taxes in 2018, if Dumas had been classified as a FVPL security, the earnings before taxes (in € thousands) would have been:

A the same.

B €1,000 lower.

C €3,000 higher.

15 Confabulated's reported interest income would be lower if the cost was the same but the par value (in € thousands) of:

A Bugle was €28,000.

B Cathay was €37,000.

C Dumas was €55,000.

16 Confabulated's special purpose entity is *most likely* to be:

A held off-balance sheet.

B consolidated on Confabulated's financial statements.

C consolidated on Confabulated's financial statements only if it is a "qualifying SPE."

The following information relates to Questions 17–22

BetterCare Hospitals, Inc. operates a chain of hospitals throughout the United States. The company has been expanding by acquiring local hospitals. Its largest acquisition, that of Statewide Medical, was made in 2001 under the pooling of interests method. BetterCare complies with US GAAP.

BetterCare is currently forming a 50/50 joint venture with Supreme Healthcare under which the companies will share control of several hospitals. BetterCare plans to use the equity method to account for the joint venture. Supreme Healthcare complies with IFRS and will use the proportionate consolidation method to account for the joint venture.

Erik Ohalin is an equity analyst who covers both companies. He has estimated the joint venture's financial information for 2018 in order to prepare his estimates of each company's earnings and financial performance. This information is presented in Exhibit 1.

Exhibit 1 Selected Financial Statement Forecasts for Joint Venture ($ Millions)

Year ending 31 December	2018
Revenue	1,430
Operating income	128
Net income	62
31 December	**2018**
Total assets	1,500
Shareholders' equity	740

Supreme Healthcare recently announced it had formed a special purpose entity through which it plans to sell up to $100 million of its accounts receivable. Supreme Healthcare has no voting interest in the SPE, but it is expected to absorb any losses that it may incur. Ohalin wants to estimate the impact this will have on Supreme Healthcare's consolidated financial statements.

17 Compared to accounting principles currently in use, the pooling method BetterCare used for its Statewide Medical acquisition has *most likely* caused its reported:

A revenue to be higher.

B total equity to be lower.

C total assets to be higher.

18 Based on Ohalin's estimates, the amount of joint venture revenue (in $ millions) included on BetterCare's consolidated 2018 financial statements should be *closest* to:

A $0.

B $715.

C $1,430.

19 Based on Ohalin's estimates, the amount of joint venture net income included on the consolidated financial statements of each venturer will *most likely* be:

A higher for BetterCare.

B higher for Supreme Healthcare.

C the same for both BetterCare and Supreme Healthcare.

20 Based on Ohalin's estimates, the amount of the joint venture's 31 December 2018 total assets (in $ millions) that will be included on Supreme Healthcare's consolidated financial statements will be *closest* to:

A $0.

B $750.

C $1,500.

21 Based on Ohalin's estimates, the amount of joint venture shareholders' equity at 31 December 2018 included on the consolidated financial statements of each venturer will *most likely* be:

A higher for BetterCare.

B higher for Supreme Healthcare.

C the same for both BetterCare and Supreme Healthcare.

22 If Supreme Healthcare sells its receivables to the SPE, its consolidated financial results will *most likely* show:

A a higher revenue for 2018.

B the same cash balance at 31 December 2018.

C the same accounts receivable balance at 31 December 2018.

The following information relates to Questions 23–28

Percy Byron, CFA, is an equity analyst with a UK-based investment firm. One firm Byron follows is NinMount PLC, a UK-based company. On 31 December 2008, NinMount paid £320 million to purchase a 50 percent stake in Boswell Company. The excess of the purchase price over the fair value of Boswell's net assets was attributable to previously unrecorded licenses. These licenses were estimated to have an economic life of six years. The fair value of Boswell's assets and liabilities other than licenses was equal to their recorded book values. NinMount and Boswell both use the pound sterling as their reporting currency and prepare their financial statements in accordance with IFRS.

Byron is concerned whether the investment should affect his "buy" rating on NinMount common stock. He knows NinMount could choose one of several accounting methods to report the results of its investment, but NinMount has not announced which method it will use. Byron forecasts that both companies' 2019 financial results (excluding any merger accounting adjustments) will be identical to those of 2018.

NinMount's and Boswell's condensed income statements for the year ended 31 December 2018, and condensed balance sheets at 31 December 2018, are presented in Exhibits 1 and 2, respectively.

Exhibit 1 NinMount PLC and Boswell Company Income Statements for the Year Ended 31 December 2018 (£ millions)

	NinMount	Boswell
Net sales	950	510
Cost of goods sold	(495)	(305)
Selling expenses	(50)	(15)
Administrative expenses	(136)	(49)
Depreciation & amortization expense	(102)	(92)
Interest expense	(42)	(32)
Income before taxes	125	17
Income tax expense	(50)	(7)
Net income	75	10

Exhibit 2 NinMount PLC and Boswell Company Balance Sheets at 31 December 2018 (£ millions)

	NinMount	Boswell
Cash	50	20
Receivables—net	70	45
Inventory	130	75
Total current assets	250	140
Property, plant, & equipment—net	1,570	930
Investment in Boswell	320	—
Total assets	2,140	1,070
Current liabilities	110	90
Long-term debt	600	400
Total liabilities	710	490
Common stock	850	535
Retained earnings	580	45
Total equity	1,430	580
Total liabilities and equity	2,140	1,070

Note: Balance sheets reflect the purchase price paid by NinMount, but do not yet consider the impact of the accounting method choice.

23 NinMount's current ratio on 31 December 2018 *most likely* will be highest if the results of the acquisition are reported using:

A the equity method.

B consolidation with full goodwill.

C consolidation with partial goodwill.

24 NinMount's long-term debt to equity ratio on 31 December 2018 *most likely* will be lowest if the results of the acquisition are reported using:

A the equity method.

B consolidation with full goodwill.

C consolidation with partial goodwill.

25 Based on Byron's forecast, if NinMount deems it has acquired control of Boswell, NinMount's consolidated 2019 depreciation and amortization expense (in £ millions) will be *closest* to:

A 102.

B 148.

C 204.

26 Based on Byron's forecast, NinMount's net profit margin for 2019 *most likely* will be highest if the results of the acquisition are reported using:

A the equity method.

B consolidation with full goodwill.

C consolidation with partial goodwill.

27 Based on Byron's forecast, NinMount's 2019 return on beginning equity *most likely* will be the same under:

A either of the consolidations, but different under the equity method.

B the equity method, consolidation with full goodwill, and consolidation with partial goodwill.

C none of the equity method, consolidation with full goodwill, or consolidation with partial goodwill.

28 Based on Byron's forecast, NinMount's 2019 total asset turnover ratio on beginning assets under the equity method is *most likely*:

A lower than if the results are reported using consolidation.

B the same as if the results are reported using consolidation.

C higher than if the results are reported using consolidation.

The following information relates to questions 29–36

John Thronen is an analyst in the research department of an international securities firm. He is preparing a research report on Topmaker, Inc., a publicly traded company that complies with IFRS.

On 1 January 2018, Topmaker invested $11 million in Blanca Co. debt securities (with a 5.0% stated coupon on par value, and interest payable each 31 December). The par value of the securities is $10 million, and the market interest rate in effect when the bonds were purchased was 4.0%. Topmaker designates the investment as amortized cost. As of 31 December 2018, the fair value of the securities is $12 million.

Blanca Co. wants to raise $40 million in capital by borrowing against its financial receivables. Blanca plans to create a special-purpose entity (SPE), invest $10 million in the SPE, have the SPE borrow $40 million, and then use the funds to purchase $50 million of receivables from Blanca. Blanca meets the definition of control and plans to consolidate the SPE. Blanca's balance sheet is presented in Exhibit 1.

Exhibit 1 Blanca Co. Balance Sheet at 31 December 2018 ($ millions)

Cash	20	Current liabilities	25
Accounts receivable	50	Noncurrent liabilities	30
Other assets	30	Shareholders' equity	45
Total assets	**100**	**Total liabilities and equity**	**100**

Also on 1 January 2018, Topmaker acquired a 15% equity interest with voting power in Rainer Co. for $300 million. Topmaker has representation on Rainer's board of directors and participates in Rainer's policymaking process. Thronen believes that Topmaker underestimated the goodwill and balance sheet value of its investment account in Rainer. To estimate these figures, Thronen gathers selected financial information for Rainer as of 31 December 2018 in Exhibit 2. The plant and equipment are depreciated on a straight-line basis and have 10 years of remaining life.

Exhibit 2 Selected Financial Data for Rainer Co., Year Ending 31 December 2018 ($ millions)

	Book Value	Fair Value
Revenue	1,740	N/A
Net income	360	N/A
Dividends paid	220	N/A
Plant and equipment	2,900	3,160
Total assets	3,170	3,430
Liabilities	1,830	1,830
Net assets	1,340	1,600

During 2018, Rainer sold $60 million in inventory to Topmaker for $80 million. In 2019, Topmaker resold the entire inventory to a third party.

Thronen is concerned about possible goodwill impairment resulting from expected changes in the industry effective at the end of 2019. He calculates the impairment loss based on the projected consolidated balance sheet data shown in Exhibit 3, assuming that the cash-generating unit and reporting unit of Topmaker are the same.

Exhibit 3 Selected Financial Data for Topmaker, Inc., Estimated Year Ending 31 December 2019 ($ millions)

Carrying value of cash-generating unit/reporting unit	15,200
Recoverable amount of cash-generating unit/reporting unit	14,900
Fair value of reporting unit	14,800
Identifiable net assets	14,400
Goodwill	520

Finally, Topmaker announces its plan to increase its ownership interest in Rainer to 80% effective 1 January 2020. It will account for the investment in Rainer using the partial goodwill method. Thronen estimates that the fair market value of the Rainer's shares on the expected date of exchange is $2 billion, with the identifiable assets valued at $1.5 billion.

29 The carrying value reported on the balance sheet of Topmaker's investment in Blanca's debt securities at 31 December 2018 is:

A $10,940,000.

B $11,000,000.

C $12,000,000.

30 Based on Exhibit 1 and Blanca's plans to borrow against its financial receivables, the consolidated balance sheet will show total assets of:

A $50,000,000.

B $140,000,000.

C $150,000,000.

31 Topmaker's influence on Rainer's business activities can be *best* described as:

A significant.

B controlling.

C shared control.

32 Based on Exhibit 2, the goodwill included in Topmaker's purchase of Rainer is:

A $21 million.

B $60 million.

C $99 million.

33 Based on Exhibit 2, the carrying value of Topmaker's investment in Rainer at the end of 2018 is *closest* to:

A $282 million.

B $317 million.

C $321 million.

34 Which of the following statements regarding the sale of inventory by Rainer to Topmaker is correct?

A The sale represents a downstream sale.

B Topmaker's unrealized profits are initially deferred.

C Profits will decline on Topmaker's 2018 income statement.

35 Based on Exhibit 3, Topmaker's impairment loss under IFRS is:

A $120 million.

B $300 million.

C $400 million.

36 The value of the minority interest at the acquisition date of 1 January 2020 is:

A $300 million.

B $400 million.

C $500 million.

SOLUTIONS

1 B is correct. If Cinnamon is deemed to have control over Cambridge, it would use the acquisition method to account for Cambridge and prepare consolidated financial statements. Proportionate consolidation is used for joint ventures; the equity method is used for some joint ventures and when there is significant influence but not control.

2 A is correct. If Cinnamon is deemed to have control over Cambridge, consolidated financial statements would be prepared and Cinnamon's total shareholders' equity would increase and include the amount of the noncontrolling interest. If Cinnamon is deemed to have significant influence, the equity method would be used and there would be no change in the total shareholders' equity of Cinnamon.

3 C is correct. If Cinnamon is deemed to have significant influence, it would report half of Cambridge's net income as a line item on its income statement, but no additional revenue is shown. Its profit margin is thus higher than if it consolidated Cambridge's results, which would impact revenue and income, or if it only reported 19 percent of Cambridge's dividends (no change in ownership).

4 C is correct. The full and partial goodwill method will have the same amount of debt; however, shareholders' equity will be higher under full goodwill (and the debt to equity ratio will be lower). Therefore, the debt to equity will be higher under partial goodwill. If control is assumed, Cinnamon cannot use the equity method.

5 A is correct. Cambridge has a lower operating margin (88/1,100 = 8.0%) than Cinnamon (142/1,575 = 9.0%). If Cambridge's results are consolidated with Cinnamon's, the consolidated operating margin will reflect that of the combined company, or 230/2,675 = 8.6%.

6 A is correct. When a company is deemed to have control of another entity, it records all of the other entity's assets on its own consolidated balance sheet.

7 B is correct. If Zimt is deemed to have significant influence, it would use the equity method to record its ownership. Under the equity method, Zimt's share of Oxbow's net income would be recorded as a single line item. Net income of Zimt = 75 + 0.5(68) = 109.

8 B is correct. Under the proportionate consolidation method, Zimt's balance sheet would show its own total liabilities of €1,421 − 735 = €686 plus half of Oxbow's liabilities of €1,283 − 706 = €577. €686 + (0.5 × 577) = €974.5.

9 C is correct. Under the assumption of control, Zimt would record its own sales plus 100 percent of Oxbow's. €1,700 + 1,350 = €3,050.

10 C is correct. Net income is not affected by the accounting method used to account for active investments in other companies. "One-line consolidation" and consolidation result in the same impact on net income; it is the disclosure that differs.

11 B is correct. Under IFRS 9, FVPL and FVOCI securities are carried at market value, whereas amortized cost securities are carried at historical cost. €28,000 + 37,000 + 50,000 = €115,000.

12 C is correct. If Dumas had been classified as a FVPL security, its carrying value would have been the €55,000 fair value rather than the €50,000 historical cost.

13 B is correct. The coupon payment is recorded as interest income whether securities are amortized cost or FVPL. No adjustment is required for amortization since the bonds were bought at par.

14 C is correct. Unrealized gains and losses are included in income when securities are classified as FVPL. During 2018 there was an unrealized gain of €1,000.

15 B is correct. The difference between historical cost and par value must be amortized under the effective interest method. If the par value is less than the initial cost (stated interest rate is greater than the effective rate), the interest income would be lower than the interest received because of amortization of the premium.

16 B is correct. Under IFRS, SPEs must be consolidated if they are conducted for the benefit of the sponsoring entity. Further, under IFRS, SPEs cannot be classified as qualifying. Under US GAAP, qualifying SPEs (a classification which has been eliminated) do not have to be consolidated.

17 B is correct. Statewide Medical was accounted for under the pooling of interest method, which causes all of Statewide's assets and liabilities to be reported at historical book value. The excess of assets over liabilities generally is lower using the historical book value method than using the fair value method (this latter method must be used under currently required acquisition accounting). It would have no effect on revenue.

18 A is correct. Under the equity method, BetterCare would record its interest in the joint venture's net profit as a single line item, but would show no line-by-line contribution to revenues or expenses.

19 C is correct. Net income will be the same under the equity method and proportional consolidation. However, sales, cost of sales, and expenses are different because under the equity method the net effect of sales, cost of sales, and expenses is reflected in a single line.

20 B is correct. Under the proportionate consolidation method, Supreme Healthcare's consolidated financial statements will include its 50 percent share of the joint venture's total assets.

21 C is correct. The choice of equity method or proportionate consolidation does not affect reported shareholders' equity.

22 C is correct. Although Supreme Healthcare has no voting interest in the SPE, it is expected to absorb any losses that the SPE incurs. Therefore, Supreme Healthcare "in substance" controls the SPE and would consolidate it. On the consolidated balance sheet, the accounts receivable balance will be the same since the sale to the SPE will be reversed upon consolidation.

23 A is correct. The current ratio using the equity method of accounting is Current assets/Current liabilities = £250/£110 = 2.27. Using consolidation (either full or partial goodwill), the current ratio = £390/£200 = 1.95. Therefore, the current ratio is highest using the equity method.

24 A is correct. Using the equity method, long-term debt to equity = £600/£1,430 = 0.42. Using the consolidation method, long-term debt to equity = long-term debt/equity = £1,000/£1,750 = 0.57. Equity includes the £320 non-controlling interest under either consolidation. It does not matter if the full or partial goodwill method is used since there is no goodwill.

25 C is correct. The projected depreciation and amortization expense will include NinMount's reported depreciation and amortization (£102), Boswell's reported depreciation and amortization (£92), and amortization of Boswell's licenses (£10 million). The licenses have a fair value of £60 million. £320 purchase price indicates a fair value of £640 for the net assets of Boswell. The net book (fair)

value of the recorded assets is £580. The previously unrecorded licenses have a fair value of £60 million. The licenses have a remaining life of six years; the amortization adjustment for 2018 will be £10 million. Therefore, Projected depreciation and amortization = £102 + £92 + £10 = £204 million.

26 A is correct. Net income is the same using any of the methods but under the equity method, net sales are only £950; Boswell's sales are not included in the net sales figure. Therefore, net profit margin is highest using the equity method.

27 A is correct. Net income is the same using any of the choices. Beginning equity under the equity method is £1,430. Under either of the consolidations, beginning equity is £1,750 since it includes the £320 noncontrolling interest. Return on beginning equity is highest under the equity method.

28 A is correct. Using the equity method, Total asset turnover = Net sales/Beginning total assets = £950/£2,140 = 0.444. Total asset turnover on beginning assets using consolidation = £1,460/£2,950 = 0.495. Under consolidation, Assets = £2,140 – 320 + 1,070 + 60 = £2,950. Therefore, total asset turnover is lowest using the equity method.

