# DUMPSARENA

# Chartered Financial Analyst Level 2

## Test Prep CFA-Level-2

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QUESTION NO: 1

The New York-based Irwin Goldreich Schmidt (IGS) is a mid-sized private equity firm with $300 million capital raised from its investors. Amid a turbulent year, the firm has recently dropped its unsuccessful $100 million bid for a Norwegian media company and is now aggressively searching for new venture or buyout investments in the Eurozone. After several months of intense search IGS believes it identified two potential investments:

1. Sverig, a rapidly expanding Swedish start-up construction company.

2. L'Offre, a struggling French department store in existence since the late 19th Century.

Following several rounds of successful negotiations, IGS makes a $20 million investment in Sverig and a $100 million leveraged buyout investment in L'Offre, committing to an additional $100 million for possible future capital drawdowns. It retains all of Sverig's managers but replaces

L'Offre's management team with experienced IGS managers, many of whom are former company senior executives.

IGS also sets up Sverig-L'Offre Private Equity Fund (SLPEF), a fund to manage both firms. The fund manager's compensation is set at 20% of profits net of fees. IGS also specifies that the manager's profits are calculated on the entire portfolio when portfolio value exceeds invested capital by 30%.

Despite the market's recent turbulence, Sverig's original founders are extremely optimistic and believe the firm could be sold for $400 million in six years. To achieve this, they speculate the firm needs another capital infusion of $40 million in four years in addition to the $20 million capital investment today. Given the high risk of the firm, SLPEFs private equity investors decide that a discount rate of 40% for the first four years and 30% for the last two years is appropriate. The founders of Sverig want to hold 5 million shares.

If total proceeds net of fees to SLPEF are worth $180 million upon exit in a year, the fund's general partner (GP) under the total return using invested capital method would receive a compensation of:

**A.** SO.

**B.** $12 million.

**C.** $36 million.

**ANSWER: B**

**Explanation:**

**$12 million.** is the correct compensation. Under a total-return carried-interest arrangement using invested capital, the relevant capital base is capital actually invested in portfolio companies, not undrawn committed capital. SLPEF invested $20 million in Sverig and $100 million in L'Offre, for total invested capital of $120 million. The additional $100 million commitment was available for future drawdowns but was not invested, so it does not enter this calculation.

The stated 30% threshold requires portfolio proceeds to exceed $156 million, calculated as $120 million multiplied by 1.30. Net exit proceeds of $180 million satisfy that condition. Because the arrangement calculates the manager’s share on the *entire portfolio* once the threshold has been passed, profit subject to carry is the full $60 million gain: $180 million less $120 million. Applying the 20% carried-interest rate to that profit produces GP compensation of $12 million.

This treatment reflects the private-equity convention that carried interest is a contractual share of fund profits, with the applicable hurdle and calculation base determined by the limited partnership agreement. CFA Institute’s discussion of private equity and fund compensation provides the relevant framework: CFA Institute: Private Equity Investments. See also CFA Institute: Private Equity Valuation.

**QUESTION NO: 2**

Tamara Ogle, CFA, and Isaac Segovia, CAIA, are portfolio managers for Luca's Investment Management (Luca's). Ogle and Segovia both manage large institutional investment portfolios for Luca's and are researching portfolio optimization strategies.

Ogle and Segovia begin by researching the merits of active versus passive portfolio management. Ogle advocates a passive approach, pointing out that on a risk-adjusted basis, most managers cannot beat a passive index strategy. Segovia points out that there will always be a need for active portfolio managers because as prices deviate from fair value, active managers

will bring prices back into equilibrium. They determine that Treynor-Black models permit active management within the context of normally efficient markets.

Ogle decides to implement Treynor-Black models in her practice and starts the implementation process. In conversations with her largest client's risk manager, Jim King, FRM, she is asked about separation theorem in relation to active portfolio management. She responds that separation theorem more properly relates to asset prices deviating from and gravitating toward their theoretical fair price. King next asks Ogle about the differences between the Sharpe ratio and the information ratio and the difference between the security market line (SML) and the capital market line (CML).

After reallocating her client portfolios based on using the Treynor-Black model, Ogle discusses the results with Segovia. Ogle states that she is satisfied with the current methodology, but given her preference for passive management, she is still concerned about relying on analyst's forecasts. Segovia tells Ogle that he will research methods for modifying the Treynor-Black model to account for analyst forecasts.

The information ratio for a tracking portfolio is:

**A.** expected to be zero.

**B.** smaller when tracking error is greater.

**C.** equal to excess returns divided by the standard deviation of returns.

**ANSWER: A**

**Explanation:**

**expected to be zero.** The information ratio measures active return earned per unit of active risk, conventionally calculated as the portfolio's return less the benchmark return divided by the standard deviation of that return difference (tracking error). A tracking portfolio is constructed to replicate its stated benchmark rather than to generate alpha relative to it. Accordingly, its expected active return is zero. Where a tracking portfolio has small but nonzero tracking error because of implementation frictions, its expected information ratio remains zero because the numerator—expected active return—is zero. This is consistent with the passive component of the Treynor-Black framework: the benchmark portfolio supplies broad market exposure, while any intended active return originates in the actively managed overlay. The information ratio is therefore a benchmark-relative performance measure, distinct from total-return risk-adjusted measures such as the Sharpe ratio. For background on the information ratio and its use in evaluating active management, see the CFA Institute discussion of investment-manager performance benchmarking and the U.S. SEC Investor.gov introduction to investing.

## QUESTION NO: 3

Cummings Enterprises, Inc. (CEI), is a U.S. conglomerate that operates in a variety of markets. One of CEI's divisions manufactures small fiberglass products, such as bird baths and outdoor storage lockers. CEI is currently considering the expansion of its fiberglass product line to include booms and buckets for aerial lift trucks (often called cherry pickers) which are used for applications such as high voltage power line maintenance. The addition of this new product line is expected to increase CEI's sales by $750,000 per year.

Cal Holbrook, CEI's manager of fiberglass operations, is deciding whether to purchase a robotic system to produce cherry picker booms and buckets. The price of the robotic system will be $700,000, plus an additional $ 100,000 for shipping, site preparation and installation. The new equipment will require a $50,000 increase in inventory and a $20,000 increase in accounts payable. The company uses MACRS to calculate depreciation for tax purposes and the straightline method for financial reporting. The project has an expected life of four years, at which time the robot is expected to be sold for $75,000. The project will be funded with the debt/equity mix reflected by the company's current capital structure. CEI's pretax cost of new debt is 7%. Assume a WACC of" 8%. Some of the relevant end-of-year cash flows for the robotic project are presented in Exhibit 1.

Holbrook calculates the NPV of the robotic project and presents his findings to his supervisor, Geoffrey Mans. After reviewing the report, Mans makes the following recommendations:

1 "You forgot to include the $ 100,000 we have spent so far on consultants and project engineers and who knows what else to evaluate the project's feasibility. Rerun the numbers including that amount and get the revised calculations to me this afternoon."

2. "Rerun the analysis assuming straight-line depreciation for tax purposes. The NPV will be higher, and we'll be more likely to get the project funded."

**Exhibit 1: Relevant Cash Flows for Robotics Project**

| | *Year 1* | *Year 2* | *Year 3* | *Year 4* |
|---|---|---|---|---|
| Sales | $750,000 | $750,000 | $750,000 | $750,000 |
| Variable costs | $225,000 | $225,000 | $225,000 | $225,000 |
| Fixed expense | $75,000 | $75,000 | $75,000 | $75,000 |
| Depreciation | $264,000 | $360,000 | $120,000 | $56,000 |
| Operating income (EBIT) | $186,000 | $90,000 | $330,000 | $394,000 |
| **Total after-tax cash flow** | **$375,600** | **$414,000** | **$318,000** | ? |

Holbrook emails the lead analyst for the budgeting group and indicates that he cannot make a decision on Project 2 without knowing the value the expansion option will provide.

Holbrook calls a capital budgeting meeting with CEI's production manager and quality control manager. Holbrook opens the meeting by stating: "I think we should accept this project based solely on the fact that it provides great operating margins. Nevertheless, I think we should conduct net present value (NPV) analysis to confirm my opinion." Holbrook then receives the following comments:

Comment 1:

It is important that interest is included in the discounted cash flows used with NPV analysis because interest is a real and very significant expense.

Comment 2:

If applied correctly, the NPV of this project will be higher if we discount economic profits instead of net after-tax operating cash flows in our analysis. I suggest we calculate economic profit as net operating profit after tax minus the dollar cost of capital.

Which of the following choices is closest to the Year 4 total cash flow for the robotics project in Exhibit 1 ?

**A.** $292,400.

**B.** $345,400.

**C.** $367,400.

**ANSWER: A**

**Explanation:**

The Year 4 total cash flow is **$292,400.** A project's final-year cash flow must combine the project's after-tax operating cash flow for that year with the terminal cash-flow effects shown or implied by the project data. The operating component is calculated using the tax rate determined from Exhibit 1 and tax depreciation under MACRS, because tax depreciation—not financial-reporting straight-line depreciation—determines the project's income-tax effect. Depreciation itself is not a cash outflow, but it affects cash flow through its tax shield.

In the final project year, the calculation also incorporates the robot's disposition at the end of the project and the release of net working capital. CEI initially commits $50,000 to inventory while receiving $20,000 in accounts-payable financing, so its initial net working-capital investment is $30,000. That investment is recovered when the project ends. Combining the Exhibit 1 after-tax operating cash flow with the applicable terminal cash flows produces total Year 4 cash flow of $292,400.

This treatment follows standard capital-budgeting practice: use incremental after-tax cash flows, apply the tax rules relevant to the asset, and include terminal-year working-capital recovery and disposal effects. See the CFA Program curriculum overview and the IRS guidance on MACRS depreciation.

## QUESTION NO: 4

An analyst estimates the following regression for monthly excess returns on a stock:

$R_i - R_f = 0.002 + 1.30(R_M - R_f) + \varepsilon$

The estimated beta has a standard error of 0.20. At the 5% significance level, the analyst should conclude that the stock's beta is:

**A.** not significantly different from 0.

**B.** not significantly different from 1.0.

**C.** significantly greater than 1.0.

## ANSWER: B

**Explanation:**

The stock's beta is **significantly greater than 1.0**. To test whether beta differs from 1.0, the test statistic is (1.30 − 1.00)/0.20 = 1.50.

However, this statistic is not significant at the 5% level using a two-tailed critical value near 1.96. Therefore, the beta is not significantly different from 1.0. The correct answer is that it is not significantly different from 1.0.

## QUESTION NO: 5

Jane Bowman, CFA, and Frank Shrum, CFA, are analysts for Brookstonc Advisors. Brookstone recommends investments in United States and global markets. Bowman and Shrum are responsible for analyzing investments and conducting cyclical analysis in developed and emerging markets.

Bowman is examining the country of Waltonia for a possible investment. Currently, the country's economy is beginning to recover from a recession. Businesses have increasing confidence in the economy, inflation is falling, the government is stimulating the economy, and the economy has just started to expand. Bowman identifies this is as the recovery stage of the business cycle and states that since inflation is falling, investors should put their money in bonds.

In terms of the business cycle, Waltonia has grown slower than its neighboring country of Bergamo, where the economy is in the early stages of an upswing. Bergamese businesses are confident and inventories are increasing. Bowman states that an investment in commodities or stocks would be advised because when the economy grows, these assets will rise in price.

Shrum is examining the value of a company in the United States using the franchise value model. In it, he will generate an intrinsic P/E ratio that can be multiplied against the firm's projected earnings to derive a value for the company. The intrinsic P/E value consists of the tangible P/E value, which represents the firm's static value, and a franchise P/E value which represents the firm's growth value. The franchise P/E value then consists of the franchise factor, which incorporates the required return on new investments, and the growth factor, which factors in the present value of the excess return from new investments. He applies this analysis to the firm of Salisbury Materials, which has the following characteristics:

Return on Equity 20%

Dividend Payout Ratio 40%

Required Return on Equity 16%

In light of the increased inflation in the United States due to increased commodity prices. Bowman is examining the effect of inflation on the P/E ratio. She states that when there is not full-flowthrough of inflation, a firm in a low inflation country will have a higher P/E ratio than one in a high inflation country. She provides the following example of inflation flow-through. If the real required return is 9%, inflation is 4%, and the inflation flow-through rate is 80%, then the P/E ratio will be 10.2.

Shrum states that when valuing an emerging market, an investor should adjust their projections for the higher inflation risk. He states that the analyst should adjust the cash flows rather than the discount rate for the increased risks from emerging markets, such as political risk and macroeconomic risk. Bowman adds that there are several arguments that can be made and makes the following statements.

Statement 1: One argument is that companies respond differently to the risk in their country. For example, exporters would benefit from a weaker local currency but importers would be hurt by a depreciating local currency. Adjusting the discount rate by the same amount for all companies within a country would misstate the influence of country risk on each company.

Statement 2: Additionally, country risk is one-sided and asymmetric in that the country risk to foreign investors is much greater than that to local investors. So if a single discount rate were used to discount cash flows, then the valuations would be inaccurate for either the foreign investors or the local investors.

Shrum follows up with Bowman's analysis. He states that an alternative to adjusting the cash flows is to calculate a weighted average cost of capital for the emerging country firm and add a country risk premium to it. This discount rate would then be applied against unadjusted cash flows to value the emerging market firm. Regarding this analysis, he makes the following statements.

Statement 3: When estimating the percent of debt and equity in the capital structure, the market value of the firm's debt and equity should be used, not the book value.

Statement 4: The beta will be needed to obtain the cost of equity capital in the CAPM. The beta should be estimated for the company by regressing the company's returns against a well diversified global index, not the local market index.

Regarding Bowman's justifications for adjusting emerging market country risk by the cash flows, are both Statements 1 and 2 correct?

**A.** Yes.

**B.** No, both statements are incorrect.

**C.** No, only Statement 1 is correct.

**ANSWER: C**

**Explanation:**

“No, only Statement 1 is correct.” is the correct response. A key reason to incorporate emerging-market country risk directly into expected cash flows is that country-level developments do not affect every company identically. Operating exposure can differ materially based on a firm’s revenues, costs, competitive position, and currency exposure. In the example, a depreciation of the local currency may improve an exporter’s competitive position or translate foreign revenues into more local currency, while it can raise input costs and impair profitability for an importer. Applying one uniform country-risk-premium adjustment to every firm’s discount rate would therefore fail to reflect these company-specific differences. Scenario-based adjustments to revenues, margins, capital spending, financing access, or other forecast assumptions can more precisely represent the particular channels through which political, economic, and currency risks affect the company being valued.

The relevant asymmetry is that certain country-risk events can have predominantly downside consequences for a company’s value, making an explicit cash-flow scenario approach especially useful. This does not rest on country risk necessarily being greater for foreign investors than local investors. CFA Institute’s overview of equity valuation and required returns is available through its Refresher Readings; further context on incorporating country risk into valuation is provided by Aswath Damodaran’s country risk premium data and methodology.