29 A is correct. Because the investment is designated as amortized cost, it is reported at the end of Year 1 using the effective interest method, whereby the amortization is calculated as the difference between the amount received and the interest income.

The amount received each period ($500,000) is based on the par value of $10,000,000 and the stated 5% coupon rate. The interest income of $440,000 is calculated by multiplying the 4.0% market rate by the initial fair value or amortized cost at the beginning of the period of $11,000,000. The difference between the $500,000 received and the interest income of $440,000 is the amortization amount, which is equal to $60,000.

The initial fair value of $11,000,000 is reduced by amortization, resulting in an amortized cost at the end of Year 1 of $10,940,000. This amount represents the carrying value reported on the balance sheet if the security is classified as amortized cost.

30 B is correct. The SPE balance sheet will show accounts receivable of $50,000,000, long-term debt of $40,000,000, and equity of $10,000,000. When the balance sheets are consolidated, Blanca's cash will increase by $40,000,000 resulting from the sale of the receivables to the SPE (net of its $10,000,000 cash investment in the SPE). Long-term debt will also increase by $40,000,000. The consolidated balance sheet will show total assets of $140,000,000 and look exactly the same as if Blanca borrowed directly against the receivables.

SPE Balance Sheet

		Long-term debt	$40,000,000
Accounts receivable	$50,000,000	Equity	$10,000,000
Total assets	**$50,000,000**	**Total liabilities and equity**	**$50,000,000**

Blanca Co. Consolidated Balance Sheet			
Cash	$60,000,000	Current liabilities	$25,000,000
Accounts receivable	$50,000,000	Noncurrent liabilities	$70,000,000
Other assets	$30,000,000	Shareholder's equity	$45,000,000
Total assets	**$140,000,000**	**Total liabilities and equity**	**$140,000,000**

31 A is correct. Topmaker's representation on the Rainer board of directors and participation in Rainer's policymaking process indicate significant influence. Significant influence is generally assumed when the percentage of ownership interest is between 20% and 50%. Topmaker's representation on the board of directors and participation in the policymaking process, however, demonstrate significant influence despite its 15% equity interest.

32 B is correct. The goodwill in Topmaker's $300 million purchase of Rainer's common shares using the equity method is $60 million and is calculated as follows:

	$ Millions
Purchase price	$300
Less: acquired equity in book value of Rainer's net assets (15% of $1,340 million)	201
Excess purchase price	99
Less: attributable to difference between fair and book value of net identifiable assets (plant and equipment) (15% of $260 million)	39
Goodwill	$60

33 B is correct. The carrying value of Topmaker's investment in Rainer using the equity method is $317 million and is calculated as follows:

	$ Millions
Purchase price	$300
Plus: Topmaker's share of Rainer's net income (15% of $360 million)	54
Less: Dividends received (15% of $220 million)	33
Less: Amortization of excess purchase price attributable to plant and equipment (15% of $260 million) divided by 10 years	3.9
Investment in associate (Rainer) at the end of 2018	$317.1

34 B is correct. The inventory sale between Rainer (associate) and Topmaker (parent) is an upstream transaction. Under the equity method, the deferral process for unrealized profits is identical under upstream and downstream inventory transfers. The investor company's (Topmaker's) share of unrealized profits is deferred by reducing the recorded amount of equity income on the investor's income statement. In later periods, when the inventory is sold to third parties, the deferred profits are added to equity income.

35 B is correct. The goodwill impairment loss under IFRS is $300 million and is calculated as the difference between the recoverable amount of a cash-generating unit and the carrying value of the cash-generating unit. Topmaker's recoverable amount of the cash-generating unit is $14,900 million, which is less than the carrying value of the cash-generating unit ($15,200 million). The result is an impairment loss of $300 million ($14,900 – $15,200).

A is incorrect because $120 million results from incorrectly calculating the impairment loss under US GAAP rather than under IFRS. Under US GAAP, the impairment loss is calculated using the following two-step approach:

Step 1 *Determination of Impairment Loss*

Because the fair value of $14,800 million is below the carrying value of $15,200 million, a potential impairment loss has been identified.

Step 2 *Measurement of the Impairment Loss*

	$ Millions
Fair value of reporting unit	$14,800
Less: identifiable net assets	$14,400
Implied goodwill	$400
Current carrying value of goodwill	$520
Less: implied goodwill	$400
Impairment loss	$120

36 A is correct. According to IFRS, under the partial goodwill method, the value of the minority interest is equal to the non-controlling interest's proportionate share of the subsidiary's identifiable net assets. Rainer's proportionate share is 20%, and the value of its identifiable assets on the acquisition date is $1.5 billion. The value of the minority interest is $300 million (20% × $1.5 billion).

PRACTICE PROBLEMS

The following information relates to Questions 1–7

Kensington plc, a hypothetical company based in the United Kingdom, offers its employees a defined benefit pension plan. Kensington complies with IFRS. The assumed discount rate that the company used in estimating the present value of its pension obligations was 5.48 percent. Information on Kensington's retirement plans is presented in Exhibit 1.

Exhibit 1 Kensington plc Defined Benefit Pension Plan

(in millions)	2010
Components of periodic benefit cost	
Service cost	£228
Net interest (income) expense	273
Remeasurements	–18
Periodic pension cost	£483
Change in benefit obligation	
Benefit obligations at beginning of year	£28,416
Service cost	228
Interest cost	1,557
Benefits paid	–1,322
Actuarial gain or loss	0
Benefit obligations at end of year	£28,879
Change in plan assets	
Fair value of plan assets at beginning of year	£23,432
Actual return on plan assets	1,302
Employer contributions	693
Benefits paid	–1,322
Fair value of plan assets at end of year	£24,105
Funded status at beginning of year	–£4,984
Funded status at end of year	–£4,774

1 At year-end 2010, £28,879 million represents:

A the funded status of the plan.

B the defined benefit obligation.

C the fair value of the plan's assets.

2 For the year 2010, the net interest expense of £273 represents the interest cost on the:

A ending benefit obligation.

B beginning benefit obligation.

C beginning net pension obligation.

3 For the year 2010, the remeasurement component of Kensington's periodic pension cost represents:

A the change in the net pension obligation.

B actuarial gains and losses on the pension obligation.

C actual return on plan assets minus the amount of return on plan assets included in the net interest expense.

4 Which of the following is *closest* to the actual rate of return on beginning plan assets and the rate of return on beginning plan assets that is included in the interest income/expense calculation?

A The actual rate of return was 5.56 percent, and the rate included in interest income/expense was 5.48 percent.

B The actual rate of return was 1.17 percent, and the rate included in interest income/expense was 5.48 percent.

C Both the actual rate of return and the rate included in interest income/expense were 5.48 percent.

5 Which component of Kensington's periodic pension cost would be shown in OCI rather than P&L?

A Service cost

B Net interest (income) expense

C Remeasurements

6 The relationship between the periodic pension cost and the plan's funded status is *best* expressed in which of the following?

A Periodic pension cost of –£483 = Ending funded status of –£4,774 – Employer contributions of £693 – Beginning funded status of –£4,984.

B Periodic pension cost of £1,322 = Benefits paid of £1,322.

C Periodic pension cost of £210 = Ending funded status of –£4,774 – Beginning funded status of –£4,984.

7 An adjustment to Kensington's statement of cash flows to reclassify the company's excess contribution for 2010 would *most likely* entail reclassifying £210 million (excluding income tax effects) as an outflow related to:

A investing activities rather than operating activities.

B financing activities rather than operating activities.

C operating activities rather than financing activities.

The following information relates to Questions 8–12

XYZ SA, a hypothetical company, offers its employees a defined benefit pension plan. Information on XYZ's retirement plans is presented in Exhibit 2. It also grants stock options to executives. Exhibit 3 contains information on the volatility assumptions used to value stock options.

Exhibit 2 XYZ SA Retirement Plan Information 2009

Employer contributions	1,000
Current service costs	200
Past service costs	120
Discount rate used to estimate plan liabilities	7.00%
Benefit obligation at beginning of year	42,000
Benefit obligation at end of year	41,720
Actuarial loss due to increase in plan obligation	460
Plan assets at beginning of year	39,000
Plan assets at end of year	38,700
Actual return on plan assets	2,700
Expected rate of return on plan assets	8.00%

Exhibit 3 XYZ SA Volatility Assumptions Used to Value Stock Option Grants

Grant Year	Weighted Average Expected Volatility
2009 valuation assumptions	
2005–2009	21.50%
2008 valuation assumptions	
2004–2008	23.00%

8 The total periodic pension cost is *closest* to:

A 320.

B 1,020.

C 1,320.

9 The amount of periodic pension cost that would be reported in P&L under IFRS is *closest* to:

A 20.

B 530.

C 1,020.

10 Assuming the company chooses not to immediately recognise the actuarial loss and assuming there is no amortisation of past service costs or actuarial gains and losses, the amount of periodic pension cost that would be reported in P&L under US GAAP is *closest* to:

A 20.

B 59.

C 530.

11 Under IFRS, the amount of periodic pension cost that would be reported in OCI is *closest* to:

A 20.

B 490.

C 1,020.

12 Compared to 2009 net income as reported, if XYZ had used the same volatility assumption for its 2009 option grants that it had used in 2008, its 2009 net income would have been:

A lower.

B higher.

C the same.

The following information relates to Questions 13–18

Stereo Warehouse is a US retailer that offers employees a defined benefit pension plan and stock options as part of its compensation package. Stereo Warehouse prepares its financial statements in accordance with US GAAP.

Peter Friedland, CFA, is an equity analyst concerned with earnings quality. He is particularly interested in whether the discretionary assumptions the company is making regarding compensation plans are contributing to the recent earnings growth at Stereo Warehouse. He gathers information from the company's regulatory filings regarding the pension plan assumptions in Exhibit 4 and the assumptions related to option valuation in Exhibit 5.

Exhibit 4 Assumptions Used for Stereo Warehouse Defined Benefit Plan

	2009	2008	2007
Expected long-term rate of return on plan assets	6.06%	6.14%	6.79%
Discount rate	4.85	4.94	5.38
Estimated future salary increases	4.00	4.44	4.25
Inflation	3.00	2.72	2.45

Exhibit 5 Option Valuation Assumptions

	2009	2008	2007
Risk-free rate	4.6%	3.8%	2.4%
Expected life	5.0 yrs	4.5 yrs	5.0 yrs

Exhibit 5 (Continued)

	2009	2008	2007
Dividend yield	1.0%	0.0%	0.0%
Expected volatility	29%	31%	35%

13 Compared to the 2009 reported financial statements, if Stereo Warehouse had used the same expected long-term rate of return on plan assets assumption in 2009 as it used in 2007, its year-end 2009 pension obligation would *most likely* have been:

A lower.

B higher.

C the same.

14 Compared to the reported 2009 financial statements, if Stereo Warehouse had used the same discount rate as it used in 2007, it would have *most likely* reported lower:

A net income.

B total liabilities.

C cash flow from operating activities.

15 Compared to the assumptions Stereo Warehouse used to compute its periodic pension cost in 2008, earnings in 2009 were *most favorably* affected by the change in the:

A discount rate.

B estimated future salary increases.

C expected long-term rate of return on plan assets.

16 Compared to the pension assumptions Stereo Warehouse used in 2008, which of the following pairs of assumptions used in 2009 is *most likely* internally inconsistent?

A Estimated future salary increases, inflation

B Discount rate, estimated future salary increases

C Expected long-term rate of return on plan assets, discount rate

17 Compared to the reported 2009 financial statements, if Stereo Warehouse had used the 2007 volatility assumption to value its employee stock options, it would have *most likely* reported higher:

A net income.

B compensation expense.

C deferred compensation liability.

18 Compared to the assumptions Stereo Warehouse used to value stock options in 2008, earnings in 2009 were most favorably affected by the change in the:

A expected life.

B risk-free rate.

C dividend yield.

The following information relates to question 19–25

The board of directors at Sallie-Kwan Industrials (SKI), a publicly traded company, is meeting with various committees following the release of audited financial statements prepared in accordance with IFRS. The finance committee (FC) is next on the agenda to review retirement benefits funding and make recommendations to the board.

SKI's three retirement benefit plans are described as follows:

Plan A

- Benefit: Annual payments for life equal to 1% of the employee's final salary for each year of service beyond the date of the plan's establishment
- The employer makes regular contributions to the plan in order to meet the future obligation
- Closed to new participants; benefits accrue for existing participants
- Fair value of assets: €5.98 billion
- Present value of obligation: €4.80 billion
- Present value of reductions in future contributions: €1.50 billion
- Ten-year vesting schedule; 70% of the participants are fully vested

Plan B

- Benefit: Discretionary retirement withdrawals; amounts depend on the plan's investment performance
- Employer makes its agreed-upon contribution to the plan on behalf of the employee in the same period during which the employee provides the service; SKI is current on this obligation
- The employee may also contribute to the plan during employment years
- Available to all employees after one year of service; 80% of the employees are fully vested

Plan C

- Benefit: Medical, prescription drug, and dental coverage for the retiree, spouse, and dependents under age 18
- 80% funded
- Available to all employees on day one of service

The FC chair reviews Plan A's funded status and the amount recorded on the balance sheet with the board, explaining that the current service cost change from last quarter has primarily resulted from a higher percentage of employees that are expected to leave before the full vesting period.

A board member inquires how Plan A's periodic pension costs affect SKI's operating performance. The FC chair reviews the adjustments needed to account for individual pension components that are considered operating costs and those considered non-operating costs, when calculating profit before taxation. Note 16 in the income statement lists the following: current service costs of €40 million, interest costs of €263 million, expected return on plan assets of €299 million, and actual return on plan assets of €205 million.

Next, the FC chairman presents the following case study data to illustrate SKI's current pension obligation for an average fully vested participant in Plan A with 10 years of prior service:

- Current annual salary: €100,000
- Years to retirement: 17
- Retirement life expectancy: 20 years
- Current plan assumptions:
  - Annual compensation increase: 6%
  - Discount rate: 4%
  - Compensation increases are awarded on the first day of the service year; no adjustments are made to reflect the possibility that the employee may leave the firm at an earlier date.

A discussion ensues regarding the effect on the pension obligation, for an average participant, of changing Plan A's annual compensation increase to 5%.

Lastly, the FC chair recommends that the board consider modifying some key assumptions affecting Plan A in response to recent market trends. The chair also reviews how these changes will alter SKI's plan obligation.

Recommendation 1: Change the assumed discount rate to 5%.

Recommendation 2: Increase the retirement life expectancy assumption by eight years.

Recommendation 3: Reduce investment risk by decreasing the expected return to 3%.

19 The participant bears the greatest amount of investment risk under which plan?

A Plan A

B Plan B

C Plan C

20 The plan for which the amount of SKI's financial obligation is defined in the current period with no obligation for future retirement benefits is:

A Plan A.

B Plan B.

C Plan C.

21 For Plan A, SKI should report a net pension:

A asset of €1.50 billion.

B asset of €1.18 billion.

C liability of €1.18 billion.

22 Based on the FC chair's explanation about the current service cost change, the present value of Plan A's obligation:

A decreased.

B stayed the same.

C increased.

23 Based on Note 16, after reclassifying pension components to reflect economic income or expense, the net adjustment to profit before taxation is:

A –€205 million.

B –€94 million.

C +€129 million.

24 Based on the case study illustration and the effect of changing the annual compensation rate, the annual unit credit for the average participant would decrease by an amount *closest* to:

A €4,349.

B €4,858.

C €5,446.

25 All else being equal, which of the following FC recommendations will increase the plan's obligation?

A Recommendation 1

B Recommendation 2

C Recommendation 3

The following information relates to question 26–32

Natalie Holmstead, a senior portfolio manager, works with Daniel Rickards, a junior analyst. Together they are evaluating the financial statements of Company XYZ (XYZ) with a focus on post-employment benefits. XYZ has a defined benefit pension plan and prepares financial statements according to IFRS requirements.

Rickards calculates the current service cost for a single employee's defined benefit pension obligation using the projected unit credit method. The employee is expected to work for 7 years before retiring and has 15 years of vested service. Rickards assumes a discount rate of 4.00% and a lump sum value of the employee's benefit at retirement of $393,949.

Next, Holmstead and Rickards discuss the present value of the defined benefit obligation (PVDBO). Rickards makes the following statements to clarify his understanding:

Statement 1 An increase in the PVDBO will result in an actuarial loss for the company.

Statement 2 The PVDBO measures the present value of future benefits earned by plan participants and includes plan assets.

Statement 3 The company should use the expected long-term rate of return on plan assets as the discount rate to calculate the PVDBO.

XYZ's pension plan offers benefits based on the employee's final year's salary. Rickards calculates the PVDBO as of the end of the current period, based on the information presented in Exhibit 1.

Exhibit 1 Select XYZ Defined Benefit Pension Plan Data

	Current Period	Prior Period
Assumed future compensation growth rate	2.5%	3.0%
Plan assets (in $ millions)	3,108	

Exhibit 1 (Continued)

	Current Period	Prior Period
Net pension liability (in $ millions)	525	
Present value of reductions of future contributions (in $ millions)	48	

Rickards adjusts the balance sheet and cash flow statement information presented in Exhibit 2 to better reflect the economic nature of certain items related to the pension plan.

Exhibit 2 Select XYZ Balance Sheet and Cash Flow Data (in $ millions)

Item	Current Period
Total assets	24,130
Total liabilities	17,560
Total equity	6,570
Total pension cost	96
Pension contribution	66
Financing cash flow	2,323
Operating cash flow	–1,087
Effective tax rate	30%

Finally, Rickards examines the data in Exhibit 3 and calculates the effect of a 100-basis-point increase in health care inflation on XYZ's debt-to-equity ratio.

Exhibit 3 Sensitivity of Accumulated Post-Employment Benefit Obligations to Changes in Assumed Health Care Inflation (in $ millions)

Item	100-bp Increase	100-bp Decrease
Benefit obligation change	$93	–$76
Benefit expense change	$12	–$10

26 The current service cost is *closest* to:

A $14,152.

B $15,758.

C $17,907.

27 Which of Rickards's statements about the PVDBO is correct?

A Statement 1

B Statement 2

C Statement 3

28 Based on Exhibit 1, the PVDBO is *closest* to:

A $3,585 million.

B $3,633 million.

C $3,681 million.

29 Based on Exhibit 1 and the method XYZ uses to link pension benefits to salaries, the change in the compensation growth rate compared with the prior period will *most likely* result in:

A lower periodic pension cost.

B no change in the periodic pension cost.

C higher periodic pension cost.

30 Based on the change in the assumed future compensation growth rate presented in Exhibit 1, which of the following pension cost components is affected?

A Service cost

B Remeasurement

C Net interest expense/income

31 Based on Exhibit 2, Rickards should adjust the operating and financing cash flows by:

A $21 million.

B $30 million.

C $96 million.

32 Based on Exhibits 2 and 3, as well as Holmstead's assumption about future health care inflation, the debt-to-equity ratio calculated by Rickards for XYZ should be *closest* to:

A 2.69.

B 2.71.

C 2.73.

SOLUTIONS

1 B is correct. The £28,879 million year-end benefit obligation represents the defined benefit obligation.

2 C is correct. The net interest expense of £273 million represents the interest cost on the beginning net pension obligation (beginning funded status) using the discount rate that the company uses in estimating the present value of its pension obligations. This is calculated as –£4,984 million times 5.48 percent = –£273 million; this represents an interest expense on the amount that the company essentially owes the pension plan.

3 C is correct. The remeasurement component of periodic pension cost includes both actuarial gains and losses on the pension obligation and net return on plan assets. Because Kensington does not have any actuarial gains and losses on the pension obligation, the remeasurement component includes only net return on plan assets. In practice, actuarial gains and losses are rarely equal to zero. The net return on plan assets is equal to actual returns minus beginning plan assets times the discount rate, or £1,302 million – (£23,432 million × 0.0548) = £18 million.

4 A is correct. The actual return on plan assets was 1,302/23,432 = 0.0556, or 5.56 percent. The rate of return included in the interest income/expense is the discount rate, which is given in this example as 5.48 percent.

The rate of 1.17 percent, calculated as the net interest income divided by beginning plan assets, is not used in pension cost calculations.

5 C is correct. Under IFRS, the component of periodic pension cost that is shown in OCI rather than P&L is remeasurments.

6 A is correct. The relation between the periodic pension cost and the plan's funded status can be expressed as Periodic pension cost = Ending funded status – Employer contributions – Beginning funded status.

7 B is correct. Kensington's periodic pension cost was £483. The company's contributions to the plan were £693. The £210 difference between these two numbers can be viewed as a reduction of the overall pension obligation. To adjust the statement of cash flows to reflect this view, an analyst would reclassify the £210 million (excluding income tax effects) as an outflow related to financing activities rather than operating activities.

8 B is correct. The total periodic pension cost is the change in the net pension liability adjusted for the employer's contribution into the plan. The net pension liability increased from 3,000 to 3,020, and the employer's contribution was 1,000. The total periodic pension cost is 1,020. This will be allocated between P&L and OCI.

9 B is correct. Under IFRS, the components of periodic pension cost that would be reported in P&L are the service cost (composed of current service and past service costs) and the net interest expense or income, calculated by multiplying the net pension liability or net pension asset by the discount rate used to measure the pension liability. Here, the service costs are 320 (= 200 + 120) and the net interest expense is 210 [= (42,000 – 39,000) × 7%]. Thus, the total periodic pension cost is equal to 530.

10 A is correct. Under US GAAP—assuming the company chooses not to immediately recognise the actuarial loss and assuming there is no amortisation of past service costs or actuarial gains and losses—the components of periodic pension cost that would be reported in P&L include the current service cost of 200,

the interest expense on the pension obligation at the beginning of the period of 2,940 (= 7.0% × 42,000), and the expected return on plan assets, which is a reduction of the cost of 3,120 (= 8.0% × 39,000). Summing these three components gives 20.

11 B is correct. The component of periodic pension cost that would be reported in OCI is the remeasurements component. It consists of actuarial gains and losses on the pension obligation and net return on plan assets. Here, the actuarial loss was 460. In addition, the actual return on plan assets was 2,700, which was 30 lower than the return of 2,730 (= 39,000 × 0.07) incorporated in the net interest income/expense. Therefore, the total remeasurements are 490.

12 A is correct. In 2009, XYZ used a lower volatility assumption than it did in 2008. Lower volatility reduces the fair value of an option and thus the reported expense. Using the 2008 volatility estimate would have resulted in higher expense and thus lower net income.

13 C is correct. The assumed long-term rate of return on plan assets is not a component that is used in calculating the pension obligation, so there would be no change.

14 B is correct. A higher discount rate (5.38 percent instead of 4.85 percent) will reduce the present value of the pension obligation (liability). In most cases, a higher discount rate will decrease the interest cost component of the net periodic cost because the decrease in the obligation will more than offset the increase in the discount rate (except if the pension obligation is of short duration). Therefore, periodic pension cost would have been lower and reported net income higher. Cash flow from operating activities should not be affected by the change.

15 B is correct. In 2009, the three relevant assumptions were lower than in 2008. Lower expected salary increases reduce the service cost component of the periodic pension cost. A lower discount rate will increase the defined benefit obligation and increase the interest cost component of the periodic pension cost (the increase in the obligation will, in most cases, more than offset the decrease in the discount rate). Reducing the expected return on plan assets typically increases the periodic pension cost.

16 A is correct. The company's inflation estimate rose from 2008 to 2009. However, it lowered its estimate of future salary increases. Normally, salary increases will be positively related to inflation.

17 B is correct. A higher volatility assumption increases the value of the stock option and thus the compensation expense, which, in turn, reduces net income. There is no associated liability for stock options.

18 C is correct. A higher dividend yield reduces the value of the option and thus option expense. The lower expense results in higher earnings. Higher risk-free rates and expected lives result in higher call option values.

19 B is correct. Plan B is a defined contribution (DC) pension plan because the amount of future benefit is not defined and SKI has an obligation to make only agreed-upon contributions. The actual future benefits depend on the investment performance of the individual's plan assets, and the employee bears the investment risk.

A is incorrect because Plan A is a defined benefit (DB) pension plan. In a DB plan, the amount of future benefit is defined based on the plan's formula (i.e., 1% of the employee's final salary for each year of service). With a DB pension plan, SKI bears the investment risk.

C is incorrect because Plan C is a health care plan and is classified as a DB plan. Under IFRS and US GAAP, all plans for pensions and other post-employment benefits (OPB) other than those explicitly structured as DC plans are classified as DB plans. The amount of future benefit depends on plan specifications and type of benefit, and it represents a promise by the firm to pay benefits in the future. SKI, not the employee, is responsible for estimating future increases in costs, such as health care, over a long time horizon.

20 B is correct. Plan B is a DC pension plan. SKI's financial obligation is defined in each period, and the employer makes its agreed-upon contribution to the plan on behalf of the employee in the same period during which the employee provides the service. SKI is current on this obligation and has no additional financial obligation for the current period.

21 B is correct. SKI's DB pension plan is overfunded by €1.18 billion, the amount by which the fair value of the pension plan assets exceeds the defined benefit obligation (€5.98 billion – €4.80 billion). When a company has a surplus in a DB pension plan, the amount of assets that can be reported is the lower of the surplus or the asset ceiling (the present value of future economic benefits, such as refunds from the plan or reductions in future contributions). In this case, the asset ceiling is given as €1.50 billion, so the amount of SKI's reported net pension asset is the amount of the surplus, because this amount is lower than the asset ceiling.

22 A is correct. A higher percentage of employees is expected to leave before the full 10-year vesting period, which would decrease the present value of the DB obligation. If the employee leaves the company before meeting the 10-year vesting requirement, she may be entitled to none or a portion of the benefits earned up until that point. In measuring the DB obligation, the company considers the probability that some employees may not satisfy the vesting requirements (i.e., may leave before the vesting period) and use this probability to calculate the current service cost and the present value of the obligation.

23 B is correct. Operating income is adjusted to include only the current service costs, the interest cost component is reclassified as interest expense, and the actual return on plan assets is added as investment income. Profit before taxation adjusted for actual rather than expected return on plan assets will decrease by €94 million (205 – 299).

	Total (€ millions)
Current service costs	– €40
Interest costs	– €263
Expected return on plan assets	+ €299
Total of pension and OPB expenses	– €4 million
Actual return (loss) on plan assets	€205 million

Because the actual return on plan assets is less than the expected return on plan assets, operating income will be adjusted downward by 299 – 205 = 94. Alternatively, the adjustments to the individual pension cost components are as follows:

Line Items to Adjust	Adjustments (€ millions)
Revenue	—
Net operating expenses	+4 – 40 = –36
Operating profit	—
Interest expense	–263
Interest and investment income	+205
Share of post-tax results of associates	–
Adjustment to profit before taxation	–€94 million

24 B is correct. The final year's estimated earnings at the end of Year 1 for the average participant would decrease by approximately €35,747.71.

	Current Assumptions	Case Study Assumptions
Current salary	€100,000	€100,000
Years until retirement	17	17
Years of service (includes prior 10)	27	27
Retirement life expectancy	20	20
Annual compensation increases	6%	5%
Discount rate	4%	4%
Final year's estimated earnings	€254,035.17	€218,287.46
Estimated annual payment for each of the 20 years	€68,589.50	€58,937.61
Value at the end of year 17 (retirement date) of the estimated future payments	€932,153.69	€800,981.35
Annual unit credit	€34,524.21	€29,665.98

Because there are now 17 years until retirement, there are 16 years until retirement from the end of Year 1. The final year's estimated earnings, estimated at the end of Year 1, are as follows:

Current year's salary × [(1 + Annual compensation increase)$^{\text{Years until retirement}}$]

Annual compensation increase of 6%: €100,000 × [$(1.06)^{16}$] = €254,035.17

Annual compensation increase of 5%: €100,000 × [$(1.05)^{16}$] = €218,287.46

The estimated annual payment for each of the 20 years (retirement life expectancy) is

(Estimated final salary × Benefit formula) × Years of service

Annual compensation increase of 6%: (€254,035.17 × 0.01) × (10 + 17) = €68,589.50

Annual compensation increase of 5%: (€218,287.46 × 0.01) × (10 + 17) = €58,937.61

The value at the end of Year 17 (retirement date) of the estimated future payments is the PV of the estimated annual payment for each of the 20 years at the discount rate of 4%:

Annual compensation increase of 6%: PV of €68,589.50 for 20 years at 4% = €932,153.69

Annual compensation increase of 5%: PV of €58,937.61 for 20 years at 4% = €800,981.35

The annual unit credit = Value at retirement/Years of service:

Annual compensation increase of 6%: €932,153.69/27 = €34,524.21

Annual compensation increase of 5%: €800,981.35/27 = €29,665.98

The annual unit credit for the average participant would decrease by €34,524.21 – €29,665.98 = €4,858.23.

25 B is correct. An increase in the retirement life expectancy (from 20 to 28 years) will increase the DB pension obligation, because Plan A pays annual payments for life.

26 A is correct. Current service cost is the present value of annual unit credit earned in the current period.

Annual unit credit (benefit) per service year = Value at retirement/Years of service

Years of service = 15 (vested years of past service) + 7 (expected years until retirement) = 22

Annual unit credit = $393,949/22 = $17,906.77.

$$\text{Current service cost (for 1 year)} = \text{Annual unit credit}/[(1 + \text{Discount rate})^{\text{(Years until retirement at the end of Year 1)}}]$$

$$= \$17{,}906.77/(1+0.04)^{6} = \$14{,}151.98.$$

27 A is correct. To estimate the PVDBO, the company must make a number of assumptions, such as future compensation increases, discount rates, and expected vesting. If changes in assumptions increase the obligation, the increase is referred to as an actuarial loss.

B is incorrect because the PVDBO does not include the value of plan assets in the calculation.

C is incorrect because the expected long-term rate of return on plan assets is not used to calculate the PVDBO. The interest rate used to calculate the PVDBO is based on current rates of return on high-quality corporate bonds (or government bonds, in the absence of a deep market in corporate bonds) with currency and durations consistent with the currency and durations of the benefits.

28 B is correct. The funded status of a pension plan is calculated as follows:

Funded status = Fair value of the plan assets – PVDBO

Based on the information provided in Exhibit 1, the PVDBO is calculated as follows:

PVDBO = Funded status (Net pension liability) + Plan assets

$525 + $3,108 = $3,633 million

29 A is correct. A decrease in the assumed future compensation growth rate will decrease a company's pension obligation when the pension formula is based on the final year's salary. Lowering the assumed future compensation growth rate decreases the service and interest components of periodic pension costs because of a decreased annual unit credit.

30 B is correct. A change in the assumed future compensation growth rate is a change in plan's actuarial assumptions. The remeasurement cost component includes actuarial gains and losses resulting from changes in the future compensation growth rate.

31 A is correct. Rickards' task is to adjust the balance sheet and cash flow statement information to better reflect the economic nature of certain items related to the pension plan. When a company's periodic contribution to a plan is lower than the total pension cost of the period, it can be viewed as a source of financing. To reflect this event, the deficit amount is adjusted by the effective tax rate and should be reclassified from an operating cash flow to a financing cash flow. The company's contribution to the pension plan was $66 million, which is $30 million less than the pension cost of $96 million. The $30 million difference is $21 million on an after-tax basis, using the effective tax rate of 30%. Therefore, $21 million should be classified as an operating cash outflow (negative value) and a financing cash inflow (positive value).

32 C is correct. To calculate the debt-to-equity ratio, both liabilities and total equity need to be adjusted for the estimated impact of a 100-bp increase in health care costs. The proposed increase in health care costs will increase total liabilities and decrease equity by the same amount. Consequently, the debt-to-equity ratio changes as follows:

Sensitivity of benefit obligation to 100-bp increase = $93

Adjusted liabilities = $17,560 + $93 = $17,653

Adjusted equity = $6,570 – $93 = $6,477

Adjusted debt-to-equity ratio = $17,653/$6,477 = 2.7255 ≈ 2.73

Consequently, a 100-bp increase in health care costs increases the debt-to-equity ratio to approximately 2.73.

PRACTICE PROBLEMS

The following information relates to Questions 1–6

Pedro Ruiz is an analyst for a credit rating agency. One of the companies he follows, Eurexim SA, is based in France and complies with International Financial Reporting Standards (IFRS). Ruiz has learned that Eurexim used EUR220 million of its own cash and borrowed an equal amount to open a subsidiary in Ukraine. The funds were converted into hryvnia (UAH) on 31 December 20X1 at an exchange rate of EUR1.00 = UAH6.70 and used to purchase UAH1,500 million in fixed assets and UAH300 million of inventories.

Ruiz is concerned about the effect that the subsidiary's results might have on Eurexim's consolidated financial statements. He calls Eurexim's Chief Financial Officer, but learns little. Eurexim is not willing to share sales forecasts and has not even made a determination as to the subsidiary's functional currency.

Absent more useful information, Ruiz decides to explore various scenarios to determine the potential impact on Eurexim's consolidated financial statements. Ukraine is not currently in a hyperinflationary environment, but Ruiz is concerned that this situation could change. Ruiz also believes the euro will appreciate against the hryvnia for the foreseeable future.

1 If Ukraine's economy becomes highly inflationary, Eurexim will *most likely* translate inventory by:

A restating for inflation and using the temporal method.

B restating for inflation and using the current exchange rate.

C using the temporal method with no restatement for inflation.

2 Given Ruiz's belief about the direction of exchange rates, Eurexim's gross profit margin would be *highest* if it accounts for the Ukraine subsidiary's inventory using:

A FIFO and the temporal method.

B FIFO and the current rate method.

C weighted-average cost and the temporal method.

3 If the euro is chosen as the Ukraine subsidiary's functional currency, Eurexim will translate its fixed assets using the:

A average rate for the reporting period.

B rate in effect when the assets were purchased.

C rate in effect at the end of the reporting period.

4 If the euro is chosen as the Ukraine subsidiary's functional currency, Eurexim will translate its accounts receivable using the:

A rate in effect at the transaction date.

B average rate for the reporting period.

C rate in effect at the end of the reporting period.

5 If the hryvnia is chosen as the Ukraine subsidiary's functional currency, Eurexim will translate its inventory using the:

A average rate for the reporting period.

B rate in effect at the end of the reporting period.

C rate in effect at the time the inventory was purchased.

6 Based on the information available and Ruiz's expectations regarding exchange rates, if the hryvnia is chosen as the Ukraine subsidiary's functional currency, Eurexim will *most likely* report:

A an addition to the cumulative translation adjustment.

B a translation gain or loss as a component of net income.

C a subtraction from the cumulative translation adjustment.

The following information relates to Questions 7–12

Consolidated Motors is a US-based corporation that sells mechanical engines and components used by electric utilities. Its Canadian subsidiary, Consol-Can, operates solely in Canada. It was created on 31 December 20X1, and Consolidated Motors determined at that time that it should use the US dollar as its functional currency.