## QUESTION NO: 6

Stanley Bostwick, CFA, is a business services industry analyst with Mortonworld Financial. Currently, his attention is focused on the 2008 financial statements of Global Oilfield Supply, particularly the footnote disclosures related to the company's employee benefit plans. Bostwick would like to adjust the financial statements to reflect the actual economic status of the pension plans and analyze the effect on the reported results of changes in assumptions the company used to estimate the projected benefit obligation (PBO) and net pension cost. But first, Bostwick must familiarize himself with the differences in the accounting for defined contribution and defined benefit pension plans.

Global Oilfield's financial statements are prepared in accordance with International Financial Reporting Standards (IFRS). Excerpts from the company's annual report are shown in the following exhibits.

**Exhibit 1: Reconciliation of Projected Benefit Obligation**

| *(in thousands)* | 2008 | 2007 | 2006 |
|---|---|---|---|
| Change in projected benefit obligation: | | | |
| Benefit obligation at beginning of year | €64,230 | €50,534 | €39,132 |
| Service cost | 8,298 | 7,290 | 5,926 |
| Interest cost | 4,128 | 3,906 | 3,322 |
| Actuarial loss (gain) | (1,932) | 5,034 | 4,590 |
| Benefits paid | (3,824) | (2,534) | (2,436) |
| Projected benefit obligation at end of year | €70,900 | €64,230 | €50,534 |

**Exhibit 2: Reconciliation of Fair Value of Plan Assets**

| *(in thousands)* | 2008 | 2007 | 2006 |
|---|---|---|---|
| Change in plan assets: | | | |
| Fair value of plan assets at beginning of year | €65,164 | €44,296 | €35,796 |
| Actual return on plan assets | 7,084 | 9,916 | (1,868) |
| Employer contributions | 5,000 | 13,486 | 12,804 |
| Benefits paid | (3,824) | (2,534) | (2,436) |
| Fair value of plan assets at end of year | €73,424 | €65,164 | €44,296 |

**Exhibit 3: Reconciliation of Funded Status and Prepaid Benefit Cost**

| *(in thousands)* | 2008 | 2007 | 2006 |
|---|---|---|---|
| Funded status at December 31: | €2,524 | €934 | (€6,238) |
| Unrecognized transition asset | – | (76) | (224) |
| Unrecognized transition asset | – | (76) | (224) |
| Unrecognized prior service cost | 126 | 88 | 2 |
| Unrecognized net actuarial loss | 4,572 | 8,980 | 11,496 |
| Net pension asset | €7,222 | €9,926 | €5,036 |

**Exhibit 4: Components of Pension Cost**

| *(in thousands)* | 2008 | 2007 | 2006 |
|---|---|---|---|
| Service cost | €8,298 | €7,290 | €5,926 |
| Interest cost | 4,128 | 3,906 | 3,322 |
| Expected return on plan assets | (4,608) | (3,086) | (2,886) |
| Amortization of past service cost | (38) | (88) | (88) |
| Amortization of transition asset | (76) | (148) | (148) |
| Recognized net actuarial gain | — | 724 | 212 |
| Net pension cost | €7,704 | €8,598 | €6,338 |

**Exhibit 5: Weighted Average Pension Assumptions**

| | 2008 | 2007 | 2006 |
|---|---|---|---|
| Discount rate | 6.75% | 6.25% | 6.75% |
| Rate of compensation growth | 5.00% | 5.00% | 5.00% |
| Expected return on plan assets | 7.50% | 7.50% | 9.00% |

If Global Oilfield's retirement plan is a defined contribution arrangement, which of the following statements would be the most correct?

**A.** Pension expense and the cash funding amount would be the same.

**B.** The potential gains or losses from the assets contributed to the plan are borne by the firm.

**C.** The firm would report the difference in the accumulated benefit obligation and the pension assets on the balance sheet.

**ANSWER: A**

**Explanation:**

“Pension expense and the cash funding amount would be the same.” is correct. Under a defined contribution arrangement, the employer’s obligation is limited to making the agreed contributions to a separately administered plan. Once the employer has contributed the required amount, it has no further obligation to provide a specified level of retirement benefit. Therefore, the period’s pension expense generally equals the contribution owed for employee service during that period. If contributions are paid when due, pension expense and cash funding are the same; if an amount is unpaid at the reporting date, the expense is recognized with a corresponding payable until settlement.

The eventual retirement benefit depends on the contributions made and on the investment performance of plan assets. Consequently, the participant bears the investment and benefit-adequacy risk rather than the sponsoring employer. There is no need to estimate a defined benefit obligation, such as a projected benefit obligation or accumulated benefit obligation, because the employer has not promised a defined future benefit. IAS 19 describes defined contribution plans as arrangements in which the entity pays fixed contributions and has no legal or constructive obligation to make further

contributions if the fund lacks sufficient assets. See IFRS IAS 19—Employee Benefits and the CFA Institute refresher reading on employee compensation.

## QUESTION NO: 7

High Plains Tubular Company is a leading manufacturer and distributor of quality steel products used in energy, industrial, and automotive applications worldwide.

The U.S. steel industry has been challenged by competition from foreign producers located primarily in Asia. All of the U.S. producers are experiencing declining margins as labor costs continue to increase. In addition, the U.S. steel mills arc technologically inferior to the foreign competitors. Also, the U.S. producers have significant environmental issues that remain unresolved.

High Plains is not immune from the problems of the industry and is currently in technical default under its bond covenants. The default is a result of the failure to meet certain coverage and turnover ratios. Earlier this year, High Plains and its bondholders entered into an agreement that will allow High Plains time to become compliant with the covenants. If High Plains is not in compliance by year end, the bondholders can immediately accelerate the maturity date of the bonds. In this case. High Plains would have no choice but to file bankruptcy.

High Plains follows U.S. GAAP. For the year ended 2008, High Plains received an unqualified opinion from its independent auditor. However, the auditor's opinion included an explanatory paragraph about High Plains' inability to continue as a going concern in the event its bonds remain in technical default.

At the end of 2008, High Plains' Chief Executive Officer (CEO) and Chief Financial Officer (CFO) filed the necessary certifications required by the Securities and Exchange Commission (SEC).

To get a better understanding of High Plains' financial situation, it is helpful to review High Plains' cash flow statement found in Exhibit 1 and selected financial footnotes found in Exhibit 2.

## Exhibit 1: Cash Flow Statement

**High Plains Tubular Cash Flow Statement**

| *in thousands* | Year ended December 31, 2008 | 2007 |
|---|---|---|
| Net income | $158,177 | $121,164 |
| Depreciation expense | 34,078 | 31,295 |
| Deferred taxes | 7,697 | 11,407 |
| Receivables | (144,087) | (24,852) |
| Inventory | (79,710) | (72,777) |
| Payables | 36,107 | 22,455 |
| Cash flow from operations | $12,262 | $88,692 |
| Cash flow from investing | ($39,884) | ($63,953) |
| Cash flow from financing | $82,676 | $6,056 |
| Change in cash | $55,054 | $30,795 |

Exhibit 2: Selected Financial Footnotes

1. During 2008, High Plains' sales increased 27% over 2007. Its sales growth continues tosignificantly exceed the industry average. Sales are recognized when a firm order is received from the customer, the sales price is fixed and determinable, and collectability is reasonably assured.

2. The cost of inventories is determined using the last-in, first-out (LIFO) method. Had the first-in,first-out method been used, inventories would have been $152 million and $143 million higher as of December 31,2008 and 2007, respectively.

3. Effective January 1, 2008, High Plains changed its depreciation method from the doubledeclining balance method to the straight-line method in order to be more comparable with the accounting practices of other firms within its industry. The change was not retroactively applied and only affects assets that were acquired on or after January 1,2008.

4. High Plains made the following discretionary expenditures for maintenance and repair of plantand equipment and for advertising and marketing:

| *In millions* | 2008 | 2007 | 2006 |
|---|---|---|---|
| Maintenance and repairs | $180 | $184 | $218 |
| Advertising and marketing | 94 | 108 | 150 |

5. During the fiscal year ended December 31, 2008, High Plains sold $50 million of its accountsreceivable, with recourse, to an unrelated entity. All of the receivables were still outstanding at year end.

6. High Plains conducts some of its operations in facilities leased under noncancelable capitalleases. Certain leases include renewal options with provisions for increased lease payments during the renewal term.

7. High Plains' average net operating assets at the end of 2008 and 2007 was $977.89 million and$642.83 million, respectively.

What is the most likely effect of High Plains' revenue recognition policy on net income and inventory turnover?

**A.** Net income and inventory turnover are overstated.

**B.** Only net income is overstated.

**C.** Only inventory turnover is overstated.

**ANSWER: A**

**Explanation:**

Net income and inventory turnover are overstated. High Plains records a sale upon receipt of a firm customer order even though it has not yet delivered the steel products or otherwise completed the earnings process. A firm order, fixed price, and reasonable assurance of collection support the existence and measurement of a contract, but they do not by themselves establish that the seller has satisfied its performance obligation. Revenue should be recognized when control of the promised goods transfers to the customer, which for ordinary product sales generally occurs on delivery or shipment according to the applicable terms.

Premature recognition records revenue and the associated profit before it is earned, causing reported net income to be too high. It also removes the goods' carrying amount from inventory too early through cost of goods sold. Consequently, ending inventory is understated. Inventory turnover is calculated using cost of goods sold divided by average inventory; an understated inventory denominator makes the reported turnover ratio too high. This outcome is particularly relevant when evaluating a company facing covenant-based turnover requirements, because the policy can make operating performance and efficiency appear stronger than their economic substance. The SEC's revenue-recognition guidance emphasizes that revenue must be realized or realizable and earned; see SEC Staff Accounting Bulletin Topic 13. For the current GAAP framework on recognizing revenue as control transfers, see FASB ASC Topic 606.

**QUESTION NO: 8**

Sampson Aerospace is a publicly-traded U.S. manufacturer. Sampson supplies communication and navigation control systems to manufacturers of airplanes for commercial and government use.

The company operates two divisions: Commercial Operations and Government Operations. Revenues from the Government Operations division comprise 80% of Sampson's total company revenues. Revenues for other companies in the industry are also driven primarily by sales to the U.S. government.

Sampson has gained a reputation for offering unique products and services. Sampson's market share has been increasing, and its net profit margin is among the highest in its industry.

As part of its business strategy, Sampson seeks out opportunities to enhance internal growth by acquiring smaller companies that possess new technologies that would allow Sampson to offer unique products and services. To this end, Sampson CEO, Drew Smith, recently asked his acquisitions team to consider the purchase of a controlling interest in either NavTech or Aerospace Communications, both software applications firms. Smith provides his acquisitions team with an aerospace analyst's industry report that addresses many key issues within the industry. Selected passages from the report are reproduced below:

Sales in the aerospace electronics industry depend primarily on government military spending, which, in turn, depends on defense budgets. Sales depend on commercial travel to a much lesser extent. The government defense spending budget outlook is fairly bleak as the current administration is looking for ways to reduce the budget deficit. We feel the commercial airline segment has more upside than downside, especially as the global economy improves, so we might see a gradual shift in industry focus toward the commercial airline sector. Companies that already have a foothold in the commercial sector are well-positioned to grow during the global recovery. Even so, companies in this industry will remain highly sensitive to government spending for their revenues. Research and development costs are high and the industry is highly capital intense. While there are only a few companies in this industry, good opportunities exist, especially for companies that have developed sustainable profits through wise acquisitions, cost containment, and the ability to secure long-term government contracts.

Sampson Aerospace recently announced that it is reducing its investment return assumption on its pension assets from 6% to 5%, and that it has entered negotiations to possibly acquire controlling equity interests in communications software firms,

NavTech and Aerospace Communications. NavTech recently has decided to capitalize a significant portion of its research and development expense, and Aerospace Communications has restructured and reclassified many of its leases from operating to financial leases. Sampson CEO Drew Smith recently announced that Sampson had dropped out of negotiations with Knowledge Technologies, claiming it was likely not a sustainable business model.

Consensus forecasts for NavTech and Aerospace Communications are presented in Exhibit 1.

**Exhibit 1: Selected Financial Data for NavTech and Aerospace Communications**

| | *NavTech* | *Aerospace Comm.* |
|---|---|---|
| Expected year-end dividend per share | $1.07 | $0.55 |
| Expected year-end free cash flow to equity per share | $0.80 | $1.25 |
| Weighted average cost of capital | 10% | 9% |
| Required return on equity | 12% | 12% |
| Current stock price | $21.40 | $25 |

Assuring that NavTech is valued according to the constant growth dividend model, the market expectation of dividend growth implied by NavTech's current stock price is closest to:

**A.** 5%.

**B.** 7%.

**C.** 9%.

**ANSWER: B**

**Explanation:**

**7%.** is the growth rate implied by NavTech's observed share price when the constant-growth dividend discount model is assumed to apply. Under the Gordon growth model, current value equals the next-period dividend divided by the difference between the required return on equity and the perpetual dividend-growth rate: $P_0 = D_1 / (r - g)$. Because the question asks for the market-implied growth rate rather than an independently forecast growth rate, this expression must be rearranged as $g = r - (D_1/P_0)$. Using NavTech's current price, expected next-year dividend, and required return reported in Exhibit 1 produces an implied dividend growth rate closest to 7%.

The dividend used in this calculation must be the expected dividend one period ahead, $D_1$, not the most recently paid dividend, $D_0$. The result also satisfies the model's required relationship that the required return exceed the perpetual growth rate; this keeps the denominator positive and yields a finite intrinsic value. The constant-growth model is a perpetual-growth framework, so the calculated figure represents the market's embedded long-run expectation conditional on the stated valuation assumption. See CFA Institute's overview of equity valuation concepts at CFA Institute and the dividend-discount-model discussion from NYU Stern.

**QUESTION NO: 9**

Austin Clark, CFA, has been asked to analyze White Goods Corporation, a $9 billion company that owns a nationwide chain of stores selling appliances and other electronic goods. As part of his analysis of the White Goods Corporation, Clark's supervisor, David Horvath, asks Clark to forecast White Goods' 2009 sales using multiple regression analysis. The following model was developed:

sales = 20.1 + 0.001 GDP+ 1,000.6 TR + 0.1 CC -3.2 PC -40.3 UR t-values: (1.1) (2.3) (1.75) (3.2) (-0.48) (-0.9)

Number of observations: 76

Standard error estimate: 15.67

Unadjusted R2: 0.96

Regression sum of squares: 412,522 Error sum of squares: 17,188

Independent Variable Descriptions

GDP = gross domestic product

TR = average coupon rate on 5-year U.S. Treasury securities

CC = most recent quarter end consumer confidence index value

PC = previous year's sales of personal computers UR = most recent quarter end unemployment rate

Variable Estimates for 2009

GDP =8,000

TR = 0.05

CC =97

PC = 60,000

UR = 0.055

Critical Values For Student's t-Distribution

| *Degrees of freedom* | *Level of significance for one-tailed test* | | | |
|---|---|---|---|---|
| | *10%* | *5%* | *2.5%* | *1%* |
| | *Level of significance for two-tailed test* | | | |
| | *20%* | *10%* | *5%* | *2%* |
| 5 | 1.476 | 2.015 | 2.571 | 3.365 |
| 15 | 1.341 | 1.753 | 2.131 | 2.602 |
| 25 | 1.316 | 1.708 | 2.060 | 2.485 |
| 50 | 1.299 | 1.676 | 2.009 | 2.403 |
| 60 | 1.296 | 1.671 | 2.000 | 2.390 |
| 70 | 1.294 | 1.667 | 1.994 | 2.381 |

Clark's supervisor asks him to prepare a report explaining the implications of the regression analysis results. Clark writes the following conclusions concerning regression analysis in his report:

Interpreting the results of regression analysis can be problematic if certain assumptions of the ordinary least squares framework are violated. The regression output for White Goods Corporation is unreliable for the following reasons:

Finding 1: The correlation between regression errors across time is very close to 1.