Chief Financial Officer Monica Templeton was asked to explain to the board of directors how exchange rates affect the financial statements of both Consol-Can and the consolidated financial statements of Consolidated Motors. For the presentation, Templeton collects Consol-Can's balance sheets for the years ended 20X1 and 20X2 (Exhibit 1), as well as relevant exchange rate information (Exhibit 2).

Exhibit 1 Consol-Can Condensed Balance Sheet for Fiscal Years Ending 31 December (C$ millions)

Account	20X2	20X1
Cash	135	167
Accounts receivable	98	—
Inventory	77	30
Fixed assets	100	100
Accumulated depreciation	(10)	—
Total assets	400	297
Accounts payable	77	22
Long-term debt	175	175
Common stock	100	100
Retained earnings	48	—
Total liabilities and shareholders' equity	400	297

Exhibit 2 Exchange Rate Information

	US$/C$
Rate on 31 December 20X1	0.86
Average rate in 20X2	0.92
Weighted-average rate for inventory purchases	0.92
Rate on 31 December 20X2	0.95

Templeton explains that Consol-Can uses the FIFO inventory accounting method and that purchases of C$300 million and the sell-through of that inventory occurred evenly throughout 20X2. Her presentation includes reporting the translated amounts in US dollars for each item, as well as associated translation-related gains and losses. The board responds with several questions.

- Would there be a reason to change the functional currency to the Canadian dollar?
- Would there be any translation effects for Consolidated Motors if the functional currency for Consol-Can were changed to the Canadian dollar?
- Would a change in the functional currency have any impact on financial statement ratios for the parent company?
- What would be the balance sheet exposure to translation effects if the functional currency were changed?

7 After translating Consol-Can's inventory and long-term debt into the parent company's currency (US$), the amounts reported on Consolidated Motor's financial statements on 31 December 20X2 would be *closest* to (in millions):

A $71 for inventory and $161 for long-term debt.

B $71 for inventory and $166 for long-term debt.

C $73 for inventory and $166 for long-term debt.

8 After translating Consol-Can's 31 December 20X2 balance sheet into the parent company's currency (US$), the translated value of retained earnings will be *closest* to:

A $41 million.

B $44 million.

C $46 million.

9 In response to the board's first question, Templeton would *most likely* reply that such a change would be justified if:

A the inflation rate in the United States became hyperinflationary.

B management wanted to flow more of the gains through net income.

C Consol-Can were making autonomous decisions about operations, investing, and financing.

10 In response to the board's second question, Templeton should reply that if the change is made, the consolidated financial statements for Consolidated Motors would begin to recognize:

A realized gains and losses on monetary assets and liabilities.

B realized gains and losses on non-monetary assets and liabilities.

C unrealized gains and losses on non-monetary assets and liabilities.

11 In response to the board's third question, Templeton should note that the change will *most likely* affect:

A the cash ratio.

B fixed asset turnover.

C receivables turnover.

12 In response to the board's fourth question, the balance sheet exposure (in C$ millions) would be *closest* to:

A –19.

B 148.

C 400.

The following information relates to Questions 13–18

Romulus Corp. is a US-based company that prepares its financial statements in accordance with US GAAP. Romulus Corp. has two European subsidiaries: Julius and Augustus. Anthony Marks, CFA, is an analyst trying to forecast Romulus's 20X2 results. Marks has prepared separate forecasts for both Julius and Augustus, as well as for Romulus's other operations (prior to consolidating the results.) He is now considering the impact of currency translation on the results of both the subsidiaries and the parent company's consolidated financials. His research has provided the following insights:

- The results for Julius will be translated into US dollars using the current rate method.
- The results for Augustus will be translated into US dollars using the temporal method.
- Both Julius and Augustus use the FIFO method to account for inventory.
- Julius had year-end 20X1 inventory of €340 million. Marks believes Julius will report €2,300 in sales and €1,400 in cost of sales in 20X2.

Marks also forecasts the 20X2 year-end balance sheet for Julius (Exhibit 1). Data and forecasts related to euro/dollar exchange rates are presented in Exhibit 2.

Exhibit 1 Forecasted Balance Sheet Data for Julius, 31 December 20X2 (€ millions)

Cash	50
Accounts receivable	100
Inventory	700
Fixed assets	1,450
Total assets	2,300
Liabilities	700
Common stock	1,500
Retained earnings	100
Total liabilities and shareholder equity	2,300

Exhibit 2 Exchange Rates ($/€)	
31 December 20X1	1.47
31 December 20X2	1.61
20X2 average	1.54
Rate when fixed assets were acquired	1.25
Rate when 20X1 inventory was acquired	1.39
Rate when 20X2 inventory was acquired	1.49

13 Based on the translation method being used for Julius, the subsidiary is *most likely:*

A a sales outlet for Romulus's products.

B a self-contained, independent operating entity.

C using the US dollar as its functional currency.

14 To account for its foreign operations, Romulus has *most likely* designated the euro as the functional currency for:

A Julius only.

B Augustus only.

C both Julius and Augustus.

15 When Romulus consolidates the results of Julius, any unrealized exchange rate holding gains on monetary assets should be:

A reported as part of operating income.

B reported as a non-operating item on the income statement.

C reported directly to equity as part of the cumulative translation adjustment.

16 When Marks translates his forecasted balance sheet for Julius into US dollars, total assets as of 31 December 20X2 (dollars in millions) will be *closest* to:

A $1,429.

B $2,392.

C $3,703.

17 When Marks converts his forecasted income statement data for Julius into US dollars, the 20X2 gross profit margin will be *closest* to:

A 39.1%.

B 40.9%.

C 44.6%.

18 Relative to the gross margins the subsidiaries report in local currency, Romulus's consolidated gross margin *most likely*:

A will not be distorted by currency translations.

B would be distorted if Augustus were using the same translation method as Julius.

C will be distorted because of the translation and inventory accounting methods Augustus is using.

The following information relates to Questions 19–24

Redline Products, Inc. is a US-based multinational with subsidiaries around the world. One such subsidiary, Acceletron, operates in Singapore, which has seen mild but not excessive rates of inflation. Acceletron was acquired in 2000 and has never paid a dividend. It records inventory using the FIFO method.

Chief Financial Officer Margot Villiers was asked by Redline's board of directors to explain how the functional currency selection and other accounting choices affect Redline's consolidated financial statements. Villiers gathers Acceletron's financial statements denominated in Singapore dollars (SGD) in Exhibit 1 and the US dollar/Singapore dollar exchange rates in Exhibit 2. She does not intend to identify the functional currency actually in use but rather to use Acceletron as an example of how the choice of functional currency affects the consolidated statements.

Exhibit 1 Selected Financial Data for Acceletron, 31 December 2007 (SGD millions)

Cash	SGD125
Accounts receivable	230
Inventory	500
Fixed assets	1,640
Accumulated depreciation	(205)
Total assets	SGD2,290
Accounts payable	185
Long-term debt	200
Common stock	620
Retained earnings	1,285
Total liabilities and equity	2,290
Total revenues	SGD4,800
Net income	SGD450

Exhibit 2 Exchange Rates Applicable to Acceletron

Exchange Rate in Effect at Specific Times	USD per SGD
Rate when first SGD1 billion of fixed assets were acquired	0.568
Rate when remaining SGD640 million of fixed assets were acquired	0.606
Rate when long-term debt was issued	0.588
31 December 2006	0.649
Weighted-average rate when inventory was acquired	0.654

(continued)

Exhibit 2 (Continued)

Exchange Rate in Effect at Specific Times	USD per SGD
Average rate in 2007	0.662
31 December 2007	0.671

19 Compared with using the Singapore dollar as Acceletron's functional currency for 2007, if the US dollar were the functional currency, it is *most likely* that Redline's consolidated:

A inventories will be higher.

B receivable turnover will be lower.

C fixed asset turnover will be higher.

20 If the US dollar were chosen as the functional currency for Acceletron in 2007, Redline could reduce its balance sheet exposure to exchange rates by:

A selling SGD30 million of fixed assets for cash.

B issuing SGD30 million of long-term debt to buy fixed assets.

C issuing SGD30 million in short-term debt to purchase marketable securities.

21 Redline's consolidated gross profit margin for 2007 would be *highest* if Acceletron accounted for inventory using:

A FIFO, and its functional currency were the US dollar.

B LIFO, and its functional currency were the US dollar.

C FIFO, and its functional currency were the Singapore dollar.

22 If the current rate method is used to translate Acceletron's financial statements into US dollars, Redline's consolidated financial statements will *most likely* include Acceletron's:

A USD3,178 million in revenues.

B USD118 million in long-term debt.

C negative translation adjustment to shareholder equity.

23 If Acceletron's financial statements are translated into US dollars using the temporal method, Redline's consolidated financial statements will *most likely* include Acceletron's:

A USD336 million in inventory.

B USD956 million in fixed assets.

C USD152 million in accounts receivable.

24 When translating Acceletron's financial statements into US dollars, Redline is *least likely* to use an exchange rate of USD per SGD:

A 0.671.

B 0.588.

C 0.654.

The following information relates to questions 25–33

Adrienne Yu is an analyst with an international bank. She analyzes Ambleu S.A. ("Ambleu"), a multinational corporation, for a client presentation. Ambleu complies with IFRS, and its presentation currency is the Norvoltian krone (NVK). Ambleu's two subsidiaries, Ngcorp and Cendaró, have different functional currencies: Ngcorp uses the Bindiar franc (Ƒ) and Cendaró uses the Crenland guinea (CRG).

Yu first analyzes the following three transactions to assess foreign currency transaction exposure:

Transaction 1:	Cendaró sells goods to a non-domestic customer that pays in dollars on the purchase date.
Transaction 2:	Ngcorp obtains a loan in Bindiar francs on 1 June 2016 from a European bank with the Norvoltian krone as its presentation currency.
Transaction 3:	Ambleu imports inventory from Bindiar under 45-day credit terms, and the payment is to be denominated in Bindiar francs.

Yu then reviews Transactions 2 and 3. She determines the method that Ambleu would use to translate Transaction 2 into its 31 December 2016 consolidated financial statements. While analyzing Transaction 3, Yu notes that Ambleu purchased inventory on 1 June 2016 for Ƒ27,000/ton. Ambleu pays for the inventory on 15 July 2016. Exhibit 1 presents selected economic data for Bindiar and Crenland.

Exhibit 1 Selected Economic Data for Bindiar and Crenland

Date	Spot FB/NVK Exchange Rate	Bindiar Inflation Rate (%)	Spot CRG/NVK Exchange Rate	Crenland Inflation Rate (%)	Crenland GPI
31 Dec 2015	—	—	5.6780	—	100.0
1 Jun 2016	4.1779	—	—	—	—
15 Jul 2016	4.1790	—	—	—	—
31 Dec 2016	4.2374	3.1	8.6702	40.6	140.6
Average 2016	4.3450	—	—	—	—
31 Dec 2017	4.3729	2.1	14.4810	62.3	228.2
Average 2017	4.3618	—	11.5823	—	186.2

Prior to reviewing the 2016 and 2017 consolidated financial statements of Ambleu, Yu meets with her supervisor, who asks Yu the following two questions:

Question 1	Would a foreign currency translation loss reduce Ambleu's net sales growth?
Question 2	According to IFRS, what disclosures should be included relating to Ambleu's treatment of foreign currency translation for Ngcorp?

To complete her assignment, Yu analyzes selected information and notes from Ambleu's 2016 and 2017 consolidated financial statements, presented in Exhibit 2.

Exhibit 2 Selected Information and Notes from Consolidated Financial Statements of Ambleu S.A. (in NVK millions)

Income Statement	2017	2016	Balance Sheet	2017	2016
Revenue (1)	1,069	1,034	Cash (3)	467	425
Profit before tax	294	269	Intangibles (4)	575	570
Income tax expense (2)	–96	–94	—	—	—
Net profit	198	175	—	—	—

Note 1: Cendaro's revenue for 2017 is CRG125.23 million.
Note 2:

Reconciliation of Income Tax Expense	2017 (in NVK millions)	2016 (in NVK millions)
Income tax at Ambleu's domestic tax rate	102	92
Effect of tax rates on non-domestic jurisdictions	–14	–9
Unrecognized current year tax losses	8	11
Income tax expense	96	94

Note 3: The parent company transferred NVK15 million to Cendaró on 1 January 2016 to purchase a patent from a competitor for CRG85.17 million.
Note 4: The 2016 consolidated balance sheet includes Ngcorp's total intangible assets of NVK3 million, which were added to Ngcorp's balance sheet on 15 July 2016.

25 Which transaction would generate foreign currency transaction exposure for Ambleu?

A Transaction 1

B Transaction 2

C Transaction 3

26 Yu's determination regarding Transaction 2 should be based on the currency of the:

A loan.

B bank.

C borrower.

27 Based on Exhibit 1, what is the foreign exchange gain resulting from Transaction 3 on the 31 December 2016 financial statements?

A NVK1.70 per ton

B NVK90.75 per ton

C NVK248.54 per ton

28 What is the *best* response to Question 1?

A Yes

B No, because it would reduce organic sales growth

C No, because it would reduce net price realization and mix

29 Based on Exhibit 1, the *best* response to Question 2 is that Ambleu should disclose:

A a restatement for local inflation.

B that assets carried at historical cost are translated at historical rates.

C the amount of foreign exchange differences included in net income.

30 Based on Exhibit 1 and Note 1 in Exhibit 2, the amount that Ambleu should include in its 31 December 2017 revenue from Cendaró is *closest* to:

A NVK10.60 million.

B NVK13.25 million.

C NVK19.73 million.

31 Based on Exhibit 2 and Note 2, the change in Ambleu's consolidated income tax rate from 2016 to 2017 *most likely* resulted from a:

A decrease in Ambleu's domestic tax rate.

B more profitable business mix in its subsidiaries.

C stronger Norvoltian krone relative to the currencies of its subsidiaries.

32 Based on Exhibit 1 and Note 3 in Exhibit 2, the cumulative translation loss recognized by Ambleu related to the patent purchase on the 31 December 2017 financial statements is *closest* to:

A NVK0.39 million.

B NVK1.58 million

C NVK9.12 million.

33 Based on Exhibit 1 and Note 4 in Exhibit 2, the total intangible assets on Ngcorp's balance sheet as of 31 December 2016 are *closest* to:

A ₣B12.54 million.

B ₣B12.71 million.

C ₣B13.04 million.

The following information relates to questions 34–40

Triofind, Inc. (Triofind), based in the country of Norvolt, provides wireless services to various countries, including Norvolt, Borliand, Abuelio, and Certait. The company's presentation currency is the Norvolt euro (NER), and Triofind complies with IFRS. Triofind has two wholly owned subsidiaries, located in Borliand and Abuelio. The Borliand subsidiary (Triofind-B) was established on 30 June 2016, by Triofind both investing NER1,000,000, which was converted into Borliand dollars (BRD), and borrowing an additional BRD500,000.

Marie Janssen, a financial analyst in Triofind's Norvolt headquarters office, translates Triofind-B's financial statements using the temporal method. Non-monetary assets are measured at cost under the lower of cost or market rule. Spot BRD/NER exchange rates are presented in Exhibit 1, and the balance sheet for Triofind-B is presented in Exhibit 2.

Exhibit 1 Spot BRD/NER Exchange Rates

Date	BRD per NER
30 June 2016	1.15
Weighted-average rate when inventory was acquired (2016)	1.19
31 December 2016	1.20

(continued)

Exhibit 1 (Continued)

Date	BRD per NER
Weighted-average rate when inventory was acquired (2017)	1.18
30 June 2017	1.17

Exhibit 2 Triofind-B Balance Sheet for 2016 and 2017 (BRD)

Assets	31 December 2016	30 June 2017	Liabilities and Stockholders' Equity	31 December 2016	30 June 2017
Cash	900,000	1,350,000	Notes payable	500,000	500,000
Inventory	750,000	500,000	Common stock	1,150,000	1,150,000
			Retained earnings		200,000
Total	1,650,000	1,850,000	Total	1,650,000	1,850,000

Janssen next analyzes Triofind's Abuelio subsidiary (Triofind-A), which uses the current rate method to translate its results into Norvolt euros. Triofind-A, which prices its goods in Abuelio pesos (ABP), sells mobile phones to a customer in Certait on 31 May 2017 and receives payment of 1 million Certait rand (CRD) on 31 July 2017.

On 31 May 2017, Triofind-A also received NER50,000 from Triofind and used the funds to purchase a new warehouse in Abuelio. Janssen translates the financial statements of Triofind-A as of 31 July 2017 and must determine the appropriate value for the warehouse in Triofind's presentation currency. She observes that the cumulative Abuelio inflation rate exceeded 100% from 2015 to 2017. Spot exchange rates and inflation data are presented in Exhibit 3.

Exhibit 3 Spot Exchange Rates and Inflation Data for Triofind-A

Date	NER per CRD	NER per ABP	Abuelio Monthly Inflation Rate (%)
31 May 2017	0.2667	0.0496	—
30 June 2017	0.2703	0.0388	25
31 July 2017	0.2632	0.0312	22

Janssen gathers corporate tax rate data and company disclosure information to include in Triofind's annual report. She determines that the corporate tax rates for Abuelio, Norvolt, and Borliand are 35%, 34%, and 0%, respectively, and that Norvolt exempts the non-domestic income of multinationals from taxation. Triofind-B constitutes 25% of Triofind's net income, and Triofind-A constitutes 15%. Janssen also gathers data on components of net sales growth in different countries, presented in Exhibit 4.

Exhibit 4 Components of Net Sales Growth (%) Fiscal Year 2017

Country	Contribution from Volume Growth	Contribution from Price Growth	Foreign Currency Exchange	Net Sales Growth
Abuelio	7	6	–2	11
Borliand	4	5	4	13
Norvolt	7	3	—	10

34 Based on Exhibits 1 and 2 and Janssen's translation method, total assets for Triofind-B translated into Triofind's presentation currency as of 31 December 2016 are *closest* to:

A NER1,375,000.

B NER1,380,252.

C NER1,434,783.

35 Based on Exhibits 1 and 2, the translation adjustment for Triofind-B's liabilities into Triofind's presentation currency for the six months ended 31 December 2016 is:

A negative.

B zero.

C positive.

36 Based on Exhibits 1 and 2 and Janssen's translation method, retained earnings for Triofind-B translated into Triofind's presentation currency as of 30 June 2017 are *closest* to:

A NER150,225.

B NER170,940.

C NER172,414.

37 The functional currency for Triofind-A's sale of mobile phones to a customer in Certait is the:

A Certait real.

B Norvolt euro.

C Abuelio peso.

38 Based on Exhibit 3, the value of the new warehouse in Abuelio on Triofind's balance sheet as of 31 July 2017 is *closest* to:

A NER31,452.

B NER47,964.

C NER50,000.

39 Relative to its domestic tax rate, Triofind's effective tax rate is *most likely*:

A lower.

B the same.

C higher.

40 Based on Exhibit 4, the country with the highest sustainable sales growth is:

A Norvolt.

B Abuelio.

C Borliand.

SOLUTIONS

1 B is correct. IAS 21 requires that the financial statements of the foreign entity first be restated for local inflation using the procedures outlined in IAS 29, "Financial Reporting in Hyperinflationary Economies." Then, the inflation-restated foreign currency financial statements are translated into the parent's presentation currency using the current exchange rate. Under US GAAP, the temporal method would be used with no restatement.

2 B is correct. Ruiz expects the EUR to appreciate against the UAH and expects some inflation in the Ukraine. In an inflationary environment, FIFO will generate a higher gross profit than weighted-average cost. For either inventory choice, the current rate method will give higher gross profit to the parent company if the subsidiary's currency is depreciating. Thus, using FIFO and translating using the current rate method will generate a higher gross profit for the parent company, Eurexim SA, than any other combination of choices.

3 B is correct. If the parent's currency is chosen as the functional currency, the temporal method must be used. Under the temporal method, fixed assets are translated using the rate in effect at the time the assets were acquired.

4 C is correct. Monetary assets and liabilities such as accounts receivable are translated at current (end-of-period) rates regardless of whether the temporal or current rate method is used.

5 B is correct. When the foreign currency is chosen as the functional currency, the current rate method is used. All assets and liabilities are translated at the current (end-of-period) rate.

6 C is correct. When the foreign currency is chosen as the functional currency, the current rate method must be used and all gains or losses from translation are reported as a cumulative translation adjustment to shareholder equity. When the foreign currency decreases in value (weakens), the current rate method results in a negative translation adjustment in stockholders' equity.

7 B is correct. When the parent company's currency is used as the functional currency, the temporal method must be used to translate the subsidiary's accounts. Under the temporal method, monetary assets and liabilities (e.g., debt) are translated at the current (year-end) rate, non-monetary assets and liabilities measured at historical cost (e.g., inventory) are translated at historical exchange rates, and non-monetary assets and liabilities measured at current value are translated at the exchange rate at the date when the current value was determined. Because beginning inventory was sold first and sales and purchases were evenly acquired, the average rate is most appropriate for translating inventory and C$77 million × 0.92 = $71 million. Long-term debt is translated at the year-end rate of 0.95. C$175 million × 0.95 = $166 million.

8 B is correct. Translating the 20X2 balance sheet using the temporal method, as is required in this instance, results in assets of US$369 million. The translated liabilities and common stock are equal to US$325 million, meaning that the value for 20X2 retained earnings is US$369 million – US$325 million = US$44 million.

Temporal Method (20X2)			
Account	**C$**	**Rate**	**US$**
Cash	135	0.95	128
Accounts receivable	98	0.95	93

Temporal Method (20X2)			
Account	**C$**	**Rate**	**US$**
Inventory	77	0.92	71
Fixed assets	100	0.86	86
Accumulated depreciation	(10)	0.86	(9)
Total assets	400		369
Accounts payable	77	0.95	73
Long-term debt	175	0.95	166
Common stock	100	0.86	86
Retained earnings	48	to balance	44
Total liabilities and shareholders' equity	400		369

9 C is correct. The Canadian dollar would be the appropriate reporting currency when substantially all operating, financing, and investing decisions are based on the local currency. The parent country's inflation rate is never relevant. Earnings manipulation is not justified, and at any rate changing the functional currency would take the gains off of the income statement.

10 C is correct. If the functional currency were changed from the parent currency (US dollar) to the local currency (Canadian dollar), the current rate method would replace the temporal method. The temporal method ignores unrealized gains and losses on non-monetary assets and liabilities, but the current rate method does not.

11 B is correct. If the Canadian dollar is chosen as the functional currency, the current rate method will be used and the current exchange rate will be the rate used to translate all assets and liabilities. Currently, only monetary assets and liabilities are translated at the current rate. Sales are translated at the average rate during the year under either method. Fixed assets are translated using the historical rate under the temporal method but would switch to current rates under the current rate method. Therefore, there will most likely be an effect on sales/fixed assets. Because the cash ratio involves only monetary assets and liabilities, it is unaffected by the translation method. Receivables turnover pairs a monetary asset with sales and is thus also unaffected.

12 B is correct. If the functional currency were changed, then Consol-Can would use the current rate method and the balance sheet exposure would be equal to net assets (total assets – total liabilities). In this case, 400 – 77 – 175 = 148.

13 B is correct. Julius is using the current rate method, which is most appropriate when it is operating with a high degree of autonomy.

14 A is correct. If the current rate method is being used (as it is for Julius), the local currency (euro) is the functional currency. When the temporal method is being used (as it is for Augustus), the parent company's currency (US dollar) is the functional currency.

15 C is correct. When the current rate method is being used, all currency gains and losses are recorded as a cumulative translation adjustment to shareholder equity.

16 C is correct. Under the current rate method, all assets are translated using the year-end 20X2 (current) rate of $1.61/€1.00. €2,300 × 1.61 = $3,703.

17 A is correct. Under the current rate method, both sales and cost of goods sold would be translated at the 20X2 average exchange rate. The ratio would be the same as reported under the euro. €2,300 – €1,400 = €900, €900/€2,300 = 39.1%. Or, $3,542 – $2,156 = $1,386, $1,386/$3,542 = 39.1%.

18 C is correct. Augustus is using the temporal method in conjunction with FIFO inventory accounting. If FIFO is used, ending inventory is assumed to be composed of the most recently acquired items, and thus inventory will be translated at relatively recent exchange rates. To the extent that the average weight used to translate sales differs from the historical rate used to translate inventories, the gross margin will be distorted when translated into US dollars.

19 C is correct. If the US dollar is the functional currency, the temporal method must be used. Revenues and receivables (monetary asset) would be the same under either accounting method. Inventory and fixed assets were purchased when the US dollar was stronger, so at historical rates (temporal method), translated they would be lower. Identical revenues/lower fixed assets would result in higher fixed-asset turnover.

20 A is correct. If the US dollar is the functional currency, the temporal method must be used, and the balance sheet exposure will be the net monetary assets of 125 + 230 − 185 − 200 = −30, or a net monetary liability of SGD30 million. This net monetary liability would be eliminated if fixed assets (non-monetary) were sold to increase cash. Issuing debt, either short-term or long-term, would increase the net monetary liability.

21 A is correct. Because the US dollar has been consistently weakening against the Singapore dollar, cost of sales will be lower and gross profit higher when an earlier exchange rate is used to translate inventory, compared with using current exchange rates. If the Singapore dollar is the functional currency, current rates would be used. Therefore, the combination of the US dollar (temporal method) and FIFO will result in the highest gross profit margin.

22 A is correct. Under the current rate method, revenue is translated at the average rate for the year, SGD4,800 × 0.662 = USD3,178 million. Debt should be translated at the current rate, SGD200 × 0.671 = USD134 million. Under the current rate method, Acceletron would have a net asset balance sheet exposure. Because the Singapore dollar has been strengthening against the US dollar, the translation adjustment would be positive rather than negative.

23 B is correct. Under the temporal method, inventory and fixed assets would be translated using historical rates. Accounts receivable is a monetary asset and would be translated at year-end (current) rates. Fixed assets are found as (1,000 × 0.568) + (640 × 0.606) = USD 956 million.

24 B is correct. USD0.671/SGD is the current exchange rate. That rate would be used regardless of whether Acceletron uses the current rate or temporal method. USD0.654 was the weighted-average rate when inventory was acquired. That rate would be used if the company translated its statements under the temporal method but not the current rate method. USD0.588/SGD was the exchange rate in effect when long-term debt was issued. As a monetary liability, long-term debt is always translated using current exchange rates. Consequently, that rate is not applicable regardless of how Acceletron translates its financial statements.

25 C is correct. In Transaction 3, the payment for the inventory is due in Bindiar francs, a different currency from the Norvoltian krone, which is Ambleu's presentation currency. Because the import purchase (account payable) is under 45-day credit terms, Ambleu has foreign currency transaction exposure. The payment is subject to fluctuations in the FB/NVK exchange rate during the 45-day period between the sale and payment dates. Thus, Ambleu is exposed to potential foreign currency gains if the Bindiar franc weakens against the Norvoltian krone or foreign currency losses if the Bindiar franc strengthens against the Norvoltian krone.

26 C is correct. The currency of Ngcorp as the borrowing foreign subsidiary, relative to that of Ambleu, determines Ambleu's choice of translation method for Transaction 2. Because Ngcorp's functional currency is the Bindiar franc and Ambleu's presentation currency is the Norvoltian krone, the current rate method rather than the temporal method should be used. Regardless of the currency in which the loan is denominated, the loan is first recorded in Ngcorp's financial statements. Then, Ngcorp's financial statements, which include the bank loan, are translated into Ambleu's consolidated financial statements.

27 A is correct. On Ambleu's balance sheet, the cost included in the inventory account is the translation of ₣B27,000/ton into Norvoltian krone on the purchase date. Ambleu could have paid this amount on the purchase date but chose to wait 45 days to settle the account. The inventory cost is determined using the ₣B/NVK exchange rate of 4.1779 on the purchase date of 1 June 2016.
₣B27,000/₣B4.1779/NVK = NVK6,462.58/ton

The cash outflow is the amount exchanged from the Norvoltian krone to the Bindiar franc to pay the ₣B27,000/ton owed for the inventory 45 days after the transaction date. This payment uses the ₣B/NVK exchange rate of 4.1790 on the settlement date of 15 July 2016.

₣B 27,000/₣B4.1790 per NVK = NVK6,460.88/ton

Foreign exchange gain = Inventory cost − Cash payment
= NVK6,462.58 − NVK6,460.88
= NVK1.70/ton

Thus, Ambleu's cash outflow is less than the cost included in the inventory account, and NVK1.70/ton is the realized foreign exchange gain relating to this transaction. By deferring payment for 45 days, and because the Bindiar franc decreased in value during this period, Ambleu pays NVK1.70/ton less than the inventory cost on the purchase date of 1 June 2016. Thus, Ambleu will report a foreign exchange gain in its 2016 net income.

28 A is correct. Net sales growth equals organic sales growth plus or minus the effects of acquisitions, divestitures, and foreign exchange. A foreign currency translation loss would reduce net sales growth. Thus the answer to Question 1 is yes.

29 C is correct. IFRS requires that Ambleu disclose "the amount of exchange differences recognized in profit or loss" when determining net income for the period. Because companies may present foreign currency transaction gains and losses in various places on the income statement, it is useful for companies to disclose both the amount of transaction gain or loss that is included in income as well as the presentation alternative used.

30 A is correct. Crenland experienced hyperinflation from 31 December 2015 to 31 December 2017, as shown by the General Price Index, with cumulative inflation of 128.2% during this period. According to IFRS, Cendaró's financial statements must be restated for local inflation, then translated into Norvoltian kroner using the current exchange rate. The 2017 revenue from Cendaró that should be included in Ambleu's income statement is calculated as follows:

Revenue in CRG × (GPI 31 December 2017/GPI average 2017) = Inflation-adjusted revenue in CRG

CRG125.23 million × (228.2/186.2) = CRG153.48 million

Inflation-adjusted revenue in CRG/31 December 2017 exchange rate (CRG/NVK) = Revenue in Norvoltian kroner

CRG153.48 million/14.4810 = NVK10.60 million

31 B is correct. The consolidated income tax rate is calculated as income tax expense divided by profit before tax. Note 2 shows that Ambleu's consolidated income tax rate decreases by 2.29%, from 34.94% (=94/269) in 2016 to 32.65% (=96/294) in 2017. The largest component of the decrease stems from the 1.42% change in the effect of tax rates in non-domestic jurisdictions, which lowers Ambleu's consolidated income tax rate in 2016 by 3.34% (=9/269) and in 2017 by 4.76% (=14/294). The decrease in 2017 could indicate that Ambleu's business mix shifted to countries with lower marginal tax rates, resulting in a lower consolidated income tax rate and more profit. (The change could also indicate that the marginal tax rates decreased in the countries in which Ambleu earns profits.)

32 B is correct. IAS 29 indicates that a cumulative inflation rate approaching or exceeding 100% over three years would be an indicator of hyperinflation. Because the cumulative inflation rate for 2016 and 2017 in Crenland was 128.2%, Cendaró's accounts must first be restated for local inflation. Then, the inflation-restated Crenland guinea financial statements can be translated into Ambleu's presentation currency, the Norvoltian krone, using the current exchange rate.

Using this approach, the cumulative translation loss on 31 December 2017 for the CRG85.17 million patent purchase is –NVK1.58 million, as shown in the following table.

Date	Inflation Rate (%)	Restated Carrying Value (CRG/MM)	Current Exchange Rate (CRG/NVK)	Translated Amount (NVK MM)	Annual Translation Gain/Loss (NVK MM)	Cumulative Translation Gain/Loss (NVK MM)
1 Jan 2016	—	85.17	5.6780	15.00	N/A	N/A
31 Dec 2016	40.6	119.75	8.6702	13.81	–1.19	–1.19
31 Dec 2017	62.3	194.35	14.4810	13.42	–0.39	–1.58

33 B is correct. Because Ngcorp has a functional currency that is different from Ambleu's presentation currency, the intangible assets are translated into Norvoltian kroner using the current rate method. The current ₣B/NVK exchange rate is 4.2374 as of 31 December 2016. Thus, the intangible assets on Ngcorp's 2016 balance sheet are NVK3 million × ₣B4.2374/NVK = ₣B12.71 million.

34 B is correct. Using the temporal method, monetary assets (i.e., cash) are translated using the current exchange rate (as of 31 December 2016) of BRD1.20/NER (or NER0.8333/BRD), and non-monetary assets are translated using the historical exchange rate when acquired. Inventory is translated at its 2016 weighted-average rate of BRD1.19/NER (or NER0.8403/BRD). Therefore, the total assets for Triofind-B translated into Norvolt euros (Triofind's presentation currency) as of 31 December 2016 are calculated as follows:

Assets	31 December 2016 (BRD)	Applicable Exchange Rate (NER/BRD)	Rate Used	NER
Cash	900,000	0.8333	Current	750,000
Inventory	750,000	0.8403	Average	630,252
Total	1,650,000			1,380,252

35 A is correct. The monetary balance sheet items for Triofind-B are translated at the current exchange rate, which reflects that the Borliand dollar weakened during the period relative to the Norvolt euro. The rate as of 30 June 2016 was BRD1.15/NER (or NER0.8696/BRD) and as of 31 December 2016 was BRD1.20/NER (or NER0.8333/BRD). Therefore, notes payable translates to NER416,667 (BRD500,000 × NER/BRD0.8333) as of 31 December 2016, compared with NER434,783 (BRD500,000 × NER/BRD0.8696) as of 30 June 2016. Thus, the translation adjustment for liabilities is negative.

36 A is correct. Triofind uses the temporal method to translate the financial statements of Triofind-B. The temporal method uses the current exchange rate for translating monetary assets and liabilities and the historical exchange rate (based on the date when the assets were acquired) for non-monetary assets and liabilities. Monetary assets and liabilities are translated using the current exchange rate (as of 30 June 2017) of NER1 = BRD1.17 (or NER0.8547/BRD), and non-monetary assets and liabilities are translated using the historical exchange rate (as of 30 June 2016) of NER1 = BRD1.15 (or NER0.8696/BRD). Inventory is translated at the 2017 weighted average rate of NER1 = BRD1.18 (or NER0.8475/BRD). The difference required to maintain equality between (a) total assets and (b) total liabilities and shareholder's equity is then recorded as retained earnings. The retained earnings for Triofind-B translated into Norvolt euros (Triofind's presentation currency) as of 30 June 2017 is calculated as follows:

Assets	30 June 2017 (BRD)	Exchange Rate (NER/BRD)	Rate Used	30 June 2017 (NER)	Liabilities and Stockholders' Equity	30 June 2017 (BRD)	Exchange Rate (NER/BRD)	Rate Used	30 June 2017 (NER)
Cash	1,350,000	0.8547	C	1,153,846	Notes Payable	500,000	0.8547	C	427,350
Inventory	500,000	0.8475	H	423,729	Common Stock	1,150,000	0.8696	H	1,000,000
					Retained Earnings	200,000			**150,225**
	1,850,000			1,577,575	Total	1,850,000			1,577,575

37 C is correct. The functional currency is the currency of the primary economic environment in which an entity operates. Abuelio is Triofind-A's primary economic environment, and its currency is the Abuelio peso (ABP). Another important factor used to determine the functional currency is the currency that mainly influences sales prices for goods and services. The fact that Triofind-A prices its goods in Abuelio pesos supports the case for the ABP to be the functional currency.