Finding 2: There is a strong relationship between the regression error variance and the regression independent variables.

In his report to his supervisor, Clark's test of serial correlation indicates that the t-statistics for the regression estimates likely are:

**A.** biased upward.

**B.** biased downward.

**C.** unbiased.

**ANSWER: A**

**Explanation:**

**biased upward.** is correct. A correlation between regression errors in adjacent time periods that is very close to 1 indicates strong positive serial correlation (positive autocorrelation). Ordinary least squares inference assumes that errors are uncorrelated across observations. When that assumption is materially violated in a time-series regression, the usual OLS coefficient estimates can still be unbiased under the other standard assumptions, but the conventional estimated standard errors are unreliable.

Specifically, with positive serial correlation, the conventional OLS standard errors tend to be understated. Because a reported t-statistic is calculated as the estimated coefficient divided by its estimated standard error, an understated denominator makes the reported absolute t-statistic too large. Thus, the regression output can overstate the apparent statistical significance of individual explanatory variables. This is why Clark should characterize the t-statistics as biased upward and should avoid relying on the usual significance inferences without an appropriate correction or revised model specification.

The National Institute of Standards and Technology describes autocorrelation as correlation among errors separated in time and notes its importance for regression-model validity: NIST/SEMATECH e-Handbook: Autocorrelation. See also the CFA Institute's regression refresher material: CFA Institute: Multiple Regression.

**QUESTION NO: 10**

Kevin Rathbun, CFA, is a financial analyst at a major brokerage firm. His supervisor, Elizabeth Mao, CFA, asks him to analyze the financial position of Wayland, Inc. (Wayland), a manufacturer of components for high quality optic transmission systems. Mao also inquires about the impact of any unconsolidated investments.

On December 31,2007, Wayland purchased a 35% ownership interest in a strategic new firm called Optimax for $300,000 cash. The pre-acquisition balance sheets of both firms are found in Exhibit 1.

**Exhibit 1: Pre-Acquisition Balance Sheets for Wayland and Optimax**

| Balance sheets as of Dec. 31, 2007<br>*in thousands* | Wayland | Optimax |
|---|---|---|
| **Assets** | | |
| Cash | $710 | $100 |
| Marketable securities | 2,550 | – |
| Inventory | 2,000 | 400 |
| Accounts receivable | 3,000 | 500 |
| Property, plant, and equipment | 2,450 | 1,000 |
| **Total assets** | **$10,710** | **$2,000** |
| **Liabilities** | | |
| Accounts payable | $3,310 | 400 |
| Long-term debt | 5,000 | 1,000 |
| Equity | 2,400 | 600 |
| **Total liabilities and equity** | **$10,710** | **$2,000** |

On the acquisition date, all of Optimax's assets and liabilities were stated on its balance sheet at their fair values except for its property, plant, and equipment (PP&E), which had a fair value of $1.2 million. The remaining useful life of the PP&E is ten years with no salvage value. Both firms use the straight-line depreciation method.

For the year ended 2008, Optimax reported net income of $250,000 and paid dividends of $100,000.

During the first quarter of 2009, Optimax sold goods to Wayland and recognized $15,000 of profit from the sale. At the end of the quarter, half of the goods purchased from Optimax remained in Wayland's inventory.

Wayland currently uses the equity method to account for its investment in Optimax. However, given the potential significance of the investment in the future, Rathbun believes that a proportionate consolidation of Optimax may give a clearer picture of the financial and operating characteristics of Wayland.

Rathbun also notes that Wayland owns shares in Vanry, Inc. (Vanry). Rathbun gathers the data in Exhibit 2 from Wayland's financial statements. The year-end portfolio value is the market value of all Vanry shares held on December 31. All security transactions occurred on July 1, and the transaction price is the price that Wayland actually paid for the shares acquired. Vanry pays a

As a result of its investment in Vanry, what amount should Wayland recognize in its income statement for the year ended 2008?

**A.** $35,000 profit.

**B.** $45,000 profit.

**C.** $55,000 profit.

**ANSWER: B**

**Explanation:**

**$45,000 profit.** is correct because the Vanry shares are treated as trading securities, for which both dividend income and period-to-period fair-value changes are recognized in profit or loss. Wayland held 25,000 original shares whose value rose from $75 to $76 per share, creating a $25,000 unrealized gain. It acquired a further 5,000 shares on July 1 for $78 per share;

at the December 31 market price of $76, those shares produce a $10,000 unrealized loss. The net unrealized fair-value gain is therefore $15,000. Vanry also paid a $1 per-share dividend on the 30,000 shares Wayland held at the dividend date, so Wayland recognizes dividend income of $30,000. Combining the $15,000 net unrealized gain with $30,000 of dividend income gives total 2008 income of $45,000. This treatment reflects the fair-value-through-profit-or-loss approach: gains and losses from remeasurement are included in the income statement as they arise, and qualifying dividend income is also reported in profit or loss. See IFRS 9's requirements for financial assets at fair value through profit or loss in IFRS 9 Financial Instruments and the IFRS Foundation's IFRS 9 supporting materials.

## QUESTION NO: 11

Maria Harris is a CFA® Level 3 candidate and portfolio manager for Islandwide Hedge Fund. Harris is commonly involved in complex trading strategies on behalf of Islandwide and maintains a significant relationship with Quadrangle Brokers, which provides portfolio analysis tools to Harris. Recent market volatility has led Islandwide to incur record-high trading volume and commissions with Quadrangle for the quarter. In appreciation of Islandwide's business, Quadrangle offers Harris an all-expenses-paid week of golf at Pebble Beach for her and her husband. Harris discloses the offer to her supervisor and compliance officer and, based on their approval, accepts the trip.

Harris has lunch that day with

C. K. Swamy, CFA, her old college roommate and future sister-inlaw. While Harris is sitting in the restaurant waiting for Swamy to arrive, Harris overhears a conversation between the president and chief financial officer (CFO) of Progressive Industries. The president informs the CFO that Progressive's board of directors has just approved dropping the company's cash dividend, despite its record of paying dividends for the past 46 quarters. The company plans to announce this information in about a week. Harris owns Progressive's common stock and immediately calls her broker to sell her shares in anticipation of a price decline.

Swamy recently joined Dillon Associates, an investment advisory firm. Swamy plans to continue serving on the board of directors of Landmark Enterprises, a private company owned by her brother-in-law, for which she receives $2,000 annually. Swamy also serves as an unpaid advisor to the local symphony on investing their large endowment and receives four season tickets to the symphony performances.

After lunch, Alice Adams, a client, offers Harris a 1 -week cruise as a reward for the great performance of her account over the previous quarter. Bert Baker, also a client, has offered Harris two airplane tickets to Hawaii if his account beats its benchmark by more than 2% over the following year.

Juliann Clark, a CFA candidate, is an analyst at Dillon Associates and a colleague of Swamy's.

Clark participates in a conference call for several analysts in which the chief executive officer at

Dex says his company's board of directors has just accepted a tender offer from Monolith Chemicals to buy Dex at a 40% premium over the market price. Clark contacts a friend and relates the information about Dex and Monolith. The friend promptly contacts her broker and buys 2,000 shares of Dex's stock.

Ed Michaels, CFA, is director of trading at Quadrangle Brokers. Michaels has recently implemented a buy program for a client. This buy program has driven up the price of a small-cap stock, in which Islandwide owns shares, by approximately 5% because the orders were large in relation to the average daily trading volume of the stock. Michaels' firm is about to bring shares of an OTC firm to market in an

IPO. Michaels has publicly announced that, as a market maker in the shares, his trading desk will create additional liquidity in the stock over its first 90 days of trading by committing to minimum bids and offers of 5,000 shares and to a maximum spread of one-eighth.

Carl Park, CFA, is a retail broker with Quadrangle and has been allocated 5,000 shares of an oversubscribed IPO. One of his clients has been complaining about the execution price of a trade Park made for her last month, but Park knows from researching it that the trade received the best possible execution. In order to calm the client down. Park increases her allocation of shares in the IPO above what it would be if he allocated them to all suitable client accounts based on account size. He allocates a pro rata portion of the remaining shares to a trust account held at his firm for which his brother-in-law is the primary beneficiary.

Has Michaels violated Standard 11(B) Integrity of Capital Markets: Manipulation with respect to any of the following?

**A.** The buy program is a violation.

**B.** The liquidity activity is a violation.

**C.** There is no violation.

**ANSWER: C**

**Explanation:**

There is no violation. Under the CFA Institute Standard concerning market manipulation, conduct violates the standard when it is intended to distort prices or trading volume artificially, or to mislead market participants. Michaels implemented a genuine client buy program. Its effect on the small-cap stock's price resulted from legitimately large demand relative to normal daily trading volume, rather than from an effort to create a false appearance of market activity or an artificial price. A price movement caused by bona fide client orders is not, by itself, manipulative.

Similarly, the trading desk's proposed market-making activity is openly disclosed before the IPO. The firm has stated the duration of its commitment, the minimum displayed bid and offer size, and the maximum spread. This transparency gives market participants relevant context about the anticipated liquidity support and does not create a misleading impression that the stock's liquidity will persist indefinitely or arise solely from independent investor demand. The activities therefore reflect disclosed market making and legitimate execution, not deceptive conduct intended to manipulate the market. CFA Institute's professional standards framework and ethics materials are available at CFA Institute Ethics and Standards and CFA Institute Code and Standards.

**QUESTION NO: 12**

Carl Warner, CFA, has been asked to review the financial information of Global Drug World

(GDW) in preparation for a possible takeover bid by rival competitor Consolidated Drugstores International (Consolidated). GDW has produced impressive results since going public via an initial public offering in 1998. Through a program of aggressive growth by acquisition, GDW is currently seen as a major player and a threat to Consolidated^ own plans for growth and profitability. In preparation for his analysis, Warner has gathered the following financial data from GDW's year-end statements:

| Partial GDW Balance Sheet on May 31, 2008 | |
|---|---|
| Assets | |
| Current assets (excluding cash) | |
| Accounts receivable | 284,762 |
| Inventories | 490,755 |
| Prepaid expenses | 23,743 |
| Total current assets (excluding cash) | 799,260 |
| Property, plant, and equipment | 687,890 |
| Other assets | 236,417 |
| | |
| Liabilities | |
| Current liabilities (excluding notes payable) | |
| Accounts payable and accrued liabilities | 296,564 |
| Other | 100,039 |
| Total current liabilities (excluding notes payable) | 396,603 |
| Long-term debt | 262,981 |
| Other liabilities | 15,484 |

| Additional Information | |
|---|---|
| Risk-free rate | 4.5% |
| WACC | 7.5% |
| 2008 working capital investment | $7,325 |
| 2008 dividends | $82,248 |
| Beta | 1.10 |
| Investment in fixed capital in 2008 | $143,579 |
| Market risk premium | 5% |
| Total equity May 31, 2007 | $1,019,869 |
| Principal repayment of long-term debt in 2008 | $33,275 |
| Notes payable issued in 2008 | $5,866 |
| 2008 change in liabilities | $27,409 |
| Tax rate | 30% |

As part of his analysis, Warner needs to forecast the free cash flow to the firm (FCFF) for 2009. The best information he has points to an increase in sales of 6%. The earnings before interest and tax (EBIT) margin is not expected to change from the rate of 6.4% achieved in 2008. Additional fixed capital spending is expected to be $36,470. Investment in net working capital is expected to be $24,313. Moreover, Warner notes that the only noncash charge is depreciation, which he estimates will be $60,000.

Warner has been asked to analyze the effect each of the following corporate events, if taken during 2009, would have on GDW's free cash flow to equity (FCFE):

• 20% increase in dividends per share.

• Repurchase of 25% of the firm's outstanding shares using cash.

• New common share offering that would increase shares outstanding by 30%.

• New issue of convertible bonds that are not callable for fi\e years and would increase the level ofdebt by 10%.

Warner determines that on a per-share basis, the FCFE for GDW in 2008 is $0.19. Further analysis suggests that FCFE per share will grow by $0.02 in each of the next two years before leveling off to a long-term growth rate of 5%. The current value of one share of GDW's equity is closest to:

**A.** $4.37.

**B.** $7.15.

**C.** $13.49.

**ANSWER: A**

**Explanation:**

The current value is **$4.37**, using a two-stage FCFE valuation model and the 10% required return on equity supplied in the preceding material. Starting from 2008 FCFE per share of $0.19, the explicitly forecast FCFE amounts are $0.21 at the end of the first year and $0.23 at the end of the second year. After that point, FCFE grows perpetually at 5%, so the terminal value at the end of year two is calculated from the following year's FCFE: ($0.23 × 1.05) ÷ (0.10 − 0.05) = $4.83. This terminal value represents the value, at year two, of all FCFE beginning in year three. The year-two cash flow for valuation purposes is therefore $0.23 + $4.83 = $5.06. Discounting $0.21 received in year one and $5.06 received in year two at 10% gives approximately $0.19 + $4.18 = $4.37. FCFE is the cash flow available to common shareholders after operating needs, reinvestment, and net debt financing, making it an appropriate direct input to an equity valuation model. The terminal-value approach follows the constant-growth framework described in CFA Program curriculum information and the FCFE valuation overview from CFA Institute's free-cash-flow valuation refresher.

**QUESTION NO: 13**

Factor Analytics Capital Management makes portfolio recommendations using various factor models. Mauricio Rodriguez, a Factor Analytics research analyst, is examining the prospects of two portfolios, the FACM Century Fund (CF) and the FACM Esquire Fund (EF).

The variance of returns are identical for the two funds. The estimates in Exhibit 1 were derived for CF and EF using monthly data for the past five years.

**Exhibit 1: Market Model Estimates for CF and EF**

Market model for CF: $R_{CF} = 0.05 + 0.70R_M + \varepsilon_{CF}$

Market model for EF: $R_{EF} = 0.02 + 1.50R_M + \varepsilon_{EF}$

where:

$R_{CF}$ = return on the CF fund
$R_{EF}$ = return on the EF fund
$R_M$ = return on the market portfolio
$\varepsilon_{CF}$ = regression error term for CF
$\varepsilon_{EF}$ = regression error term for EF

Supervisor Barbara Woodson asks Rodriguez to use the Capita! Asset Pricing Model (CAPM) and a multifactor model (APT) to make a decision to continue or discontinue the EF fund. The two factors in the multifactor model are not identified. To help with the decision, Woodson provides Rodriguez with the capital market forecasts in Exhibit 2.