38 B is correct. Triofind complies with IFRS, and Abuelio can be considered a highly inflationary economy because its cumulative inflation rate exceeded 100% from 2015 to 2017. Thus, Triofind-A's financials must be restated to

include local inflation rates and then translated using the current exchange rate into Norvolt euros, which is Triofind's presentation currency. This approach reflects both the likely change in the local currency value of the warehouse as well as the actual change in the exchange rate. The original purchase price is ABP1,008,065 (NER50,000/ABP0.0496). The value of the new warehouse in Abuelio as of 31 July 2017 is NER47,964, calculated as follows:

Date	Abuelio Monthly Inflation Rate (%)	Restated Warehouse Value (ABP)	NER/ABP	Warehouse Value (NER)
31 May 2017		1,008,065	0.0496	50,000
30 June 2017	25	1,260,081	0.0388	48,891
31 July 2017	22	1,537,298	0.0312	47,964

39 A is correct. Norvolt exempts the non-domestic income of multinationals from taxation. Because Norvolt has a corporate tax rate of 34%, the 0% tax rate in Borliand and the fact that 25% of Triofind's net income comes from Borliand should result in a lower effective tax rate on Triofind's consolidated financial statements compared with Triofind's domestic tax rate. Abuelio's tax rate of 35% is very close to that of Norvolt, and it constitutes only 15% of Triofind's net income, so its effect is unlikely to be significant.

40 B is correct. Although Borliand shows the highest growth in Norvolt euro terms, this result is partially because of currency fluctuations, which cannot be controlled. Abuelio had the highest change in sales resulting from price and volume at 13% (excluding foreign currency exchange). This growth is more sustainable than net sales growth, which includes currency fluctuations, because Triofind's management has more control over growth in sales resulting from greater volume or higher prices.

PRACTICE PROBLEMS

The following information relates to questions 1–7

Viktoria Smith is a recently hired junior analyst at Aries Investments. Smith and her supervisor, Ingrid Johansson, meet to discuss some of the firm's investments in banks and insurance companies.

Johansson asks Smith to explain why the evaluation of banks is different from the evaluation of non-financial companies. Smith tells Johansson the following:

Statement 1 As intermediaries, banks are more likely to be systemically important than non-financial companies.

Statement 2 The assets of banks mostly consist of deposits, which are exposed to different risks than the tangible assets of non-financial companies.

Smith and Johansson also discuss key aspects of financial regulations, particularly the framework of Basel III. Johansson tells Smith:

> "Basel III specifies the minimum percentage of its risk-weighted assets that a bank must fund with equity. This requirement of Basel III prevents a bank from assuming so much financial leverage that it is unable to withstand loan losses or asset write-downs."

Johansson tells Smith that she uses the CAMELS approach to evaluate banks, even though it has some limitations. To evaluate P&C insurance companies, Johansson tells Smith that she places emphasis on the efficiency of spending on obtaining new premiums. Johansson and Smith discuss differences between P&C and L&H insurance companies. Smith notes the following differences:

Difference 1: L&H insurers' claims are more predictable than P&C insurers' claims.

Difference 2: P&C insurers' policies are usually short term, whereas L&H insurers' policies are usually longer term.

Difference 3: Relative to L&H insurers, P&C insurers often have lower capital requirements and can also seek higher returns offered by riskier investments.

Johansson asks Smith to review key performance ratios for three P&C insurers in which Aries is invested. The ratios are presented in Exhibit 1.

Exhibit 1 Key Performance Ratios for Selected P&C Insurers

	Insurer A	Insurer B	Insurer C
Loss and loss adjustment expense ratio	68.8%	65.9%	64.1%
Underwriting expense ratio	33.7%	37.8%	32.9%
Combined ratio	102.5%	103.7%	97.0%

Johansson also asks Smith to review key performance ratios for ABC Bank, a bank in which Aries is invested. The ratios are presented in Exhibit 2.

Exhibit 2 Key Performance Ratios for ABC Bank*

	2017	2016	2015
Common equity Tier 1 capital ratio	10.7%	11.5%	12.1%
Tier 1 capital ratio	11.5%	12.6%	13.4%
Total capital ratio	14.9%	14.8%	14.9%
Liquidity coverage ratio	123.6%	121.4%	119.1%
Net stable funding ratio	114.9%	113.2%	112.7%
Total trading VaR (all market risk factors)	$11	$13	$15
Total trading and credit portfolio VaR	$15	$18	$21

* *Note*: VaR amounts are in millions and are based on a 99% confidence interval and a single-day holding period.

1 Which of Smith's statements regarding banks is correct?
   - **A** Only Statement 1
   - **B** Only Statement 2
   - **C** Both Statement 1 and Statement 2

2 The aspect of the Basel III framework that Johansson describes to Smith relates to minimum:
   - **A** capital requirements.
   - **B** liquidity requirements.
   - **C** amounts of stable funding requirements.

3 One limitation of the approach used by Johansson to evaluate banks is that it fails to address a bank's:
   - **A** sensitivity to market risk.
   - **B** management capabilities.
   - **C** competitive environment.

4 The best indicator of the operations of a P&C insurance company emphasized by Johansson when evaluating P&C insurance companies is the:
   - **A** combined ratio.
   - **B** underwriting loss ratio.
   - **C** underwriting expense ratio.

5 Which of the differences between P&C insurers and L&H insurers noted by Smith is *incorrect*?
   - **A** Difference 1
   - **B** Difference 2
   - **C** Difference 3

6 Based on Exhibit 1, Smith should conclude that the insurer with the most efficient underwriting operation is:
   - **A** Insurer A.
   - **B** Insurer B.
   - **C** Insurer C.

7 Based on Exhibit 2, Smith and Johansson should conclude that over the past three years, ABC Bank's:

A liquidity position has declined.

B capital adequacy has improved.

C sensitivity to market risk has improved.

The following information relates to questions 8–14

Ivan Paulinic, an analyst at a large wealth management firm, meets with his supervisor to discuss adding financial institution equity securities to client portfolios. Paulinic focuses on Vermillion Insurance (Vermillion), a property and casualty company, and Cobalt Life Insurance (Cobalt). To evaluate Vermillion further, Paulinic compiles the information presented in Exhibit 1.

Exhibit 1 Select Financial Ratios for Vermillion Insurance

Ratio	2017	2016
Loss and loss adjustment expense	59.1%	61.3%
Underwriting expense	36.3%	35.8%
Combined	95.4%	97.1%
Dividend	2.8%	2.6%

In addition to the insurance companies, Paulinic gathers data on three national banks that meet initial selection criteria but require further review. This information is shown in Exhibits 2, 3, and 4.

Exhibit 2 Select Balance Sheet Data for National Banks—Trading: Contribution to Total Revenues

Bank	2017	2013	2009	2005
N-bank	4.2%	7.0%	10.1%	8.9%
R-bank	8.3%	9.1%	17.0%	7.9%
T-bank	5.0%	5.0%	11.9%	6.8%

Focusing on N-bank and T-bank, Paulinic prepares the following data.

Exhibit 3 2017 Select Data for N-bank and T-bank

	N-bank		T-bank	
	2017	2016	2017	2016
Average daily trading VaR ($ millions)	11.3	12.6	21.4	20.5
Annual trading revenue/average daily trading VaR	160×	134×	80×	80×

Paulinic investigates R-bank's risk management practices with respect to the use of credit derivatives to enhance earnings, following the 2008 financial crisis. Exhibit 4 displays R-bank's exposure over the last decade to credit derivatives not classified as hedges.

Exhibit 4 R -bank's Exposure to Freestanding Credit Derivatives

Credit Derivative Balances	2017	2012	2007
Notional amount ($ billions)	13.4	15.5	305.1

All of the national banks under consideration primarily make long-term loans and source a significant portion of their funding from retail deposits. Paulinic and the rest of the research team note that the central bank is unwinding a long period of monetary easing as evidenced by two recent increases in the overnight funding rate. Paulinic informs his supervisor that:

Statement 1 Given the recently reported stronger-than-anticipated macroeconomic data, there is an imminent risk that the yield curve will invert.

Statement 2 N-bank is very active in the 30-day reverse repurchase agreement market during times when the bank experiences significant increases in retail deposits.

8 Paulinic's analysis of the two insurance companies *most likely* indicates that:

A Cobalt has more-predictable claims than Vermillion.

B Cobalt has a higher capital requirement than Vermillion.

C Vermillion's calculated risk-based capital is more sensitive than Cobalt's to interest rate risk.

9 Based only on the information in Exhibit 1, in 2017 Vermillion *most likely*:

A experienced a decrease in overall efficiency.

B improved its ability to estimate insured risks.

C was more efficient in obtaining new premiums.

10 Based only on Exhibit 2, which of the following statements is correct?

A The quality of earnings for R-bank was the highest in 2009.

B Relative to the other banks, N-bank has the highest quality of earnings in 2017.

C Trading represented a sustainable revenue source for T-bank between 2005 and 2013.

11 Based only on Exhibit 3, Paulinic should conclude that:

A trading activities are riskier at T-bank than N-bank.

B trading revenue per unit of risk has improved more at N-bank than T-bank.

C compared with duration, the metric used is a better measure of interest rate risk.

12 Based only on Exhibit 4, R-bank's use of credit derivatives since 2007 *most likely*:

A increased posted collateral.

B decreased the volatility of earnings from trading activities.

C indicates consistent correlations among the relevant risks taken.

13 Based on Statement 1, the net interest margin for the three banks' *most likely* will:

A decrease.

B remain unchanged.

C increase.

14 Based on Statement 2, the financial ratio *most* directly affected is the:

A Tier 2 capital ratio.

B net stable funding ratio.

C liquidity coverage ratio.

The following information relates to questions 15–20

Judith Yoo is a financial sector analyst writing an industry report. In the report, Yoo discusses the relative global systemic risk across industries, referencing Industry A (international property and casualty insurance), Industry B (credit unions), and Industry C (global commercial banks).

Part of Yoo's analysis focuses on Company XYZ, a global commercial bank, and its CAMELS rating, risk management practices, and performance. First, Yoo considers the firm's capital adequacy as measured by the key capital ratios (common equity Tier 1 capital, total Tier 1 capital, and total capital) in Exhibit 1.

Exhibit 1 Company XYZ: Excerpt from Annual Report Disclosure

At 31 December	2017	2016	2015
Regulatory capital	**$m**	**$m**	**$m**
Common equity Tier 1 capital	146,424	142,367	137,100
Additional Tier 1 capital	22,639	20,443	17,600
Tier 2 capital	22,456	27,564	38,200
Total regulatory capital	191,519	190,374	192,900
Risk-weighted assets (RWAs) by risk type			
Credit risk	960,763	989,639	968,600
Market risk	44,100	36,910	49,600

Exhibit 1 (Continued)

At 31 December	2017	2016	2015
Regulatory capital	**$m**	**$m**	**$m**
Operational risk	293,825	256,300	224,300
Total RWAs	1,298,688	1,282,849	1,242,500

Yoo turns her attention to Company XYZ's asset quality using the information in Exhibit 2.

Exhibit 2 Company XYZ: Asset Composition

At 31 December	2017	2016	2015
	$m	**$m**	**$m**
Total liquid assets	361,164	354,056	356,255
Investments	434,256	367,158	332,461
Consumer loans	456,957	450,576	447,493
Commercial loans	499,647	452,983	403,058
Goodwill	26,693	26,529	25,705
Other assets	151,737	144,210	121,780
Total assets	1,930,454	1,795,512	1,686,752

To assess Company XYZ's risk management practices, Yoo reviews the consumer loan credit quality profile in Exhibit 3 and the loan loss analysis in Exhibit 4.

Exhibit 3 Company XYZ: Consumer Loan Profile by Credit Quality

At 31 December	2017	2016	2015
	$m	**$m**	**$m**
Strong credit quality	338,948	327,345	320,340
Good credit quality	52,649	54,515	54,050
Satisfactory credit quality	51,124	55,311	56,409
Substandard credit quality	23,696	24,893	27,525
Past due but not impaired	2,823	2,314	2,058
Impaired	8,804	9,345	10,235
Total gross amount	478,044	473,723	470,617
Impairment allowances	–5,500	–4,500	–4,000
Total	472,544	469,223	466,617

Exhibit 4 Company XYZ: Loan Loss Analysis Data

At 31 December	2017	2016	2015
	$m	$m	$m
Consumer loans			
Allowance for loan losses	11,000	11,500	13,000
Provision for loan losses	3,000	2,000	1,300
Charge-offs	3,759	3,643	4,007
Recoveries	1,299	1,138	1,106
Net charge-offs	2,460	2,505	2,901
Commercial loans			
Allowance for loan losses	1,540	1,012	169
Provision for loan losses	1,100	442	95
Charge-offs	1,488	811	717
Recoveries	428	424	673
Net charge-offs	1,060	387	44

Finally, Yoo notes the following supplementary information from Company XYZ's annual report:

- Competition in the commercial loan space has become increasingly fierce, leading XYZ managers to pursue higher-risk strategies to increase market share.
- The net benefit plan obligation has steadily decreased during the last three years.
- Company XYZ awards above-average equity-based compensation to its top managers.

15 Which of the following industries *most likely* has the highest level of global systemic risk?

A Industry A

B Industry B

C Industry C

16 Based on Exhibit 1, Company XYZ's capital adequacy over the last three years, as measured by the three key capital ratios, signals conditions that are:

A mixed.

B declining.

C improving.

17 Based only on Exhibit 2, asset composition from 2015 to 2017 indicates:

A declining liquidity.

B increasing risk based on the proportion of total loans to total assets.

C decreasing risk based on the proportion of investments to total assets.

18 Based on Exhibit 3, the trend in impairment allowances is reflective of the changes in:

A impaired assets.

B strong credit quality assets.

C past due but not impaired assets.

19 Based on Exhibit 4, a loan loss analysis for the last three years indicates that:

A Company XYZ has become less conservative in its provisioning for consumer loans.

B the provision for commercial loan losses has trailed the actual net charge-off experience.

C the cushion between the allowance and the net commercial loan charge-offs has declined.

20 Which of the following supplemental factors is consistent with a favorable assessment of Company XYZ's financial outlook?

A Competitive environment

B Net benefit plan obligation

C Equity-based compensation policy

SOLUTIONS

1 A is correct. Banks are more likely to be systemically important than non-financial companies because, as intermediaries, they create financial linkages across all types of entities, including households, banks, corporates, and governments. The network of linkages across entities means that the failure of one bank will negatively affect other financial and non-financial entities (a phenomenon known as financial contagion). The larger the bank and the more widespread its network of linkages, the greater its potential impact on the entire financial system. The assets of banks are predominantly financial assets, such as loans and securities (not deposits, which represent most of a bank's liabilities). Compared to the tangible assets of non-financial companies, financial assets create direct exposure to a different set of risks, including credit risks, liquidity risks, market risks, and interest rate risks.

2 A is correct. Basel III specifies the minimum percentage of its risk-weighted assets that a bank must fund with equity capital. This minimum funding requirement prevents a bank from assuming so much financial leverage that it is unable to withstand loan losses or asset write-downs.

3 C is correct. The approach used by Johansson to evaluate banks, the CAMELS approach, has six components: (1) capital adequacy, (2) asset quality, (3) management capabilities, (4) earnings sufficiency, (5) liquidity position, and (6) sensitivity to market risk. While the CAMELS approach to evaluating a bank is fairly comprehensive, some attributes of a bank are not addressed by this method. One such attribute is a bank's competitive environment. A bank's competitive position relative to its peers may affect how it allocates capital and assesses risks.

4 A is correct. The underwriting expense ratio is an indicator of the efficiency of money spent on obtaining new premiums. The underwriting loss ratio is an indicator of the quality of a company's underwriting activities—the degree of success an underwriter has achieved in estimating the risks insured. The combined ratio, a measure of the overall underwriting profitability and efficiency of an underwriting operation, is the sum of these two ratios.

5 C is correct. The products of the two types of insurance companies, P&C and L&H, differ in contract duration and claim variability. P&C insurers' policies are usually short term, and the final cost will usually be known within a year of the occurrence of an insured event, while L&H insurers' policies are usually longer term. P&C insurers' claims are more variable and "lumpier" because they arise from accidents and other less predictable events, while L&H insurers' claims are more predictable because they correlate closely with relatively stable, actuarially based mortality rates applied to large populations. The relative predictability of L&H insurers' claims generally allows these companies to have lower capital requirements and to seek higher returns than P&C insurers.

6 C is correct. The combined ratio, which is the sum of the underwriting expense ratio and the loss and loss adjustment expense ratio, is a measure of the efficiency of an underwriting operation. A combined ratio of less than 100% is considered efficient; a combined ratio greater than 100% indicates an underwriting loss. Insurer C is the only insurer that has a combined ratio less than 100%.