**Exhibit 2: Capital Market Forecasts**

| | |
|---|---|
| Treasury bond yield | 4% |
| Market portfolio risk premium | 8% |
| APT factor 1 | 5% |
| APT factor 2 | 2% |
| Inflation rate | 3% |
| Market portfolio standard deviation | 20% |

After examining the prospects for the EF portfolio, Rodriguez derives the forecasts in Exhibit 3.

**Exhibit 3: EF Forecasts**

| | |
|---|---|
| Return for EF | 0.12 |
| Portfolio beta* | 0.80 |
| APT factor 1 sensitivity | 1.50 |
| APT factor 2 sensitivity | 2.00 |

*Relative to the market portfolio

Rodriguez also develops a 2-factor macroeconomic factor model for the EF portfolio. The two factors used in the model are the surprise in GDP growth and the surprise in Investor Sentiment. The equation for the macro factor model is:

$$R_{EF} = a_{EF} + b_{EF,1}F_{GDP} + b_{EF,2}F_{IS} + \varepsilon_{EF}$$

During an investment committee meeting, Woodson makes the following statements related to the 2-factor macroeconomic factor model.

Statement 1: An investment combination in CF and EF that provides a GDP growth factor beta equal to one and an Investor Sentiment factor beta equal to zero will have lower active factor risk than a tracking portfolio consisting of CF and EF.

Statement 2: When markets are in equilibrium, no combination of CF and EF will produce an arbitrage opportunity

In their final meeting, Rodriguez informs Woodson that the CF portfolio consistently outperformed its benchmark over the past five years. Rodriguez makes the following comments to Woodson: "The consistency with which CF outperformed its benchmark is amazing. The difference between the CF monthly return and its benchmark return was nearly always positive and varied little over time."

Based on the data provided in Exhibits 2 and 3, should Rodriguez recommend that Factor Analytics continue to invest in the EF fund using the:

CAPM? 2-factorAPT?

**A.** Yes ;Yes

**B.** Yes ;No

**C.** No ;Yes

**ANSWER: B**

**Explanation:**

“Yes ;No” is correct because the investment decision differs under the two expected-return models. Under CAPM, EF’s required return is calculated from the risk-free rate plus its forecast market beta multiplied by the forecast market risk premium. The resulting CAPM required return is below EF’s 12% forecast return. Because the portfolio’s expected return exceeds the return required for its forecast level of systematic market risk, CAPM indicates positive alpha and supports continuing the investment.

For the two-factor arbitrage pricing theory model, the required return incorporates EF’s sensitivities to both specified factors and each factor’s associated risk premium, in addition to the risk-free rate. Applying the Exhibit 2 factor-risk-premium forecasts and the Exhibit 3 factor beta forecasts produces a required return of 15.5%. EF’s 12% forecast return is therefore insufficient relative to the compensation required for its two sources of factor risk. The multifactor-model result supports discontinuing, rather than continuing, the fund. The relevant beta for the CAPM calculation is the forecast beta supplied for the decision, not merely a historical beta estimated from the market-model regression.

These model relationships are consistent with the CFA Institute overview of multifactor models and its portfolio risk and return materials.

**QUESTION NO: 14**

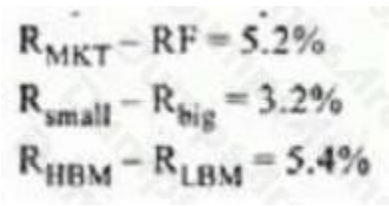
Yi Tang updates several economic parameters monthly for use by the analysts and the portfolio managers at her firm. If economic conditions warrant, she will update the parameters even more frequently. As a result of an economic slowdown, she is going through this process now.

The firm has been using an equity risk premium of 5.6%, found with historical estimates. Tang is going to use an estimate of the equity risk premium found with a macroeconomic model. By comparing the yields on nominal bonds and real bonds, she estimates the inflation rate to be 2.6% . She expects real domestic growth to be 3.0%. Tang does not expect a change in price/earnings ratios. The yield on the market index is 1.7% and the expected risk-free rate of return is 2.7%.

Elizabeth Trotter, one of the firm's portfolio Managers, asks Tang about the effects of survivorship bias on estimates of the equity risk premium. Trotter asks, "Which method is most susceptible to this bias, historical estimates, Gordon growth model estimates, or survey estimates?"

Tang wishes to estimate the required rate of return for Northeast Electric (NE) using the Capital Asset Pricing Model (CAPM) and the Fama-French three factor model. She is using the following information to accomplish this:

· The risk-free rate of return is 2.7%. · The expected risk premiums arc:




· The beta coefficient in the CAPM is estimated to be 0.63.

· The betas (factor sensitivities) for the three Fama-French factors are 1.00 for the market factor, 0.76 for the size factor, and -0.04 for the book-to-markct factor.

Trotter also asks Tang about adjusted betas. She says, "We use a formula for the adjusted beta where the adjusted beta = (2/3) (regression beta) + (1/3) (1.0). How do the adjusted betas compare to the original regression betas?"

Trotter has one final question for Tang. Trotter says, "We need to estimate the equity beta for VixPRO, which is a private company that is not publicly traded. We have identified a publicly traded company that has similar operating characteristics to VixPRO and we have estimated the beta for that company using regression analysis. We used the return on the public company as the dependent variable and the return on the market index as the independent variable. What steps do I need to take to find the beta for VixPRO equity? The companies have different debt/equity ratios. The debt of both companies is very low risk, and I believe I can ignore taxes."

Which of the following is the best answer that Tang should give the portfolio manager to the question about adjusted betas?

**A.** The regression betas are all increased by 0.33.

**B.** Regression betas that are above 1.0 are adjusted upward and regression betas that arc below 1.0 are adjusted downward.

**C.** Regression betas are adjusted to be closer to 1.0 by roughly 1/3 of their original difference from 1.0.

**ANSWER: C**

**Explanation:**

Regression betas are adjusted to be closer to 1.0 by roughly 1/3 of their original difference from 1.0. This follows directly from the specified adjustment formula: adjusted beta = (2/3) × regression beta + (1/3) × 1.0. The formula is a weighted average of the estimated regression beta and the market beta of 1.0, so it shrinks every estimated beta toward 1.0 rather than adding a fixed amount to each estimate.

Algebraically, the distance of the adjusted beta from 1.0 equals two-thirds of the original distance: adjusted beta − 1.0 = (2/3) × (regression beta − 1.0). Thus, one-third of the original gap is removed. For example, a regression beta of 1.60 is 0.60 above 1.0; its adjusted beta is 1.40, which is 0.40 above 1.0. Similarly, a regression beta of 0.70 is 0.30 below 1.0; its adjusted beta is 0.80, only 0.20 below 1.0. This adjustment reflects the common empirical tendency for beta estimates to exhibit mean reversion over time. CFA Institute discusses beta and its role in estimating required return within the CAPM framework in its Cost of Capital: Foundational Topics refresher reading. See also Investopedia's beta overview for the interpretation of beta relative to market risk.

**QUESTION NO: 15**

Jason Bennett is an analyst for Valley Airlines (Valley), a U.S. firm. Valley owns a stake in Southwest Air Cargo (Southwest), also a U.S. firm. The two firms have had a long-standing relationship. The relationship has become even closer because several of Valley's top executives hold seats on Southwest's Board of Directors.

Valley acquired a 45% ownership stake in Southwest on December 31, 2007. Acquisition of the ownership stake cost $9 million and was paid in cash. Valley's stake in Southwest is such that management can account for the investment using either the equity method or the acquisition method. While Valley's management desires to fairly represent the firm's operating results, they have assigned Bennett to assess the impact of each method on reported financial statements.

Immediately prior to the acquisition. Valley's current asset balance and total equity were $96 million and $80 million, respectively. Southwest's current assets and total equity were $32 million and $16 million, respectively.

While analyzing the use of the equity method versus the acquisition method, Bennett calculates the return on assets (ROA) ratio. He arrives at two conclusions:

Statement 1: Compared to the acquisition method, the equity method results in a higher ROA because of the higher net income under the equity method.

Statement 2: Compared to the acquisition method, the equity method results in a higher ROA because of the smaller level of total assets under the equity method.

In order to get a better picture of Valley's operating condition, Bennett is also considering the use of proportionate consolidation to account for Southwest. He makes the following statements regarding the acquisition method and a proportionate consolidation:

Statement 3: Both methods are widely accepted under the provisions of U.S. GAAP and International Financial Reporting Standards (IFRS).

Statement 4: Both methods report the same level of assets on the parent's balance sheet.

Statement 5: Both methods report all of Southwest's liabilities on the parent's balance sheet.

In addition. Valley has always wanted to pursue its goal of vertical integration by expanding its scope of operations to include the manufacturing of airline parts for its own airplanes. Therefore, it established a subsidiary, Mountain Air Parts (Mountain), in Switzerland on January 1,2008. Switzerland was chosen as the location for economic and geographical diversification reasons. Mountain will operate as a self-contained, independent subsidiary. Local management in Switzerland will make the majority of operating, financing, and investing decisions.

The Swiss franc (CHF) is the official currency in Switzerland. On January 1, 2008, the USD/CHF exchange rate was 0.77. At December 31, 2008, the exchange rate had changed to 0.85 USD/ CHF. The average exchange rate in 2008 was 0.80 USD/CHF. In its first year of operations. Mountain paid no dividends and no taxes. Mountain uses the FIFO assumption for its flow of inventory.

**Mountain Air Parts**
**Balance Sheet**

| (in CHF thousands) | 12/31/2008 | 1/1/2008 |
|---|---|---|
| **Assets** | | |
| Cash and accounts receivable | [illegible] | 400 |
| Inventory | 500 | 500 |
| Property, plant, and equipment | [illegible] | 700 |
| **Total assets** | 1,700 | 1,600 |
| **Liabilities and equity** | | |
| Accounts payable | 200 | 100 |
| Long-term debt | 100 | 200 |
| Common stock | 1,300 | 1,300 |
| Retained earnings | 100 | 0 |
| **Total liabilities and owner's equity** | 1,700 | 1,600 |

**Mountain Air Parts**
**Income Statement for 2008**

| (in CHF thousands) | |
|---|---|
| Sales | 7,000 |
| COGS | (6,800) |
| Depreciation | (100) |
| **Net income** | 100 |

For this question only, assume that Mountain is operating in a highly inflationary environment. Which of the following statements is least correct? Mountain's:

**A.** nonmonetary assets and nonmonetary liabilities are adjusted for inflation in accordance with U.S. GAAP.

**B.** functional currency is the U.S. dollar.

**C.** financial statements are adjusted for inflation, and the net purchasing power gain or loss is recognized in the income statement in accordance with IFRS.

**ANSWER: A**

**Explanation:**

“nonmonetary assets and nonmonetary liabilities are adjusted for inflation in accordance with U.S. GAAP.” is the least correct statement. For a foreign operation in a highly inflationary economy, U.S. GAAP requires use of the temporal method because the parent’s reporting currency is treated as the subsidiary’s functional currency. The subsidiary’s financial statements are remeasured into U.S. dollars rather than first being inflation-adjusted. Under this approach, monetary items are remeasured at the current exchange rate, while nonmonetary items carried at historical cost, such as inventory and fixed assets, use historical exchange rates. Thus, U.S. GAAP does not require an inflation restatement of Mountain’s nonmonetary assets and liabilities merely because the local economy is highly inflationary. This treatment reflects the view that local-currency statements prepared in a highly inflationary environment do not provide a meaningful basis for translation without remeasurement. The applicable U.S. guidance and the temporal-method framework are summarized in PwC’s highly inflationary economies guide. In contrast, IFRS addresses hyperinflation through IAS 29, summarized by the IFRS Foundation.

## QUESTION NO: 16

Russell Larson, CFA, is an investment analyst for Sentry Properties, Inc., a group of wealthy investors that is currently interested in purchasing Riviera Terrace, a 60- unit apartment complex in Southeastern Florida. The current owners of Riviera Terrace have agreed to sell the property for $40,000,000. Larson estimates that Rivjera Terrace's net operating income for the first year after the sale is finalized will be $4,200,000, and it is expected to maintain its historic annual growth rate of 5%.

At Sentry's request, Larson will evaluate the investment in Riviera Terrace over a 5-year horizon using selling prices of $45,000,000 and S60,000,000.

During the due diligence process, Larson has determined that the average selling price for apartment complexes similar to Riviera Terrace is $1,250,000 per unit, with annual net operating income equal to $ 135,000 per unit. Larson has also determined that net operating income is typically 80% of gross income.

Larson has collected the following information to aid in his evaluation of Riviera Terrace.

• The property will be fully depreciated at a rate of S 1,250,000 per year over 32 years.

• Rental contracts are expected to be reissued on the date the sale is completed.

• Sentry has arranged to finance the investment with a 30-ycar, 7% interest-only loan, withmonthly payments and a face value equal to 80% of the initial investment.

• Selling expenses will be 7% of the gross selling price.

• The capital gains tax rate is 15%, the tax on recaptured depreciation is 28%, and the tax rate onordinary income is 40%.

• Sentry Properties' required return on equity is 20%.

• The interest rate on U.S. government bonds after adjustments for real estate based tax savings= 5.0%.

• The premium investors require for the illiquidity of real estate investments = 2.5%.

• The average real estate return net of appreciation = 1.25%.

• The real estate investment risk premium = 3.0%.

• The average internal rate of return for properties that are comparable to Riviera Terrace is 22%.

As part of the diligence process, Larson deems it to be appropriate to estimate the.market value of Riviera Terrace using capitalization rates based on the market extraction and built-up methods.

One of the partners in Sentry Properties has also asked Larson to estimate the market value of Riviera Terrace using: (1) the direct income capitalization approach and (2) the gross income multiplier approach.

There are several indicators that the Florida real estate market may take a downward turn over the next five years. With this in mind, Larson determines that there is a reasonable chance that Sentry will have to terminate its investment in Riviera Terrace at the end of year 3 at the initial purchase price of $40,000,000. Under this scenario, he estimates the equity reversion after tax (ERAT) in year 3 to be $4,934,000. Cash flow after tax in years 1 and 2 are $1,676,000 and $1,802,000, respectively.

Larson values Riviera Terrace using the direct income capitalization approach. His estimate is closest to:

**A.** $31,111,111.

**B.** $38,888,889.

**C.** $48,611,111.

**ANSWER: B**

**Explanation:**

The correct estimate is **$38,888,889.** Under the direct income capitalization approach, value equals the property's stabilized forward net operating income divided by a market-derived capitalization rate. The comparable apartment complexes provide both the annual net operating income per unit and the transaction price per unit, so their implied capitalization rate is $135,000 ÷ $1,250,000 = 10.8%.

Riviera Terrace's estimated first-year net operating income is $4,200,000. Applying the extracted 10.8% capitalization rate gives a value of $4,200,000 ÷ 0.108 = $38,888,888.89, or approximately $38,888,889. This method appropriately matches the subject property's income measure with a capitalization rate observed from comparable properties. Because the question asks for a direct capitalization estimate, the relevant inputs are the first-year NOI and the market-implied cap rate; financing terms, income taxes, potential future sale prices, and multiyear equity cash flows are not part of this specific valuation calculation. Direct capitalization is a standard real estate income-approach technique, as covered within the CFA Program curriculum's real estate valuation content: CFA Program Curriculum. For a general definition of the capitalization-rate relationship between NOI and property value, see Investopedia: Capitalization Rate.

**QUESTION NO: 17**

Voyager Inc., a primarily internet-based media company, is buying The Daily, a media company with exposure to newspapers, television, and the internet.

| Company Descriptions |
| --- |
| Voyager Inc. is organized into two segments: Internet and Newspaper Publishing. The internet segment operates Web sites that offer news, entertainment, and advertising content in text and video format. The internet segment represents 75% of the company's total revenues. The newspaper publishing segment publishes 10 daily newspapers. The newspaper publishing segment represents 25% of the company's total revenues. |
| The Daily is organized into three segments: Newspaper Publishing (60% of revenues), Broadcasting (35% of revenues), and Internet (5% of revenues). The newspaper publishing segment publishes 101 daily newspapers. The Broadcasting segment owns and operates 25 television stations. The Internet segment consists of an internet advertising service. The Daily's newspaper publishing and broadcasting segments cover the twenty largest markets in the United States. |

Voyager's acquisition of The Daily is The company's second major acquisition in its history. The previous acquisition was at the height of the merger boom in the year 2000. Voyager purchased the Dragon Company at a premium to net asset value, thereby doubling the company's size. Voyager used the pooling method to account for the acquisition of Dragon; however, because of FASB changes to the Business Combination Standard, Voyager will use the acquisition method to account for the Daily acquisition.

| (in millions except per share data) | Voyager Inc. (before merger) | The Daily (before merger) |
|---|---|---|
| Revenues | $1,800 | $7,600 |
| Operating Income | $415 | $998 |
| Earnings | $200 | $650 |
| Assets | $1,900 | $14,700 |
| Debt | $200 | $2,500 |
| Equity | $1,100 | $7,600 |
| Number of shares | 117.6 million | 213.1 million |
| Stock price per share | $68 | $35 |
| Earnings per share | $1.70 | $3.05 |
| PE ratio | 40.0x | 11.5x |

Voyager has made an all-cash offer of $45 per share to acquire The Daily. Wall Street is skeptical about the merger. While Voyager has been growing its revenues by 40% per year, The Daily's revenue growth has been less than 2% per year. Michael Renner. the CFO of Voyager, defends the acquisition by stating that The Daily has accumulated a large amount of tax losses and that the combined company can benefit by immediately increasing net income after the merger. In addition, Renner states that the New Voyager will eliminate the inefficiencies of the internet operations and thereby boost future earnings. Renner believes that the merged companies will have a value of $17.5 billion.

In the past, The Daily's management has publicly stated its opposition to merging with any company, a position management still maintains. As a result of this situation, Voyager submitted their merger proposal directly to The Daily's board of directors, while the firm's CEO was on vacation. Upon returning from vacation, The Daily's CEO issued a public statement claiming that the proposed merger was unacceptable under any circumstances.

Assume that Voyager offers 63 million shares of its stock, rather than cash, to acquire The Daily.

The share price of the combined company is closest to:

**A.** $145 per share.

**B.** $150 per share.

**C.** $155 per share.

**ANSWER: B**

**Explanation:**

**$150 per share.** is the correct result because a stock-financed acquisition changes the ownership claim denominator: the combined company must have enough shares outstanding to include both Voyager's pre-acquisition shareholders and the 63.0 million new Voyager shares issued to The Daily's shareholders. Voyager has 117.6 million existing shares, so the post-transaction share count is 180.6 million shares (117.6 million + 63.0 million).

The combined equity value, after incorporating the transaction inputs and the value attributed to the combined firm, is $27,089.5 million. Dividing that total equity value by the 180.6 million shares outstanding gives a pro forma share price of approximately $150.00 per share. This is a valuation-per-share calculation; it reflects how the aggregate value of the combined enterprise is allocated across all outstanding shares after the share issuance. The use of the acquisition method

affects the accounting for acquired assets, liabilities, and goodwill, but the immediate pro forma market-value calculation remains total combined equity value divided by total post-merger shares.

This approach is consistent with the acquisition-method framework for business combinations described in FASB ASC Topic 805, Business Combinations and the U.S. Securities and Exchange Commission's overview of mergers and acquisitions.

## QUESTION NO: 18

Ryan Hendricks serves as a security analyst for Investment Management, Inc. (IMI), which employs the Treynor-Black model to evaluate securities and to make portfolio recommendations. IMI uses the capital asset pricing model (CAPM) to determine the degree to which securities may be mispriced relative to IMFs forecasts.

Hendricks evaluates the common shares of Computer Software Associates (CSA), a small company specializing in a unique computer software market niche. Hendricks obtains the following market model results for CSA, using monthly returns for the past 60 months:

$$R_{CSA} = -0.02 + 1.75\, R_{s\&p500} + \epsilon_{CSA} \qquad (1)$$

where:

$R_{CSA}$ = the return on the CSA stock

$R_{S\&P500}$ = tne return on tne S&P500 stock market index

$\epsilon_{CSA}$ = random regression error term

Hendricks uses the adjusted beta method to derive his forecasts for companies' future betas. In deriving his forecast for any company beta, Hendricks uses the following first-order autoregressive formula:

forecast beta = 0.33 + 0.67 x (historical beta) (2)

Hendricks derives required returns for individual securities using the CAPM after making appropriate adjustments using his adjusted beta formula in equation (2).

IMI provides Hendricks with the following capital market forecasts to use as inputs for the CAPM.

**Exhibit 1: Capital Market Forecasts**

| *Economic Variable* | *Expected Return* |
|---|---|
| S&P 500 | 12% |
| 1-year Treasury bill | 4% |

IMI asks Hendricks to make decisions to take long and short positions in individual securities for

IMI's actively managed portfolio, IMI-Active. Specifically, Hendricks is asked to examine CSA and Millennium Drilling (MD), an oil and gas drilling company specializing in deep sea drilling. After a thorough examination of the prospects for each company, Hendricks derives the following alpha forecasts for CSA and MD.

**Exhibit 2: Alpha Forecasts**

| *Company* | *Alpha* |
|---|---|
| CSA | 0.04 |
| MD | 0.08 |

Hendricks forecasts that the unsystematic variance (the variance of the market model regression error) for MD will be more than double that of CSA.

After determining the appropriate allocations across securities within the IMI-Active portfolio, Hendricks derives the portfolio predictions shown in Exhibit 3.

**Exhibit 3: Forecasts for the IMI-Active Portfolio**

| *Forecast Variable* | *Forecast Value* |
|---|---|
| Alpha, $\alpha$ | 5.33% |
| Beta, $\beta$ | 1.35% |
| Total standard deviation, $\sigma$ | 40.00% |
| Unsystematic standard deviation, $\sigma(\varepsilon)$ | 30.00% |

IMI forecasts that the total standard deviation for the S&P500 returns will equal 20%. After examining the historical forecasting abilities of Hendricks, IMI determines that Hendricks has demonstrated perfect forecasting ability in regards to CSA stock, but imperfect forecasting abilities in regards to MD stock. IMI finds that the correlation between the realized alphas for MD and the forecast MD alphas provided by Hendricks equals 0.50.

Referring to the Treynor-Black model, Hendricks makes the following statements:

Statement 1: All else equal, the Treynor-Black model increases the weight to the active portfolio as its unsystematic risk increases.

Statement 2: The Treynor-Black model is based on the premise that only a limited number of stocks should be included in the actively managed portfolio.

The information ratio for the IMI-Activc portfolio is closest to:

**A.** 0.06.

**B.** 0.12.

**C.** 0.18.

**ANSWER: B**

**Explanation:**

The information ratio for the IMI-Active portfolio is **0.12**. In the Treynor-Black framework, the active portfolio's information ratio measures the expected return attributable to security-selection skill per unit of residual, or nonsystematic, risk. It is calculated as the active portfolio's predicted alpha divided by the standard deviation of its residual return: IR = $\alpha_A/\sigma(e_A)$. This differs from a Sharpe ratio because total portfolio volatility is not the relevant denominator; market-related risk is separated from the active manager's security-specific bets.

Using the active portfolio alpha and residual standard deviation reported in Exhibit 3 produces an information ratio of approximately 0.12. The result can be interpreted as 0.12 units of expected active return for each unit of nonsystematic risk assumed by IMI-Active. This is the key performance input used by the Treynor-Black model when combining an actively

selected portfolio with a passive market portfolio. The model's purpose is to exploit positive expected alphas while explicitly recognizing the residual risk required to pursue them. CFA Institute's curriculum overview is available at CFA Program Curriculum, and its investment-analysis resources are available through CFA Institute Insights.

## QUESTION NO: 19

Delicious Candy Company (Delicious) is a leading manufacturer and distributor of quality confectionery products throughout Europe and Mexico. Delicious is a publicly-traded firm located in Italy and has been in business over 60 years.

Caleb Scott, an equity analyst with a large pension fund, has been asked to complete a comprehensive analysis of Delicious in order to evaluate the possibility of a future investment.

Scott compiles the selected financial data found in Exhibit 1 and learns that Delicious owns a 30% equity interest in a supplier located in the United States. Delicious uses the equity method to account for its investment in the U.S. associate.

**Exhibit 1: Selected Financial Data—Delicious Candy Company**

| *in millions* | *2009* | *2008* |
|---|---|---|
| **Income Statement** | | |
| Revenue | €60,229 | €55,137 |
| Earnings before interest and tax | 7,990 | 7,077 |
| Earnings before tax | 7,570 | 6,779 |
| Income from associate[a] | 354 | 270 |
| Net income | 6,501 | 5,625 |
| **Balance sheet** | | |
| Total assets[b] | €56,396 | €53,111 |
| Investment in associate | 5,504 | 5,193 |
| Stockholders' equity[c] | 30,371 | 29,595 |

[a] Not included in EBIT or EBT.
[b] Total assets were €45,597 at the end of 2007.
[c] Stockholders' equity was €27,881 at the end of 2007.

Scott reads the Delicious's revenue recognition footnote found in Exhibit 2.

Exhibit 2: Revenue Recognition Footnote

_____ in millions_____

Revenue is recognized, net of returns and allowances, when the goods are shipped to customers and collectability is assured. Several customers remit payment before delivery in order to receive additional discounts. Delicious reports these amounts as unearned revenue until the goods are shipped. Unearned revenue was €7,201 at the end of 2009 and €5,514 at the end of 2008.

Delicious operates two geographic segments: Europe and Mexico. Selected financial information for each segment is found in Exhibit 3.

**Exhibit 3: Selected Financial Information by Segment**

| *in millions* | *EBIT* | *Revenue* | *Total CapEx* | *Total Assets* |
|---|---|---|---|---|
| Europe | €7,203 | €50,463 | €4,452 | €36,642 |
| Mexico | €787 | €9,766 | €8,269 | €14,250 |

At the beginning of 2009, Delicious entered into an operating lease for manufacturing equipment.

At inception, the present value of the lease payments, discounted at an interest rate of 10%, was 6300 million. The lease term is six years and the annual payment is 669 million. Similar equipment owned by Delicious is depreciated using the straight-line method and no residual values are assumed.

Scott gathers the information in Exhibit 4 to determine the implied "stand-alone" value of Delicious without regard to the value of its U.S. associate.

**Exhibit 4: Selected 2009 Market Capitalization Data**

| *in millions except exchange rates* | *Delicious* | *Associate* |
|---|---|---|
| Market capitalization | €97,525 | $32,330 |
| Current exchange rate (€ per $) | €0.70 | |
| Average exchange rate (€ per $) | €0.73 | |

When applying the financial analysis framework to Delicious, which of the following is the best example of an input Scott should use when establishing the purpose and context of the analysis?

**A.** The audited financial statements of Delicious prepared in conformance with either U.S. Generally Accepted Accounting Principles or International Financial Reporting Standards.

**B.** Ratio analysis adjusted for differences between U.S. accounting standards and international accounting standards.

**C.** Review of the pension fund's guidelines related to developing the specific work product.

**ANSWER: C**

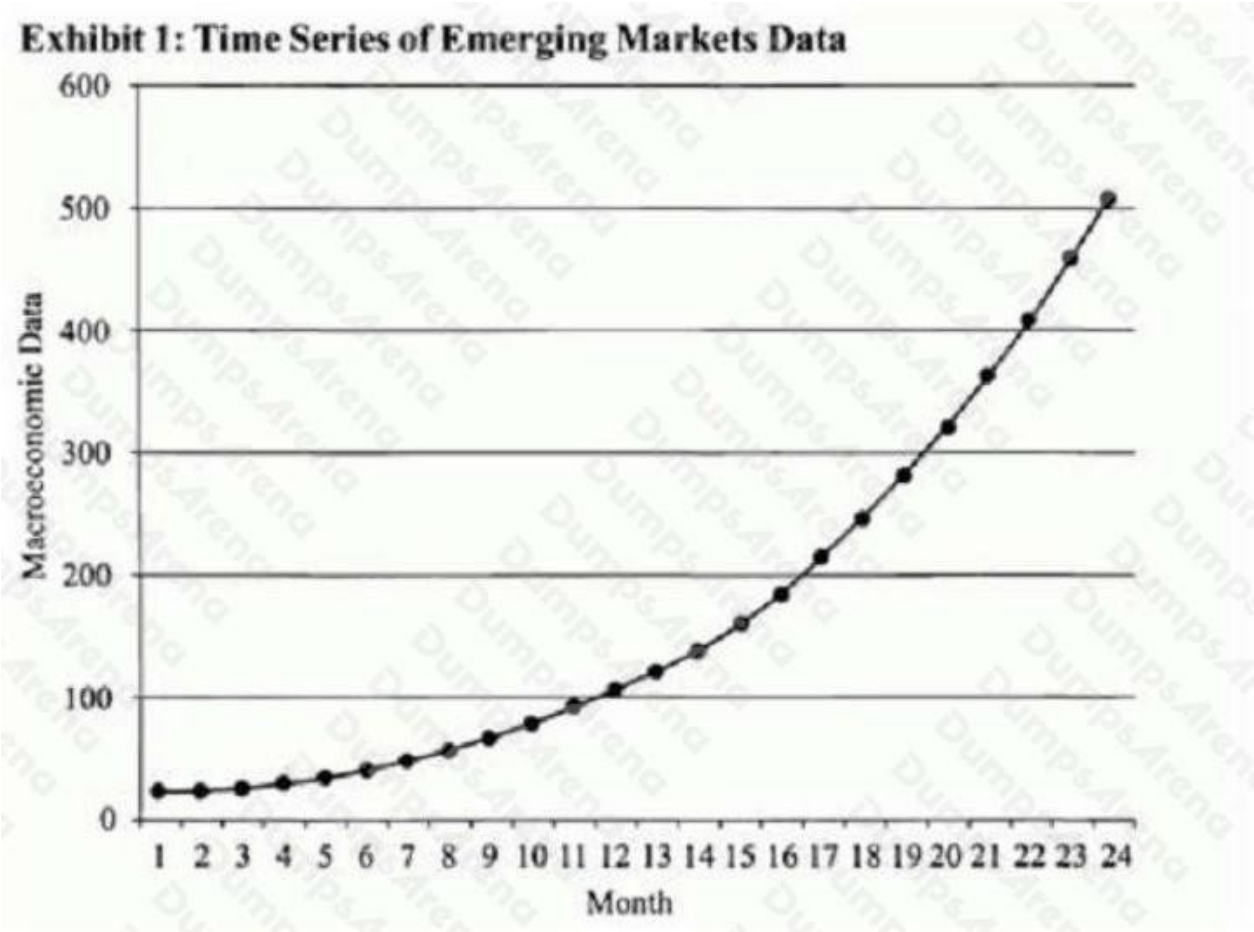
**Explanation:**

Review of the pension fund's guidelines related to developing the specific work product is the appropriate input at the purpose-and-context stage of the financial analysis framework. Before gathering and processing company information, the analyst must establish what decision the analysis is intended to support, who will use it, the required form of the deliverable, the relevant time horizon, and any constraints imposed by the client or institution. Because Scott works for a pension fund and is assessing a potential investment, the fund's guidelines help define the mandate—for example, whether the expected work product is a valuation, a recommendation, a risk assessment, or a report subject to specified investment-policy and presentation requirements. Those requirements determine the scope and depth of the later analysis and ensure that it is decision-useful for its intended user. This sequencing reflects the CFA Institute financial statement analysis process, which begins by articulating the purpose and context and then proceeds to data collection, data processing, analysis, conclusions, and reporting. CFA Institute also emphasizes that professional analysis must be performed with diligence and a reasonable basis consistent with the client's objectives and constraints. See the CFA Institute Financial Statement Analysis introduction and the CFA Institute Standards of Professional Conduct.