7 C is correct. Over the past three years, there has been a downward trend in the two VaR measures—total trading VaR (all market risk factors) and total trading and credit portfolio VaR. This trend indicates an improvement in ABC Bank's sensitivity, or a reduction in its exposure, to market risk. The two liquidity

measures—the liquidity coverage ratio and the net stable funding ratio—have increased over the past three years, indicating an improvement in ABC Bank's liquidity position. Trends in the three capital adequacy measures—common equity Tier 1 capital ratio, Tier 1 capital ratio, and total capital ratio—indicate a decline in ABC Bank's capital adequacy. While the total capital ratio has remained fairly constant over the past three years, the common equity Tier 1 capital ratio and the Tier 1 capital ratio have declined. This trend suggests that ABC Bank has moved toward using more Tier 2 capital and less Tier 1 capital, indicating an overall decline in capital adequacy.

8 A is correct. Claims associated with life and health insurance companies (Cobalt) are more predicable than those for property and casualty insurance companies (Vermillion). Property and casualty insurers' claims are more variable and "lumpier" because they arise from accidents and other unpredictable events, whereas life and health insurers' claims are more predictable because they correlate closely with relatively stable actuarially based mortality rates when applied to large populations.

9 B is correct. The loss and loss adjustment expense ratio decreased from 61.3% to 59.1% between 2016 and 2017. This ratio is calculated as follows: (Loss Expense + Loss Adjustment Expense)/Net Premiums Earned. The loss and loss adjustment expense ratio indicates the degree of success an underwriter has achieved in estimating the risks insured. A lower ratio indicates greater success in estimating insured risks.

10 B is correct. The quality of earnings is directly related to the level of sustainable sources of income. Trading income tends to be volatile and not necessarily sustainable. Higher-quality income would be net interest income and fee-based service income. Because N-bank's 2017 trading revenue contribution is the lowest relative to other banks, its quality of earnings would be considered the best of the three banks.

11 B is correct. Trading revenue per unit of risk can be represented by the ratio of annual trading revenue to average daily trading value at risk (VaR) and represents a measure of reward-to-risk. The trading revenue per unit of risk improved at N-bank (from 134× to 160×) between 2016 and 2017, and there was no change at T-bank (80×). VaR can be used for gauging trends in intracompany risk taking.

12 B is correct. Exhibit 4 indicates that exposure to free-standing credit derivatives dramatically declined from a peak during the global financial crisis in 2008. If a derivatives contract is classified as freestanding, changes in its fair value are reported as income or expense in the income statement at each reporting period. The immediate recognition of a gain or loss in earnings, instead of reporting it in other comprehensive income, can lead to unexpected volatility of earnings and missed earnings targets. As a result, earnings volatility from the use of credit derivatives most likely decreased.

13 A is correct. A bank's net interest margin represents the difference between interest earned on loans and other interest-bearing assets and the level of interest paid on deposits and other interest-bearing liabilities. Banks typically borrow money for shorter terms (retail deposits) and lend to customers for longer periods (mortgages and car loans). If the yield curve unexpectedly inverts, the short-term funding costs will increase and the net interest margin will most likely decrease (not remain unchanged or increase).

14 C is correct. Reverse repurchase agreements represent collateralized loans between a bank and a borrower. A reverse repo with a 30-day maturity is a highly liquid asset and thus would directly affect the liquidity coverage ratio (LCR). LCR evaluates short-term liquidity and represents the percentage of a bank's expected cash outflows in relation to highly liquid assets.

15 C is correct. Industry C, representing global commercial banks, most likely has the highest level of global systemic risk because global commercial banks have the highest proportion of cross-border business. Unlike banks, the overall insurance market (of which Industry A is a subset) has a smaller proportion of cross-border business, and insurance companies' foreign branches are generally required to hold assets in a jurisdiction that are adequate to cover the related policy liabilities in that jurisdiction. As an international property and casualty (P&C) insurer, Company A provides protection against adverse events related to autos, homes, or commercial activities; many of these events have local, rather than international, impact. Industry B, credit unions, most likely has the lowest level of global systemic risk. Credit unions are depository institutions that function like banks and offer many of the same services, but they are owned by their members rather than being publicly traded as many banks are.

16 A is correct. Company XYZ's key capital adequacy ratios show mixed conditions. The ratios are calculated as follows:

$$\text{Common Equity Tier 1 Capital Ratio} = \frac{\text{Total Common Equity Tier 1 Capital}}{\text{Total Risk-Weighted Assets}}$$

$$\text{2015 Common Equity Tier 1 Capital Ratio} = \frac{137{,}100}{1{,}242{,}500} = 11.0\%$$

$$\text{2016 Common Equity Tier 1 Capital Ratio} = \frac{142{,}367}{1{,}282{,}849} = 11.1\%$$

$$\text{2017 Common Equity Tier 1 Capital Ratio} = \frac{146{,}424}{1{,}298{,}688} = 11.3\%$$

$$\text{Tier 1 Ratio} = \frac{\text{Common Equity Tier 1 Capital} + \text{Additional Tier 1 Capital}}{\text{Total Risk-Weighted Assets}}$$

$$\text{2015 Tier 1 Ratio} = \frac{137{,}100 + 17{,}600}{1{,}242{,}500} = 12.5\%$$

$$\text{2016 Tier 1 Ratio} = \frac{142{,}367 + 20{,}443}{1{,}282{,}849} = 12.7\%$$

$$\text{2017 Tier 1 Ratio} = \frac{146{,}424 + 22{,}639}{1{,}298{,}688} = 13.0\%$$

$$\text{Total Capital Ratio} = \frac{\text{Total Capital}}{\text{Total Risk-Weighted Assets}}$$

$$\text{2015 Total Capital Ratio} = \frac{192{,}900}{1{,}242{,}500} = 15.5\%$$

$$\text{2016 Total Capital Ratio} = \frac{190{,}374}{1{,}282{,}849} = 14.8\%$$

$$2017 \text{ Total Capital Ratio} = \frac{191{,}519}{1{,}298{,}688} = 14.7\%$$

	2017	2016	2015
Common equity Tier 1 capital ratio	11.3%	11.1%	11.0%
Tier 1 capital ratio	13.0%	12.7%	12.5%
Total capital ratio	14.7%	14.8%	15.5%

The common equity Tier 1 capital ratio and the Tier 1 capital ratio both strengthened from 2015 to 2017, but the total capital ratio weakened during that same period, signaling mixed conditions.

17 A is correct. Company XYZ's liquid assets as a percentage of total assets declined each year since 2015, indicating declining liquidity.

	2017		2016		2015	
	$m	% of Total Assets	$m	% of Total Assets	$m	% of Total Assets
Total liquid assets	361,164	18.7%	354,056	19.7%	356,255	21.1%
Investments	434,256	22.5%	367,158	20.4%	332,461	19.7%
Loans						
Consumer loans	456,957		450,576		447,493	
Commercial loans	499,647		452,983		403,058	
Total loans	956,604	49.6%	903,559	50.3%	850,551	50.4%
Goodwill	26,693	1.4%	26,529	1.5%	25,705	1.5%
Other assets	151,737	7.9%	144,210	8.0%	121,780	7.2%
Total assets	1,930,454	100%	1,795,512	100%	1,686,752	100%

18 C is correct. Impairment allowances have increased proportionately to the increases in the amount of past due but not impaired assets, which may be in anticipation of these past due assets becoming impaired. Impaired assets have decreased each year while strong credit quality assets have increased each year, which suggests lowering impairment allowances as a result of improving credit quality of these financial instruments.

At 31 December	2017	2016	2015
	$m	$m	$m
Strong credit quality	338,948	327,345	320,340
Good credit quality	52,649	54,515	54,050
Satisfactory credit quality	51,124	55,311	56,409
Substandard credit quality	23,696	24,893	27,525
Past due but not impaired	2,823	2,314	2,058
Impaired	8,804	9,345	10,235
Total gross amount	478,044	473,723	470,617
Impairment allowances	–5,500	–4,500	–4,000
Total	472,544	469,223	466,617
YoY change in impaired assets		–5.8%	–8.7%
YoY change in strong credit quality assets		3.5%	2.2%

(continued)

At 31 December	2017	2016	2015
	$m	$m	$m
YoY change in past due but not impaired assets	22.0%	12.4%	
YoY change in impairment allowances	22.2%	12.5%	

Note: YoY = year-over-year

2015 to 2016 change in impaired assets: $\left(\frac{9,345}{10,235}\right) - 1 = -8.7\%$

2015 to 2016 change in strong credit quality assets: $\left(\frac{327,345}{320,340}\right) - 1 = 2.2\%$

2015 to 2016 change in past due but not impaired assets: $\left(\frac{2,314}{2,058}\right) - 1 = 12.4\%$

2015 to 2016 change in impairment allowances: $\left(\frac{-4,500}{-4,000}\right) - 1 = 12.5\%$

2016 to 2017 change in impaired assets: $\left(\frac{8,804}{9,345}\right) - 1 = -5.8\%$

2016 to 2017 change in strong credit quality assets: $\left(\frac{338,948}{327,345}\right) - 1 = 3.5\%$

2016 to 2017 change in past due but not impaired assets: $\left(\frac{2,823}{2.314}\right) - 1 = 22.0\%$

2016 to 2017 change in impairment allowances: $\left(\frac{-5,500}{-4,500}\right) - 1 = 22.2\%$

19 C is correct. The allowance for loan losses to net commercial loan charge-offs has been declining during the last three years, which indicates that the cushion between the allowance and the net commercial loan charge-offs has deteriorated.

$$\text{2015 Consumer: } \frac{\text{Allowance for Loan Losses}}{\text{Net Loan Charge-Offs}} = \frac{13,000}{2,901} = 4.48$$

$$\text{2016 Consumer: } \frac{\text{Allowance for Loan Losses}}{\text{Net Loan Charge-Offs}} = \frac{11,500}{2,505} = 4.59$$

$$\text{2017 Consumer: } \frac{\text{Allowance for Loan Losses}}{\text{Net Loan Charge-Offs}} = \frac{11,000}{2,460} = 4.47$$

$$\text{2015 Commercial: } \frac{\text{Allowance for Loan Losses}}{\text{Net Loan Charge-Offs}} = \frac{169}{44} = 3.84$$

$$\text{2016 Commercial: } \frac{\text{Allowance for Loan Losses}}{\text{Net Loan Charge-Offs}} = \frac{1,012}{387} = 2.61$$

$$\text{2017 Commercial: } \frac{\text{Allowance for Loan Losses}}{\text{Net Loan Charge-Offs}} = \frac{1{,}540}{1{,}060} = 1.45$$

$$\text{2015 Consumer: } \frac{\text{Provision for Loan Losses}}{\text{Net Loan Charge-Offs}} = \frac{1{,}300}{2{,}901} = 0.45$$

$$\text{2016 Consumer: } \frac{\text{Provision for Loan Losses}}{\text{Net Loan Charge-Offs}} = \frac{2{,}000}{2{,}505} = 0.80$$

$$\text{2017 Consumer: } \frac{\text{Provision for Loan Losses}}{\text{Net Loan Charge-Offs}} = \frac{3{,}000}{2{,}460} = 1.22$$

$$\text{2015 Commercial: } \frac{\text{Provision for Loan Losses}}{\text{Net Loan Charge-Offs}} = \frac{95}{44} = 2.16$$

$$\text{2016 Commercial: } \frac{\text{Provision for Loan Losses}}{\text{Net Loan Charge-Offs}} = \frac{442}{387} = 1.14$$

$$\text{2017 Commercial: } \frac{\text{Provision for Loan Losses}}{\text{Net Loan Charge-Offs}} = \frac{1{,}100}{1{,}060} = 1.04$$

	2017	2016	2015
	$m	$m	$m
Consumer loans			
Allowance for loan losses	11,000	11,500	13,000
Provision for loan losses	3,000	2,000	1,300
Charge-offs	3,759	3,643	4,007
Recoveries	1,299	1,138	1,106
Net charge-offs	2,460	2,505	2,901
Commercial loans			
Allowance for loan losses	1,540	1,012	169
Provision for loan losses	1,100	442	95
Charge-offs	1,488	811	717
Recoveries	428	424	673
Net charge-offs	1,060	387	44
Allowance for loan losses to net loan charge-offs: consumer	4.47	4.59	4.48
Allowance for loan losses to net loan charge-offs: commercial	1.45	2.61	3.84
Provision for loan losses to net loan charge-offs: consumer	1.22	0.80	0.45
Provision for loan losses to net loan charge-offs: commercial	1.04	1.14	2.16

20 B is correct. The net benefit plan obligation has steadily decreased during the last three years, which indicates a lower degree of risk posed by the benefit plan.

PRACTICE PROBLEMS

The following information relates to Questions 1–4

Mike Martinez is an equity analyst who has been asked to analyze Stellar, Inc. by his supervisor, Dominic Anderson. Stellar exhibited strong earnings growth last year; however, Anderson is skeptical about the sustainability of the company's earnings. He wants Martinez to focus on Stellar's financial reporting quality and earnings quality.

After conducting a thorough review of the company's financial statements, Martinez concludes the following:

Conclusion 1	Although Stellar's financial statements adhere to generally accepted accounting principles (GAAP), Stellar understates earnings in periods when the company is performing well and overstates earnings in periods when the company is struggling.
Conclusion 2	Stellar most likely understated the value of amortizable intangibles when recording the acquisition of Solar, Inc. last year. No goodwill impairment charges have been taken since the acquisition.
Conclusion 3	Over time, the accruals component of Stellar's earnings is large relative to the cash component.
Conclusion 4	Stellar reported an unusually sharp decline in accounts receivable in the current year, and an increase in long-term trade receivables.

1 Based on Martinez's conclusions, Stellar's financial statements are *best* categorized as:

A non-GAAP compliant.

B GAAP compliant, but with earnings management.

C GAAP compliant and decision useful, with sustainable and adequate returns.

2 Based on Conclusion 2, after the acquisition of Solar, Stellar's earnings are *most likely*:

A understated.

B fairly stated.

C overstated.

3 In his follow-up analysis relating to Conclusion 3, Martinez should focus on Stellar's:

A total accruals.

B discretionary accruals.

C non-discretionary accruals.

4 What will be the impact on Stellar in the current year if Martinez's belief in Conclusion 4 is correct? Compared with the previous year, Stellar's:

A current ratio will increase.

B days sales outstanding (DSO) will decrease.

C accounts receivable turnover will decrease.

The following information relates to questions 5–12

Ioana Matei is a senior portfolio manager for an international wealth management firm. She directs research analyst Teresa Pereira to investigate the earnings quality of Miland Communications and Globales, Inc.

Pereira first reviews industry data and the financial reports of Miland Communications for the past few years. Pereira then makes the following three statements about Miland:

Statement 1 Miland shortened the depreciable lives for capital assets.

Statement 2 Revenue growth has been higher than that of industry peers.

Statement 3 Discounts to customers and returns from customers have decreased.

Pereira also observes that Miland has experienced increasing inventory turnover, increasing receivables turnover, and net income greater than cash flow from operations. She estimates the following regression model to assess Miland's earnings persistence:

$$\text{Earnings}_{t+1} = \alpha + \beta_1 \text{Cash flow}_t + \beta_2 \text{Accruals}_t + \varepsilon$$

Pereira and Matei discuss quantitative models such as the Beneish model, used to assess the likelihood of misreporting. Pereira makes the following two statements to Matei:

Statement 4 An advantage of using quantitative models is that they can determine cause and effect between model variables.

Statement 5 A disadvantage of using quantitative models is that their predictive power declines over time because many managers have learned to test the detectability of manipulation tactics by using the model.

Pereira collects the information in Exhibit 1 to use the Beneish model to assess Miland's likelihood of misreporting.

Exhibit 1 Selected Beneish Model Data for Miland Communications

	Last Year	Current Year
Days' sales receivable index (DSR)	0.90	1.20
Leverage index (LEVI)	0.75	0.95
Sales, general, and administrative expenses index (SGAI)	0.60	0.75

Pereira concludes her investigation of Miland by examining the company's reported pre-tax income of $5.4 billion last year. This amount includes $1.2 billion of acquisition and divestiture-related expenses, $0.5 billion of restructuring expenses, and

$1.1 billion of other non-operating expenses. Pereira determines that the acquisition and divestiture-related expenses as well as restructuring expenses are non-recurring expenses, but other expenses are recurring expenses.

Matei then asks Pereira to review last year's financial statements for Globales, Inc. and assess the effect of two possible misstatements. Upon doing so, Pereira judges that Globales improperly recognized EUR50 million of revenue and improperly capitalized EUR100 million of its cost of revenue. She then estimates the effect of these two misstatements on net income, assuming a tax rate of 25%.

Pereira compares Globales, Inc.'s financial statements with those of an industry competitor. Both firms have similar, above-average returns on equity (ROE), although Globales has a higher cash flow component of earnings. Pereira applies the mean reversion principle in her forecasts of the two firms' future ROE.

5 Which of Pereira's statements describes an accounting warning sign of potential overstatement or non-sustainability of operating and/or net income?

A Statement 1

B Statement 2

C Statement 3

6 Which of Pereira's statements about Miland Communications is *most likely* a warning sign of potential earnings manipulation?

A The trend in inventory turnover

B The trend in receivables turnover

C The amount of net income relative to cash flow from operations

7 Based on the regression model used by Pereira, earnings persistence for Miland would be highest if:

A β_1 is less than 0.

B β_1 is greater than β_2.

C β_2 is greater than β_1.

8 Which of Pereira's statements regarding the use of quantitative models to assess the likelihood of misreporting is correct?

A Only Statement 4

B Only Statement 5

C Both Statement 4 and Statement 5

9 Based on Exhibit 1, which variable in the Beneish model has a year-over-year change that would increase Miland's likelihood of manipulation?