**QUESTION NO: 20**

Joan Fisher and Kim Weatherford are economists responsible for modeling security returns for Quincy Portfolio Managers, which is located in the southwestern United States. Fisher is the firm's chief economist and Weatherford is her assistant.

Fisher has been busy over the past week modeling the macroeconomic data of an emerging market. The data for the past 24 months is shown in Exhibit 1.




Fisher ponders how she can run a regression that will model the data for this country in the most appropriate way. She decides to regress the macroeconomic values against a time variable. The resulting plot of the residuals is shown in Exhibit 2.




In addition to financial assets, Quincy Portfolio Managers also recommends the use of commodities as a portfolio diversifier. Weatherford has been examining price indices for silver in an attempt to determine whether silver returns are predictable. As an initial step, she uses an autoregressive first-order regression model on daily price data for silver over the past two years.

The plot of the raw data and the results of the regression are shown in Exhibits 3 and 4.

**Exhibit 3: Time Series of Silver Prices**

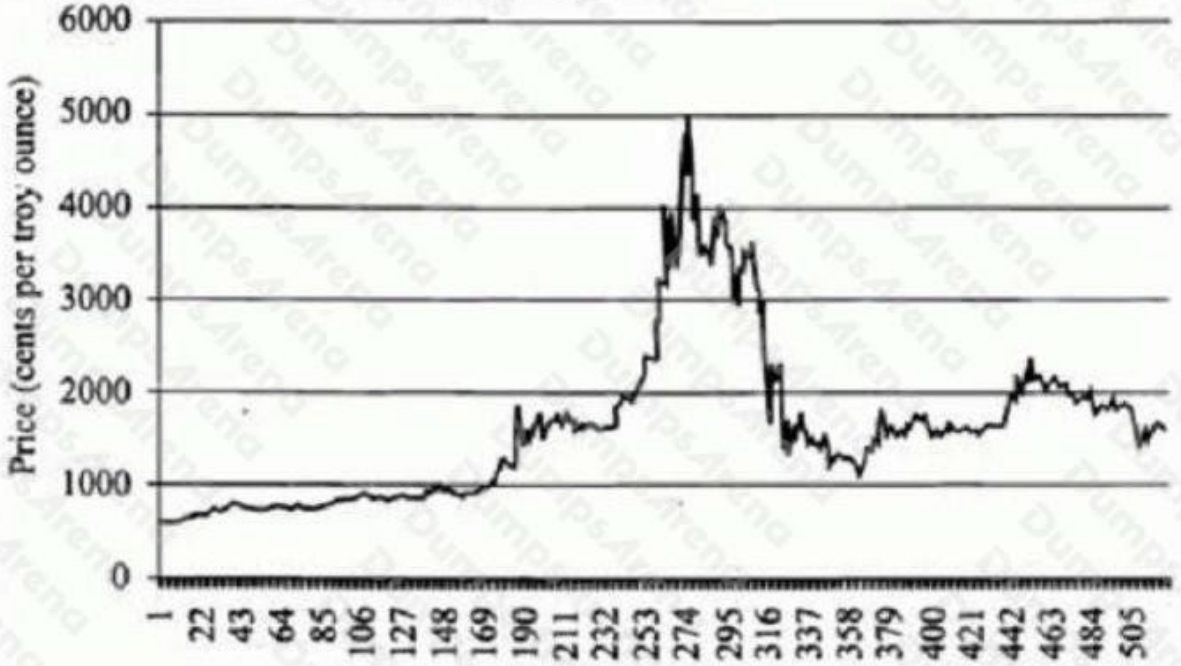



**Exhibit 4: Silver Price Regression Results**

| *Regression Statistics* | |
|---|---|
| Multiple *R* | 0.99 |
| *R*-Square | 0.98 |
| Adjusted *R*-Square | 0.98 |
| Standard Error | 123.81 |
| Observations | 522.00 |
| Durbin-Watson | 2.39 |

**Exhibit 4: Silver Price Regression Results (cont.)**

*ANOVA*

| | *df* | *SS* | *MS* | *F* | *Significance F* |
|---|---|---|---|---|---|
| Regression | 1.00 | 365,730,065 | 365,730,065 | 23,859.63 | 0.00 |
| Residual | 520.00 | 7,970,771 | 15,328 | | |
| Total | 521.00 | 373,700,837 | | | |

| | *Coefficients* | *Standard Error* | *t-Stat* | *P-value* |
|---|---|---|---|---|
| Intercept | 21.00 | 11.56 | 1.82 | 0.07 |
| Slope | 0.99 | 0.01 | 154.47 | 0.00 |

Fisher and Weatherford later discuss fluctuations in gold prices. Although the arithmetic and geometric mean returns for gold were negative for much of the 1980s and 1990s, Fisher and Weatherford believe that gold should perform better in the future due to higher expected inflation. After appropriate transformation of the data, they use an autoregressive first-order regression model to examine the characteristics of gold returns, the results of which are shown in Exhibit 5.

Which of the following are the most likely problem in Weatherford's silver regression and the most appropriate test for it?

Problem Test

**A.** Multicollinearity Breusch Pagan

**B.** Multicollinearity Dickey Fuller

**C.** Nonstationary data Dickey Fuller

**ANSWER: C**

**Explanation:**

**Nonstationary data Dickey Fuller** is correct. Weatherford applies a first-order autoregressive model to silver *price levels*, so the relevant concern is whether the series has a unit root. The plotted price series appears to wander over time rather than fluctuate around a stable long-run mean, and an estimated first-lag autoregressive coefficient close to 1 is characteristic of a unit-root process. Such a process is nonstationary: its mean and variance behavior are not stable through time. Standard regression inference and conclusions about predictability based on a levels regression can therefore be unreliable unless stationarity is established or the data are transformed, commonly by differencing prices to obtain returns.

The Dickey-Fuller test is designed specifically to test for a unit root in an autoregressive time series. In its usual formulation, the null hypothesis is that the unit-root coefficient is zero in the differenced regression, equivalently that the level autoregressive coefficient equals 1. Failure to reject that null supports the conclusion that the price series is nonstationary. This makes the test directly aligned with the diagnostic issue raised by the silver regression. The CFA curriculum's time-series framework likewise emphasizes unit-root testing before interpreting autoregressive models fitted to financial time-series levels. See the CFA Program Curriculum and the Augmented Dickey-Fuller test documentation.

## QUESTION NO: 21

Mary Andrews and Drew McClure are economists for Gasden Econometrics. Gasden provides economic consulting and forecasting services for governments, corporations and small businesses. Andrews and McClure are currently consulting for the developing country of Wakulla, which is considering imposing new regulations on its businesses.

Due to increases in industrial production in the country, the demand for electricity has increased. Unfortunately the cost of electricity has increased as well, and the Wakullian government is considering regulating the electrical utility industry by limiting the amount producers can charge. The price limits would be established so that the utilities can set their own prices as long as they do not earn a return on invested capital that is higher than the average Wakullian business. The Wakullian

government has also proposed stiffer environmental regulations on its firms because the level of air quality has declined in its largest cities. Andrews advises that this regulation is likely to increase production costs that will burden smaller businesses more than larger businesses, and thus can adversely affect competition within an industry. The higher production cost from the environmental regulation will ultimately be borne by consumers, she asserts.

One of the concerns of the Wakullian government is that previous regulation of the economy has been ineffective. For example, when the automobile industry was required to increase the fuel efficiency of passenger vehicles, they increased the weight of some vehicles so more could be classified as trucks, instead of passenger vehicles. The trucks were not subject to the regulation and as a result, fuel efficiency actually declined in the country due to the heavier weight of trucks. McClure comments that the regulation should have been written so that the regulation would be more effective.

McClure gives another example of an ineffective regulation from the automobile industry. When airbags were required in automobiles, consumers started wearing their seat belt less often and driving at higher speeds because the airbags gave them a feeling of greater safety. Consequently, driving fatalities and injuries did not decline as much as expected.

Some regulation, Andrews states, is limited in effectiveness when the regulators are chosen from the industry that is regulated. For example, Andrews states that, due to the level of scientific knowledge needed, many regulatory bodies for the pharmaceutical industry are dominated by former drug company executives and scientists. She states that, according to the share-the-gains, share-the-pains theory, regulatory decisions tend to favor the drug industry because of the close relationship between the industry and the regulator.

McClure adds that another example of regulatory ineffectiveness is when telephone companies go before their regulatory bodies to ask for rate increases. He states ihat according to the capture hypothesis, telephone companies will have greater economic resources and more at stake than individual consumers. As a result, the regulatory decisions tend to favor the telephone industry.

The Wakullian government is considering some of the country's industries. To illustrate the potential costs and benefits of deregulation to the Wakullian government, Andrews and McClure compose a matrix of the potential consequences of deregulation. In the matrix, three scenarios of possible economic consequences are presented in Exhibit 1.

**Exhibit 1**

| | *Scenario A* | *Scenario B* | *Scenario C* |
|---|---|---|---|
| Prices in the short run | Decrease | Increase | Increase |
| Quality of goods and services in the short run | Improves | Improves | Declines |
| Welfare of industry workers in the short run | Declines | Improves | Declines |
| Prices in the long run | Decrease | Increase | Decrease |
| Competition in the long run | Increase | Decrease | Increase |

Which of the following terms best describes the response of consumers to the auto safety regulation?

**A.** Feedback effect.

**B.** Reactionary response.

**C.** Subversion of process.

**ANSWER: A**

**Explanation:**

**Feedback effect.** is correct because the airbag mandate changes consumers' perceived cost of risky driving. Feeling better protected by airbags, some drivers reduce seat-belt use and drive faster. Those behavioral adjustments partially offset the safety benefit that the regulation was designed to produce, so fatalities and injuries decline by less than policymakers initially expected. This is a feedback effect: the regulation changes the incentives or perceived risks facing affected parties, and their response feeds back into—and weakens—the regulation's ultimate outcome. In economic analysis, evaluating regulation therefore requires more than identifying its direct mechanical effect; it also requires considering how firms and consumers adapt once the rule is in place. Here, the relevant adaptation occurs after the safety requirement takes effect and is directly tied to consumers' altered perception of safety. The CFA Program curriculum includes economic analysis of government intervention and the importance of incentives and unintended consequences; see the CFA Program Curriculum. The broader road-safety evidence also recognizes that seat belts and other protective measures affect injury risk and safety behavior, as discussed by the U.S. National Highway Traffic Safety Administration.

## QUESTION NO: 22

Sentinel News is a publisher of over 100 newspapers around the country, with the exception of the Midwestern states. The company's CFO, Harry Miller, has been reviewing a number of potential candidates (both public and private companies) that would provide Sentinel News entrance into the Midwestern market. Recently, the founder of Midwest News, a private newspaper company, passed away. The founder's family members are inclined to sell their 80% controlling interest. The family members are concerned that Midwest News's declining newspaper circulation is not cyclical, but rather permanent. The family members would reinvest the cash proceeds from the sale of Midwest News into a diversified portfolio of stocks and bonds. Miller's staff collects the financial information shown in Exhibit 1.

**Exhibit 1: Midwest News's Financial Information**

| | |
|---|---|
| Total assets | $92.5 million |
| Total debt | $0 |
| Total equity | $79.5 million |
| Shares outstanding | 1.5 million |
| Revenues | $251.5 million |
| Net income | $19.5 million |

Miller noted that Midwest News does not pay a dividend, nor does the company have any debt. The most comparable publicly traded stock is Freedom Corporation. Freedom, however, has significant radio and television operations. Freedom's estimated beta is 0.90, and 40% of the company's capital structure is debt. Freedom is expected to maintain a payout ratio of 40%. Analysts are forecasting the company will earn S3.00 per share next year and grow their earnings by 6% per year. Freedom has a current market capitalization of S15 billion and 375 million shares outstanding. Freedom's current market value equals its intrinsic value.

Miller's staff uses current expectations to develop the appropriate equity risk premium for Midwest News. The staff uses the Gordon growth model (GGM) to estimate Midwest's equity risk premium.

The equity risk premium calculated by the staff is provided in Exhibit 2.

Miller believes the best method to estimate the required return on equity Midwest News is the build-up method. All relevant information to determine Midwest News's required relurn on equity is presented in Exhibit 2.

| Exhibit 2: Required Return Estimate Factors | |
|---|---|
| Risk free rate | 3.5% |
| Equity risk premium | 4.0% |
| Small size premium | 3.5% |
| Specific-company premium | 2.0% |
| Marketability premium | 2.8% |
| Beta | 1.2 |
| Growth rate | 3.0% |

The specific-company premium reflects concerns about future industry performance and business risk in Midwest News. Miller makes two statements concerning the valuation methodology used to value Midwest News's equity.

Statement I: The required return estimate that is calculated from Exhibit 2 reflects all adjustments needed to make an accurate valuation of Midwest News.

Statement 2: It is better to use the free cash flow model to value Midwest News than a dividend discount model.

Miller considered two different valuation models to determine the price of Midwest News's equity: a single-stage free cash flow model and a single-stage residual income model.

Miller has made two statements, one concerning the required return estimate, and the other concerning the relative merits of the free cash flow model versus the dividend discount model. Are Miller's statements correct?

**A.** Only Statement 1 is correct.

**B.** Only Statement 2 is correct.

**C.** Both Statements 1 and 2 are correct.

**ANSWER: B**

**Explanation:**

Only Statement 2 is correct. Midwest News pays no dividend, so a dividend discount model cannot directly capitalize an expected stream of shareholder distributions without imposing an assumption about when and how the firm will begin paying dividends. A free cash flow valuation is more appropriate because it values the operating cash flows available to capital providers rather than relying on an existing dividend policy. For an unlevered company such as Midwest News, free cash flow to the firm can be discounted at the weighted average cost of capital; because there is no debt, this rate is equivalent to the required return on equity. The resulting enterprise value is also equity value in the absence of debt.

The transaction concerns an 80% controlling interest in a private company. Therefore, a complete estimate of the value received by the selling family must also consider the value associated with control, commonly addressed through a control premium applied to the relevant value estimate. A build-up estimate of required return and a specific-company risk premium address discount-rate risk, but they do not by themselves incorporate that transaction-level control feature. This leaves the claim that all valuation adjustments are already reflected unsupported. Further discussion of cash-flow valuation approaches is available from Aswath Damodaran's valuation resources and the CFA Institute refresher readings.

**QUESTION NO: 23**

Jenna Stuart is a financial analyst for Deuce Hardware Company, a U.S. company that reports its results in U.S. dollars. Wayward Distributing, Inc., is a foreign subsidiary of Deuce Hardware, which began operations on January 1,2007. Wayward is located in a foreign country and reports its results in the local currency called the Rho. Selected balance sheet information for Wayward is shown in the following table.

**Selected Balance Sheet Accounts Wayward Distributing Inc. (in Rho)**

| | *12/31/07* | *12/31/08* |
|---|---|---|
| Cash and accounts receivable | 5,000 | 5,200 |
| Inventory | 3,800 | 4,900 |
| Net fixed assets | 6,200 | 7,400 |
| Total assets | 15,000 | 17,500 |
| Current liabilities | 2,000 | 2,000 |
| Long-term debt | 9,000 | 9,500 |
| Shareholders' equity | 4,000 | 6,000 |

Stuart has been asked to analyze how the reported financial results of Wayward will be affected by the choice of the all-current or temporal methods of accounting for foreign operations. She has gathered the following exchange rate information on the $/Rho exchange rate:

• Spot rate on 1/01/08: $0.35 per Rho

• Spot rate on 12/31/08: $0.45 per Rho

• Average spot rate during 2008: $0.42 per Rho

Will total asset turnover (calculated using end-of-period balance sheet figures) likely be larger when calculated from the Rho financial statements or the financial statements translated into the reporting currency (US$) using the all-current method?

**A.** Larger on US$ statements.

**B.** Larger on Rho statements.

**C.** No difference.

**ANSWER: B**

**Explanation:**

**Larger on Rho statements.** is correct because total asset turnover divides revenue by total assets, and the all-current translation method applies different exchange rates to those two components. Revenue for the period is translated using the average exchange rate, whereas end-of-period assets are translated using the closing exchange rate. Here, the Rho appreciated against the U.S. dollar: the average rate is $0.42 per Rho and the closing rate is $0.45 per Rho. Consequently, translated total assets are multiplied by a relatively higher rate than translated revenue. The dollar-denominated asset base therefore increases proportionally more than dollar-denominated revenue, reducing the translated total asset turnover ratio relative to the ratio calculated directly in Rho.

This is a mixed-ratio effect: income-statement amounts and balance-sheet amounts are translated using rates from different points in time. The conclusion follows specifically from the use of end-of-period assets in the denominator; translating both numerator and denominator at the same exchange rate would leave the ratio unchanged. The all-current approach's use of closing rates for assets and average rates for income-statement activity is consistent with foreign-operation translation guidance. See IAS Plus: IAS 21—The Effects of Changes in Foreign Exchange Rates and IFRS Foundation: IAS 21.

## QUESTION NO: 24

Stan Loper is unfamiliar with the Black-Scholes-Merton (BSM) option pricing model and plans to use a two-period binomial model to value some call options. The stock of Arbor Industries pays no dividends and currently trades for $45. The up-move factor for the stock is 1.15, and the risk-free rate is 4%. He is considering buying two-period European style options on Arbor Industries with a strike price of S40. The delta of these options over the first period is 0.83.

Loper is curious about the effect of time on the value of the calls in the binomial model, so he also calculates the value of a one-period European style call option with a strike price of 40.

Loper is also interested in using the BSM model to price European and American call and put options. He is concerned, however, whether the assumptions necessary to derive the model are realistic. The assumptions he is particularly concerned about are:

• The volatility of the option value is known and constant.

• Stock prices are lognormally distributed.

• The continuous risk-free rate is known and constant.

Loper would also like to value options on Rapid Repair, Inc., common stock, but Rapid pays dividends, so Loper is uncertain what the effect will be on the value of the options. Loper uses the two-period model to value long positions in the Rapid Repair call and put options without accounting for the fact that Rapid Repair pays common dividends.

When Loper failed to account for Rapid Repair dividends, did he likely overvalue the calls or the puts?

**A.** The calls and the puts are overvalued.

**B.** Only the calls are overvalued.

**C.** Only the puts are overvalued.

## ANSWER: B

**Explanation:**

**Only the calls are overvalued.** Expected dividends reduce the value of the underlying stock over the option's life because the stock price typically falls by approximately the amount of a cash dividend on the ex-dividend date, all else equal. A call option's payoff increases with the underlying share price, so incorporating an expected dividend lowers the stock-price inputs and expected terminal stock prices used in a binomial valuation. Therefore, a valuation that ignores Rapid Repair's dividends treats the stock as if it will retain a higher value than it realistically will, producing a call value that is too high.

For a non-dividend-paying stock, put–call parity is expressed as $C + PV(X) = P + S$. With known dividends, the current stock price is adjusted by the present value of the dividends expected before expiration. This adjustment captures the fact that dividends reduce the effective value of holding the stock through the option's maturity. In a two-period binomial model, the same principle applies: expected dividends should be reflected in the stock-price tree or through an equivalent adjustment to the initial stock value. The CFA Institute curriculum discusses the effect of dividends on option values in its derivatives readings; see CFA Institute: Option Markets, Contracts, and Strategies and Investopedia: Put-Call Parity.

## QUESTION NO: 25

Sara Robinson and Marvin Gardner are considering an opportunity to start their own money management firm. Their conversation leads them to a discussion on establishing a portfolio management process and investment policy statements. Robinson makes the following statements:

Statement 1;

Our only real objective as portfolio managers is to maximize the returns to our clients.

Statement 2:

If we are managing only a fraction of a client's total wealth, it is the client's responsibility, not ours, to determine how their investments are allocated among asset classes.

Statement 3: When developing a client's strategic asset allocation, portfolio managers have to consider capital market expectations. In response, Gardner makes the following statements:

Statement 4: While return maximization is important for a given level of risk, we also need to consider the client's tolerance for risk.

Statement 5: We'll let our clients worry about the tax implications of their investments; our time is better spent on finding undervalued assets.

Statement 6: Since we expect our investor's objectives to be constantly changing, we will need to evaluate their investment policy statements on an annual basis at a minimum.

Robinson wants to focus on younger clientele with the expectation that the new firm will be able to retain the clients for a long time and create long-term profitable relationships. While Gardner felt it was important to develop long-term relationships, he wants to go after older, high-net-worth clients.

Are Statements 2 and 3 correct when considering asset allocation?

**A.** Both statements are correct.

**B.** Only Statement 2 is correct.

**C.** Only Statement 3 is correct.

**ANSWER: C**

**Explanation:**

Only Statement 3 is correct. Strategic asset allocation is a forward-looking decision that establishes the portfolio's long-term mix of asset classes in a manner consistent with the client's investment objectives and constraints. Capital market expectations are therefore an essential input: the manager must form expectations about the risk, return, correlations, and economic conditions relevant to the available asset classes. Those assumptions support evaluation of the risk–return trade-offs of alternative allocations and selection of an allocation appropriate for the client.

Asset allocation also cannot be determined sensibly by viewing a managed account in isolation when it represents only part of a client's wealth. A portfolio manager needs sufficient information about the client's total financial situation, including other investments, sources of income, liabilities, liquidity needs, tax circumstances, and concentrated exposures. This broader view helps ensure that the managed portfolio complements, rather than inadvertently duplicates or offsets, the client's overall asset allocation and risk exposure. The investment policy statement documents these considerations and provides the framework for implementing and monitoring the strategic allocation. CFA Institute describes portfolio management as aligning investment decisions with client objectives and constraints; see its CFA Program curriculum overview and Code of Ethics and Standards of Professional Conduct.

**QUESTION NO: 26**

Connor Burton, CFA, is the managing partner for United Partners, a small investment advisory firm that employs three investment professionals and currently has approximately $250 million of assets under management. The client base of United Partners is varied, and accounts range in size from small retirement accounts to a $30 million private school endowment. In addition to Burton's administrative responsibilities as the managing partner at United, he also serves as an investment advisor to several clients. Because United Partners is a small firm, the company does not employ any research analysts but instead obtains its investment research products and services from two national brokerage firms, which in turn execute all client trades for United Partners. The arrangement with the two brokers has enabled United to assure its clients that the firm will always seek the best execution for them by having both brokers competitively bid for United's business.

A prospective client, Harold Crossley, has approached Burton about shifting some of his personal assets under management from MoneyCorp to United Partners. Burton provides Crossley with a packet of marketing information that Burton developed himself. The packet contains five years of historical performance data for the private school endowment, Unitcd's largest client. Burton states that the composite's management style and performance results are representative of the management style and returns that United can be expected to achieve for Crossley. Also included in the information packet are brief bios on each of United's three investment professionals. Crossley notices that all three of United's investment professionals are described as "CFA charterholders," but he is not familiar with the designation. In response to Crossley's inquiry. Burton explains the significance of the program by stating that the designation, which is only awarded after passing three rigorous

exams and obtaining the requisite years of work experience, represents a commitment to the highest standards of ethical and professional conduct.

As a condition of moving his account to United Partners, Crossley insists that all of his trades be executed through his brother-in-law, a broker for Security Bank. Security Bank is a large, New York-based broker/dealer but is not one of the two brokerage firms with which United currently does business. Burton contacts Crossley's brother-in-law and determines that Security Bank's trade execution is competitive, but Crossley's account alone would not generate enough volume to warrant any soft dollar arrangement for research materials.

However, Crossley'-s brother-in-law does offer for Security Bank to pay a referral fee to Burton for directing any of United's clients to Security Bank's retail banking division. To bring Crossley on as a client, Burton agrees to the arrangement. Going forward. Burton will use Security Bank to execute all of Crossley's trades but will use research materials provided by the other two brokers to assist in the management of Crossley's account.

Several months later, Burton is invited to a road show for an initial public offering (IPO) for

Solution Ware, a software company. Security Bank is serving as lead underwriter on

SolutionWare's IPO. Burton attends the meeting, which is led by two investment bankers and one software industry research analyst from Security Bank who covers SolutionWare. Burton notes that the bankers from Security Bank have included detailed financial statements for SolutionWare in the offering prospectus and also disclosed that Security Bank provides a warehouse line of credit to SolutionWare. After the meeting, Burton calls Crossley to recommend the purchase of SolutionWare equity. Crossley heeds Burton's advice and tells him to purchase 5,000 shares. Before placing Crossley's order, Burton reads the SolutionWare marketing materials and performs a detailed analysis of expected future earnings and other key factors for the investment decision. Burton determines that the offering would be a suitable investment for his own retirement portfolio in addition to Crossley's portfolio. United Partners, being a small firm, has no formal written policy regarding trade allocation, employee participation in equity offerings, or established blackout periods for employee trading. Burton adds his order to Crossley's order and places a purchase order for the combined number of shares with Security Bank. Burton is later notified that the offering was oversubscribed, and United Partners was only able to obtain roughly 75% of the desired number of shares. To be fair. Burton allocates the shares on a pro rata basis between Crossley's account and his own retirement account. When Burton notifies Crossley of the situation, Crossley is nonetheless pleased to have a position, though smaller than requested, in such a "hot" offering.

With respect to the road show meeting regarding the initial public offering of Solution Ware, did Security Bank comply with the requirements and recommendations of the CFA Institute Research Objectivity Standards?

**A.** No, because it publicly revealed that it also provides corporate finance services for Solution Ware.

**B.** No, because it failed to provide Burton with adequate information to make an investment decision.

**C.** No, because it allowed an analyst to participate in a marketing road show for a company that he covers.

**ANSWER: C**

**Explanation:**

“No, because it allowed an analyst to participate in a marketing road show for a company that he covers.” is correct because the question asks whether Security Bank complied with both the requirements and the recommendations of the CFA Institute Research Objectivity Standards. The standards’ investment-banking safeguards are designed to preserve the independence of research analysis and prevent research personnel from appearing to endorse, market, or promote an underwriting client. In particular, recommended compliance procedures call for firms to prohibit analysts from participating in marketing road shows for companies they cover. Here, the Security Bank software-industry research analyst who covers SolutionWare participated in the issuer’s IPO road show alongside investment bankers. That participation creates precisely the appearance that the analyst’s research role is being used to support the firm’s investment-banking activity, undermining research objectivity. The prospectus disclosure of Security Bank’s warehouse credit relationship is consistent with the standards’ emphasis on disclosure of relevant conflicts, but disclosure does not make analyst participation in the marketing event consistent with the recommendation. CFA Institute’s ethical framework emphasizes independence, objectivity, and the management and disclosure of conflicts in investment activities. See the CFA Institute Code of Ethics and Standards of Professional Conduct and CFA Institute’s Ethics and Standards resources.

**QUESTION NO: 27**

Richard Grass is the healthcare analyst for Furrnon Investments and is reviewing the investment merits of the developing hospice industry. The hospice industry has a short history in the public market, as several companies have recently completed their initial public offering. Hospice services are provided to patients diagnosed with terminal illness as an alternative to aggressive medical management. The use of hospice services at skilled nursing facilities and assisted-living facilities is forecasted to continue its recent growth. Medicare is the primary payer for hospice services, accounting for 85% of the approximately $7 billion in industry's revenues. Hospice providers offer symptom and pain management to patients diagnosed with a terminal illness by their physician. The program was added to the Medicare benefit package in the early 1980s. Growth in the sector has only recently. accelerated due to the emergence of a number of for-profit companies. The caregiver provides a plan for each admitted patient and care is given in any number of healthcare environments, including the patient's home.

Grass's analysis of the hospice industry has uncovered several facts that are outlined below:

• The industry's revenue annual growth rate has increased from 14% in the late 1990s to 25% in2008.

• The average length of stay at facilities for hospice patients is increasing.