A DSR

B LEVI

C SGAI

10 Based on Pereira's determination of recurring and non-recurring expenses for Miland, the company's recurring or core pre-tax earnings last year is *closest* to:

A $4.3 billion.

B $4.8 billion.

C $7.1 billion.

11 After adjusting the Globales, Inc. income statement for the two possible misstatements, the decline in net income is *closest* to:

A EUR37.5 million.

B EUR112.5 million.

C EUR150.0 million.

12 Pereira should forecast that the ROE for Globales is likely to decline:

A more slowly than that of the industry competitor.

B at the same rate as the industry competitor.

C more rapidly than that of the industry competitor.

The following information relates to questions 13–19

Emmitt Dodd is a portfolio manager for Upsilon Advisers. Dodd meets with Sonya Webster, the firm's analyst responsible for the machinery industry, to discuss three established companies: BIG Industrial, Construction Supply, and Dynamic Production. Webster provides Dodd with research notes for each company that reflect trends during the last three years:

BIG Industrial:

Note 1 Operating income has been much lower than operating cash flow (OCF).

Note 2 Accounts payable has increased, while accounts receivable and inventory have substantially decreased.

Note 3 Although OCF was positive, it was just sufficient to cover capital expenditures, dividends, and debt repayments.

Construction Supply:

Note 4 Operating margins have been relatively constant.

Note 5 The growth rate in revenue has exceeded the growth rate in receivables.

Note 6 OCF was stable and positive, close to its reported net income, and just sufficient to cover capital expenditures, dividends, and debt repayments.

Dynamic Production:

Note 7 OCF has been more volatile than that of other industry participants.

Note 8 OCF has fallen short of covering capital expenditures, dividends, and debt repayments.

Dodd asks Webster about the use of quantitative tools to assess the likelihood of misreporting. Webster tells Dodd she uses the Beneish model, and she presents the estimated *M*-scores for each company in Exhibit 1.

Exhibit 1 Beneish Model *M*-scores

Company	2017	2016	Change in *M*-score
BIG Industrial	–1.54	–1.82	0.28
Construction Supply	–2.60	–2.51	–0.09
Dynamic Production	–1.86	–1.12	–0.74

Webster tells Dodd that Dynamic Production was required to restate its 2016 financial statements as a result of its attempt to inflate sales revenue. Customers of Dynamic Production were encouraged to take excess product in 2016, and they were then allowed to return purchases in the subsequent period, without penalty.

Webster's industry analysis leads her to believe that innovations have caused some of the BIG Industrial's inventory to become obsolete. Webster expresses concern to Dodd that although the notes to the financial statements for BIG Industrial are informative about its inventory cost methods, its inventory is overstated.

The BIG Industrial income statement reflects a profitable 49% unconsolidated equity investment. Webster calculates the return on sales of BIG Industrial based on the reported income statement. Dodd notes that industry peers consolidate similar investments. Dodd asks Webster to use a comparable method of calculating the return on sales for BIG Industrial.

13 Which of Webster's notes about BIG Industrial provides an accounting warning sign of a potential reporting problem?

A Only Note 1

B Only Note 2

C Both Note 1 and Note 2

14 Do either of Webster's Notes 4 or 5 about Construction Supply describe an accounting warning sign of potential overstatement or non-sustainability of operating income?-

A No

B Yes, Note 4 provides a warning sign

C Yes, Note 5 provides a warning sign

15 Based on Webster's research notes, which company would *most likely* be described as having high-quality cash flow?

A BIG Industrial

B Construction Supply

C Dynamic Production

16 Based on the Beneish model results for 2017 in Exhibit 1, which company has the highest probability of being an earnings manipulator?

A BIG Industrial

B Construction Supply

C Dynamic Production

17 Based on the information related to its restatement, Dynamic Production reported poor operating cash flow quality in 2016 by understating:

A inventories.

B net income.

C trade receivables.

18 Webster's concern about BIG Industrial's inventory suggests poor reporting quality, *most likely* resulting from a lack of:

A completeness.

B clear presentation.

C unbiased measurement.

19 In response to Dodd's request, Webster's recalculated return on sales will *most likely*:

A decrease.

B remain the same.

C increase.

SOLUTIONS

1 B is correct. Stellar's financial statements are GAAP compliant (Conclusion 1) but cannot be relied upon to assess earnings quality. There is evidence of earnings management: understating and overstating earnings depending upon the results of the period (Conclusion 1), understated amortizable intangibles (Conclusion 2), and a high accruals component in the company's earnings (Conclusion 3).

2 C is correct. Martinez believes that Stellar most likely understated the value of amortizable intangibles when recording the acquisition of a rival company last year. Impairment charges have not been taken since the acquisition (Conclusion 2). Consequently, the company's earnings are likely to be overstated because amortization expense is understated. This understatement has not been offset by an impairment charge.

3 B is correct. Martinez concluded that the accruals component of Stellar's earnings was large relative to the cash component (Conclusion 3). Earnings with a larger component of accruals are typically less persistent and of lower quality. An important distinction is between accruals that arise from normal transactions in the period (called non-discretionary) and accruals that result from transactions or accounting choices outside the normal (called discretionary accruals). The discretionary accruals are possibly made with the intent to distort reported earnings. Outlier discretionary accruals are an indicator of possibly manipulated—and thus low quality earnings. Thus, Martinez is primarily focused on discretionary accruals, particularly outlier discretionary accruals (referred to as abnormal accruals).

4 B is correct. Because accounts receivable will be lower than reported in the past, Stellar's DSO [Accounts receivable/(Revenues/365)] will decrease. Stellar's accounts receivable turnover (365/days' sales outstanding) will increase with the lower DSO, giving the false impression of a faster turnover. The company's current ratio will decrease (current assets will decrease with no change in current liabilities).

5 B is correct. Higher growth in revenue than that of industry peers is an accounting warning sign of potential overstatement or non-sustainability of operating income. Shortening the depreciable lives of capital assets is a conservative change and not a warning sign. An increase (not a decrease) in discounts and returns would be a warning sign.

6 C is correct. Net income being greater than cash flow from operations is a warning sign that the firm may be using aggressive accrual accounting policies that shift current expenses to future periods. Decreasing, not increasing, inventory turnover could suggest inventory obsolescence problems that should be recognized. Decreasing, not increasing, receivables turnover could suggest that some revenues are fictitious or recorded prematurely or that the allowance for doubtful accounts is insufficient.

7 B is correct. When earnings are decomposed into a cash component and an accruals component, research has shown that the cash component is more persistent. A beta coefficient (β_1) on the cash flow variable that is larger than the beta coefficient (β_2) on the accruals variable indicates that the cash flow component of earnings is more persistent than the accruals component. This result provides evidence of earnings persistence.

8 B is correct. Earnings manipulators have learned to test the detectability of earnings manipulation tactics by using the model to anticipate analysts' perceptions. They can reduce their likelihood of detection; therefore, Statement 5 is correct. As a result, the predictive power of the Beneish model can decline over time. An additional limitation of using quantitative models is that they cannot determine cause and effect between model variables. Quantitative models establish only associations between variables, and Statement 4 is incorrect.

A is incorrect because quantitative models cannot determine cause and effect between model variables. They are capable only of establishing associations between variables. Therefore, Statement 4 is incorrect.

9 A is correct. The DSR (days' sales receivable index) variable in the Beneish model is related positively to the Beneish model *M*-score. Therefore, a year-over-year increase in DSR from 0.9 to 1.20 would lead to an increase in the *M*-score, which implies an increase in Miland's likelihood of manipulation.

B is incorrect because the LEVI (leverage index) variable in the Beneish model is related negatively to the Beneish model *M*-score. Therefore, a year-over-year increase in LEVI from 0.75 to 0.95 would lead to a decrease in the *M*-score, which implies a decrease (not increase) in Miland's likelihood of manipulation.

C is incorrect because the SGAI (sales, general, and administrative expenses index) variable in the Beneish model is related negatively to the Beneish model *M*-score. Therefore, a year-over-year increase in SGAI from 0.60 to 0.75 would lead to a decrease in the *M*-score, which implies a decrease (not increase) in Miland's likelihood of manipulation.

10 C is correct. Recurring or core pre-tax earnings would be $7.1 billion, which is the company's reported pre-tax income of $5.4 billion plus the $1.2 billion of non-recurring (i.e., one-time) acquisitions and divestiture expenses plus the $0.5 billion of non-recurring restructuring expenses.

11 B is correct. The correction of the revenue misstatement would result in lower revenue by EUR50 million, and the correction of the cost of revenue misstatement would result in higher cost of revenue by EUR100 million. The result is a reduction in pre-tax income of EUR150 million. Applying a tax rate of 25%, the reduction in net income would be $150 \times (1 - 0.25) = \text{EUR}112.5$ million.

12 A is correct. Based on the principle of mean reversion, the high ROE for both firms should revert towards the mean. Globales has a higher cash flow component to its return than the peer firm, however, so its high return on common equity should persist longer than that of the peer firm. The peer firm has a higher accruals component, so it is likely to revert more quickly.

13 B is correct. Only Note 2 provides a warning sign. The combination of increases in accounts payable with substantial decreases in accounts receivable and inventory are an accounting warning sign that management may be overstating cash flow from operations. Note 1 does not necessarily provide a warning sign. Operating income being greater than operating cash flow is a warning sign of a potential reporting problem. In this case, however, BIG Industrial's operating income is lower than its operating cash flow.

14 A is correct. Neither Note 4 nor Note 5 provides an accounting warning sign of potential overstatement or non-sustainability of operating income.

Increases in operating margins can be a warning sign of potential overstatement or non-sustainability of operating and/or net income. In this case, however, operating margins for Construction Supply have been relatively constant during the last three years.

A growth rate in receivables exceeding the growth rate in revenue is an accounting warning sign of potential overstatement or non-sustainability of operating income. In this case, however, Construction Supply's revenue growth exceeds the growth rate in receivables.

15 B is correct. High-quality OCF means the performance is of high reporting quality and also of high results quality. For established companies, high-quality operating cash flow would typically be positive; be derived from sustainable sources; be adequate to cover capital expenditures, dividends, and debt repayments; and have relatively low volatility compared with industry peers. Construction Supply reported positive OCF during each of the last three years. The OCF appears to be derived from sustainable sources, because it compares closely with reported net income. Finally, OCF was adequate to cover capital expenditures, dividends, and debt repayments. Although the OCF for BIG Industrial has been positive and just sufficient to cover capital expenditures, dividends, and debt repayments, the increases in accounts payable and substantial decreases in accounts receivable and inventory during the last three years are an accounting warning sign that management may be overstating cash flow from operations. For Dynamic Production, OCF has been more volatile than other industry participants, and it has fallen short of covering capital expenditures, dividends, and debt repayments for the last three years. Both of these conditions are warning signs for Dynamic Production.

16 A is correct. Higher *M*-scores indicate an increased probability of earnings manipulation. The company with the highest *M*-score in 2017 is BIG Industrial, with an *M*-score of –1.54. Construction Supply has the lowest *M*-score at –2.60, and Dynamic Production also has a lower *M*-score at –1.86. The *M*-score for BIG Industrial is above the relevant cutoff of –1.78.

17 A is correct. The items primarily affected by improper revenue recognition include net income, receivables, and inventories. When revenues are overstated, net income and receivables will be overstated and inventories will be understated.

18 C is correct. Webster is concerned that innovations have made some of BIG Industrial's inventory obsolete. This scenario suggests impairment charges for inventory may be understated and that the inventory balance does not reflect unbiased measurement.

19 A is correct. The use of unconsolidated joint ventures or equity-method investees may reflect an overstated return on sales ratio, because the parent company's consolidated financial statements include its share of the investee's profits but not its share of the investee's sales. An analyst can adjust the reported amounts to better reflect the combined amounts of sales. Reported net income divided by the combined amount of sales will result in a decrease in the net profit margin.

PRACTICE PROBLEMS

The following information relates to Questions 1–7

Quentin Abay, CFA, is an analyst for a private equity firm interested in purchasing Bickchip Enterprises, a conglomerate. His first task is to determine the trends in ROE and the main drivers of the trends using DuPont analysis. To do so he gathers the data in Exhibit 1.

Exhibit 1 Selected Financial Data for Bickchip Enterprises (€ Thousands)

	2020	2019	2018
Revenue	72,448	66,487	55,781
Earnings before interest and tax	6,270	4,710	3,609
Earnings before tax	5,101	4,114	3,168
Net income	4,038	3,345	2,576
Asset turnover	0.79	0.76	0.68
Assets/Equity	3.09	3.38	3.43

After conducting the DuPont analysis, Abay believes that his firm could increase the ROE without operational changes. Further, Abay thinks that ROE could improve if the company divested segments that were generating the lowest returns on capital employed (total assets less non-interest-bearing liabilities). Segment EBIT margins in 2020 were 11 percent for Automation Equipment, 5 percent for Power and Industrial, and 8 percent for Medical Equipment. Other relevant segment information is presented in Exhibit 2.

Exhibit 2 Segment Data for Bickchip Enterprises (€ Thousands)

	Capital Employed			Capital Expenditures (Excluding Acquisitions)		
Operating Segments	2020	2019	2018	2020	2019	2018
Automation Equipment	10,705	6,384	5,647	700	743	616
Power and Industrial	15,805	13,195	12,100	900	849	634
Medical Equipment	22,870	22,985	22,587	908	824	749
	49,380	42,564	40,334	2,508	2,416	1,999

Abay is also concerned with earnings quality, so he intends to calculate Bickchip's cash-flow-based accruals ratio and the ratio of operating cash flow before interest and taxes to operating income. To do so, he prepares the information in Exhibit 3.

Exhibit 3 Earnings Quality Data for Bickchip Enterprises (€ Thousands)

	2020	2019	2018
Net income	4,038	3,345	2,576
Net cash flow provided by (used in) operating activity[a]	9,822	5,003	3,198
Net cash flow provided by (used in) investing activity	(10,068)	(4,315)	(5,052)
Net cash flow provided by (used in) financing activity[b]	(5,792)	1,540	(2,241)
Average net operating assets	43,192	45,373	40,421
[a] includes cash paid for taxes of:	(1,930)	(1,191)	(1,093)
[b] includes cash paid for interest of:	(1,169)	(596)	(441)

1 Over the three-year period presented in Exhibit 1, Bickchip's return on equity is *best* described as:

A stable.

B trending lower.

C trending higher.

2 Based on the DuPont analysis, Abay's belief regarding ROE is *most likely* based on:

A leverage.

B profit margins.

C asset turnover.

3 Based on Abay's criteria, the business segment *best* suited for divestiture is:

A medical equipment.

B power and industrial.

C automation equipment.

4 Bickchip's cash-flow-based accruals ratio in 2020 is *closest* to:

A 9.9%.

B 13.4%.

C 23.3%.

5 The cash-flow-based accruals ratios from 2018 to 2020 indicate:

A improving earnings quality.

B deteriorating earnings quality.

C no change in earnings quality.

6 The ratio of operating cash flow before interest and taxes to operating income for Bickchip for 2020 is *closest* to:

A 1.6.

B 1.9.

C 2.1.

7 Based on the ratios for operating cash flow before interest and taxes to operating income, Abay should conclude that:

A Bickchip's earnings are backed by cash flow.

B Bickchip's earnings are not backed by cash flow.

C Abay can draw no conclusion due to the changes in the ratios over time.

SOLUTIONS

1 C is correct. The ROE has been trending higher. ROE can be calculated by multiplying (net profit margin) × (asset turnover) × (financial leverage). Net profit margin is net income/sales. In 2018 the net profit margin was 2,576/55,781 = 4.6% and the ROE = 4.6% × 0.68 × 3.43 = 10.8%. Using the same method, ROE was 12.9 percent in 2019 and 13.6 percent in 2020.

2 A is correct. The DuPont analysis shows that profit margins and asset turnover have both increased over the last three years, but leverage has declined. The reduction in leverage offsets a portion of the improvement in profitability and turnover. Thus, ROE would have been higher if leverage had not decreased.

3 B is correct. The Power and Industrial segment has the lowest EBIT margins but uses about 31 percent of the capital employed. Further, Power and Industrial's proportion of the capital expenditures has increased from 32 percent to 36 percent over the three years. Its capital intensity only looked to get worse, as the segment's percentage of total capital expenditures was higher than its percentage of total capital in each of the three years. If Abay is considering divesting segments that do not earn sufficient returns on capital employed, this segment is most suitable.

4 A is correct. The cash-flow-based accruals ratio = [NI – (CFO + CFI)]/(Average NOA) = [4,038 – (9,822 – 10,068)]/43,192 = 9.9%.

5 A is correct. The cash-flow-based accruals ratio falls from 11.0 percent in 2018 to 5.9 percent in 2019, and then rises to 9.9 percent in 2020. However, the change over the three-year period is a net modest decline, indicating a slight improvement in earnings quality.

6 B is correct. Net cash flow provided by (used in) operating activity has to be adjusted for interest and taxes, as necessary, in order to be comparable to operating income (EBIT). Bickchip, reporting under IFRS, chose to classify interest expense as a financing cash flow so the only necessary adjustment is for taxes. The operating cash flow before interest and taxes = 9,822 + 1,930 = 11,752. Dividing this by EBIT of 6,270 yields 1.9.

7 A is correct. Operating cash flow before interest and taxes to operating income rises steadily (not erratically) from 1.2 to 1.3 to 1.9. The ratios over 1.0 and the trend indicate that earnings are supported by cash flow.