• Labor costs account for 75% of total expenses, drugs 15% of total expenses, and medicalsupplies 10%.

• More than 80% of hospice patients are above 65 years old and 30% are above 85 years old.

• Based on the U.S. Census Bureau's statistics, over the next six years (2009-2015), the numberof people in the 65 and older age group will increase annually by 1.4%.

• The Medicare hospice benefit is still underutilized by the terminally ill population, according toMedPac (an independent advisory committee for the U.S. Congress on healthcare issues).

• Only 30% of Medicare beneficiaries enroll in the hospice benefit before they die.

• In recent years, the U.S. government has approved rate increases for the sector compared to flator declining rate trends for other healthcare services.

• The Medicare hospice program has a beneficiary cap which cannot exceed approximately$18,000 annually per person.

• The top six for-profit providers account for about half of the segment's sales.

• The overall hospice provider market is roughly divided into 55% non-profit, 10% U.S.government, and 35% for-profit.

Grass's analysis has narrowed his search to Hope Company. Hope controls about 7% of the total hospice service market or 20% of the for-profit market. The company has the only regulator approved for-profit certificate for the state of Florida, one of the most attractive markets in the United States. In addition to a strong market share in Florida, Hope has a strong presence in urban markets like Dallas and San Francisco. Hope has a more diversified revenue base than other publicly traded for-profit providers.

Grass is forecasting Hope Company's revenues and profits for the next year. Which of the following statements is least likely a risk Grass should consider in developing his forecast? Furmon Investment's economist is forecasting a:

**A.** reduction in Medicare's benefit package.

**B.** recession for the U.S. economy.

**C.** larger than expected increase for healthcare labor expenditures.

**ANSWER: B**

**Explanation:**

A recession for the U.S. economy is the least likely material risk to Hope Company’s near-term revenue and profit forecast. Hospice care is provided after a physician certifies that a patient is terminally ill, so demand is driven principally by medical need, the size and age of the population, utilization of the hospice benefit, and reimbursement policy—not by discretionary consumer spending or the normal business cycle. The case specifically identifies an aging patient base, low current enrollment among eligible Medicare beneficiaries, and expanding use in facility settings, all of which support relatively resilient service demand. In addition, Medicare accounts for the overwhelming majority of industry revenue. This means that the company’s top-line outlook depends much more directly on Medicare eligibility, payment rates, benefit design, and applicable caps than on broad economic activity. Medicare describes hospice as a covered benefit for eligible beneficiaries who elect palliative rather than curative care; see Medicare’s hospice coverage overview. The Centers for Medicare &

Medicaid Services likewise administers prospective hospice payment policies and annual updates, as described in its Hospice payment resources. Accordingly, a recession may have limited indirect effects, but it is not a primary forecasting risk for this reimbursement-supported, medically necessary service.

## QUESTION NO: 28

Arnaud Aims is assisting with the analysis of several firms in the retail department store industry.

Because one of the industry members, Flavia Stores, has negative earnings for the current year, Aims wishes to normalize earnings to establish more meaningful P/E ratios. For the current year (2008) and six previous years, selected financial data are given below. All data are in euros.

**Exhibit 1: Selected Financial Data for Flavia Stores, 2002–2008**

| | 2008 | 2007 | 2006 | 2005 | 2004 | 2003 | 2002 |
|---|---|---|---|---|---|---|---|
| Earnings per share | (1.05) | 1.90 | 1.65 | 0.99 | 1.35 | 0.77 | 1.04 |
| Book value per share | 9.11 | 10.66 | 9.26 | 8.11 | 7.62 | 6.77 | 6.50 |
| Return on equity | (0.115) | 0.178 | 0.178 | 0.122 | 0.177 | 0.114 | 0.160 |

Aims wishes to estimate normalized EPS for 2008 using two different methods, the method of historical average EPS and the method of average rate of return on equity. He will leave 2008 EPS and ROI out of his estimates. Based on his normalized EPS estimates, he will compute a trailing P/E for 2008. The stock price for Flavia Stores is €26.50.

Aims is also looking at price-to-book ratios as an alternative to price-to-earnings ratios. Three of the advantages of P/B ratios that Aims recalls are:

Advantage 1: Because book value is a cumulative balance sheet account encompassing several years, book value is more likely to be positive than EPS.

Advantage 2: For many companies, especially service companies, human capital is more important than physical capital as an operating asset.

Advantage 3: Book value represents the historical purchase cost of assets, as well as accumulated accounting depreciation expenses. Inflation and technological changes can drive a wedge between the book value and market value of assets.

Aims used a constant growth DDM to establish a justified P/E ratio based on forecasted fundamentals. One of his associates asked Aims if he could easily establish a justified price-tosales (P/B) ratio and price-to-book (P/B) ratio from his justified P/E ratio. Aims replied, "I could do this fairly easily)

If I multiply the P/E ratio times the net profit margin, the ratio of net income to sales, the result will be the P/S ratio. If I multiply the P/E ratio times the return on equity, the ratio of net income to book value of equity, the result will be the P/B ratio."

Aims's associate likes to use the price-earnings-to-growth (PEG) ratio because it appears to address the effect of growth on the P/E ratio. For example, if a firm's P/E ratio is 20 and its forecasted 5-year growth rate is 10%, the PEG ratio is 2.0. The associate likes to invest in firms that have an above-industry-average PEG ratio. The associate also says that he likes to invest in firms whose leading P/E is greater than its trailing P/E. Aims tells the associate that he would like to investigate these two investment criteria further.

Finally, Aims makes two comments to his associate about valuation ratios based on EBITDA and on dividends.

Comment 1: EBITDA is a pre-interest-expense figure, so I prefer a ratio of total equity value to EBITDA over a ratio of enterprise value to EBITDA.

Comment 2: Dividend yields are useful information because they are one component of total return. However, they can be an incomplete measure of return, as investors trade off future earnings growth to receive higher current dividends.

Using the information in Exhibit 1, estimate the 2008 P/E ratio for Flavia Stores using the method of historical average EPS. The P/E ratio is closest to:

**A.** 18.4.

**B.** 20.6.

**C.** 27.9.

**ANSWER: B**

**Explanation:**

The correct estimate is **20.6.** Under the historical-average-EPS normalization method, the analyst excludes the abnormal current-year result and calculates sustainable earnings per share from the six preceding annual observations. The reported EPS figures for 2002 through 2007 are €1.90, €1.65, €0.99, €1.35, €0.77, and €1.04. Their arithmetic average is €1.2833 per share: (€1.90 + €1.65 + €0.99 + €1.35 + €0.77 + €1.04) ÷ 6.

The normalized trailing P/E then uses the current market price divided by this normalized EPS, rather than the negative 2008 EPS. Thus, €26.50 ÷ €1.2833 = 20.65, which rounds to 20.6. This approach is useful when a single year's earnings do not represent the firm's longer-run earning capacity: averaging several prior periods reduces the influence of temporary cyclical or unusual effects. The calculation follows the standard definition of a price-to-earnings multiple: market price per share divided by earnings per share. See CFA Institute's overview of the equity valuation concepts and basic tools and the SEC's investor explanation of the P/E ratio.

**QUESTION NO: 29**

William Bow, CFA, is a risk manager for GlobeCorp, an international conglomerate with operations in the technology, consumer products, and medical devices industries. Exactly one year ago, GlobeCorp, under Bow's advice, entered into a 3-year payer interest rate swap with semiannual floating rate payments based on the London interbank offered rate (LIBOR) and semiannual fixed rate payments based on an annual rate of 2.75%. At the time of initiation, the swap had a value of zero and the notional principal was set equal to $150 million. The counterparty to GlobeCorp's swap is NVS Bank, a commercial bank that also serves as a swap dealer. Exhibit 1 below summarizes the current LIBOR term structure.

**Exhibit 1: Current LIBOR Term Structure**

| | Days | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 90 | 180 | 270 | 360 | 450 | 540 | 630 | 720 |
| LIBOR | 2.25% | 2.45% | 3.20% | 3.75% | 4.20% | 3.80% | 3.10% | 2.40% |

Upper management at GlobeCorp feels that the original swap has served its intended purpose but that circumstances have changed and it is now time to offset the firm's exposure to the swap. Because they cannot find a counterparty to an offsetting swap transaction, management has asked Bow to come up with alternative measures to offset the swap exposure. Bow created a report for the management team which outlines several strategies to neutralize the swap exposure. Two of his strategies are included in Exhibit 2.

**Exhibit 2: Swap Neutralization Strategies**

| *Strategy 1* | *Strategy 2* |
|---|---|
| Establish short positions in a series of off-market LIBOR forward rate agreements including a 6 × 12 FRA, 12 × 18 FRA, 18 × 24 FRA, and 24 × 30 FRA with a notional principal of $150 million for each contract. | Sell a floating rate note with a semiannual coupon payment based on 180 day LIBOR, a maturity of two years, and a par value of $150 million. |

After examining its long-term liabilities, NVS Bank has decided that it currently needs to borrow $100 million over the next two years to finance its operations. For this type of funding need, NVS generally issues quarterly coupon short-term floating rate notes based on 90-day LIBOR. NVS is concerned, however, that interest rates may shift upward and the LIBOR curve may become upward sloping. To manage this risk, NVS is considering utilizing interest rate derivatives. Managers at the bank have collected quotes on over-the-counter interest rate caps and floors from a well known securities dealer. The quotes, which are based on a notional principal of $100 million, are provided in Exhibit 3.

**Exhibit 3: Interest Rate Caps and Floors**

| | | | *Interest Rate Cap* | | *Interest Rate Floor* | |
|---|---|---|---|---|---|---|
| *Term (Years)* | *LIBOR* | *Settlement* | *Rate* | *Price* | *Rate* | *Price* |
| 1 | 90-day | Quarterly | 3.50% | $2,000,000 | 2.55% | $1,900,000 |
| 1 | 180-day | Semiannual | 3.50% | $2,000,000 | 2.55% | $1,900,000 |
| 2 | 90-day | Quarterly | 3.65% | $2,200,000 | 2.70% | $2,090,000 |
| 2 | 180-day | Semiannual | 3.65% | $2,200,000 | 2.70% | $2,090,000 |

One of the managers at NVS Bank, Lois Green, has expressed her distrust of the securities dealer quoting prices on the caps and floors. In a memo to the CFO, Green suggested that NVS use an alternative but equivalent approach to manage the interest rate risk associated with its two-year funding plan. Following is an excerpt from Green's memo:

"Rather than using a cap or floor, NVS Bank can effectively manage its exposure to interest rates resulting from the 2-year funding requirement by taking long positions in a series of put options on fixed-income instruments with expiration dates that coincide with the payment dates on the floating rate note."

"As a cheaper alternative, NVS can effectively manage its exposure to interest rates resulting from the 2-ycar funding requirement by creating a collar using long positions in a series of call options on interest rates and long positions in a series of call options on fixed income instruments all of which would have expiration dates that coincide with the payment dates on the floating rate note."

Which of the following statements regarding the GlobeCorp swap initiated one year ago is most likely correct?

**A.** NVS Bank has greater current credit risk than GlobeCorp.

**B.** The value of the swap to GlobeCorp has increased since initiation.

**C.** Globecorp's upcoming payment will be lower than its previous payment.

**ANSWER: A**

**Explanation:**

NVS Bank has greater current credit risk than GlobeCorp because the swap's current market value is negative to GlobeCorp and correspondingly positive to NVS Bank. One year after inception, the original three-year contract has two years remaining. The relevant comparison is therefore with a newly initiated two-year, semiannual-pay swap. Discounting the remaining semiannual floating-rate cash flows using the current LIBOR term structure produces a current par fixed swap rate of approximately 2.38%, below GlobeCorp's contractual fixed payment rate of 2.75%.

As the fixed-rate payer, GlobeCorp is obligated to pay the above-market fixed rate while receiving floating LIBOR. Its existing contract is consequently a liability to GlobeCorp: replacing its remaining terms in the market would be less costly than continuing under the original swap. Conversely, the same position has positive value to NVS Bank. Counterparty credit exposure is associated with the amount owed to a party if its counterparty defaults. Since NVS has a positive claim against GlobeCorp under the swap, NVS faces exposure to GlobeCorp's potential failure to make the net amounts due. This is why NVS Bank has the greater current credit risk. For general derivatives-market and counterparty-risk context, see the Bank for International Settlements report on OTC derivatives and the ISDA Credit Risk Management Guide.

**QUESTION NO: 30**

George Armor, CFA, is a new stock analyst for Pedad Investments. One tool that Pedad uses to compare stock valuations is the dividend discount model (DOM). In particular, the firm evaluates stocks in terms of "justified" multiples of sales and book value. These multiples are based on algebraic manipulation of the DDM. Over time, these multiples seem to provide a good check on the market valuation of a stock relative to the company's fundamentals. Any stock which is currently priced below its value based on a justified multiple of sales or book value is considered attractive for purchase by Pedad portfolio managers. Exhibit 1 contains financial information from the year just ended for three stable companies in the meat-packing industry: Able Corp, Baker, Inc., and Charles Company, from which Armor will derive his valuation estimates.

**Exhibit 1: Selected Financial Information**

| | *Able Corp* | *Baker, Inc.* | *Charles Company* |
|---|---|---|---|
| Revenue/share | $115.00 | $52.80 | $25.75 |
| EPS | $2.50 | $4.80 | $4.00 |
| DPS | $1.00 | $1.60 | $2.50 |
| ROE | 25% | 15% | 8% |
| Book value per share | $10.00 | $32.00 | $50.00 |
| Stock price per share (current) | $60.00 | $70.00 | $35.50 |
| Required return | 20% | 12% | 10% |

One of Pedad's other equity analysts, Marie Swift, CFA, recently held a meeting with Armor to discuss a relatively new model the firm is implementing to determine the P/E ratios of companies that Pedad researches. Swift explains that the model utilizes a cross-sectional regression using the previous year-end data of a group of comparable companies' P/E ratios against their dividend payout ratios (r), sustainable growth rates (g), and returns on equity (ROE). The resulting regression equation is used to determine a predicted P/E ratio for the subject company using the subject company's most recent year-end data. Swift has developed the following model, which has an R-squared of 81%, for the meat packing industry (16 companies):

Predicted P/E = 2.74 + 8.21(r) + 14.21(g) + 2.81(ROE)

(STD error) (2.11) (6.52) (9.24) (2.10)

After Swift presents the model to Armor, she points out that models of this nature are subject to limitations. In particular, multicollinearity, which appears to be present in the meat packing industry model, can create great difficulty in interpreting the effects of the individual coefficients of the model. Swift continues by stating that in spite of this limitation, models of this nature generally have known and significant predictive power across different time periods although not across different stocks.

Armor has been asked to identify the relative valuation merits of the three stocks. Which of the following statements is correct?

**A.** Able Corp is the best investment because it has the highest ROE.

**B.** Charles Company is the best investment because the stock is priced below book value.

**C.** Able Corp's earnings should grow the fastest due to its high ROE and retention ratio.

**ANSWER: C**

**Explanation:**

Able Corp's earnings should grow the fastest due to its high ROE and retention ratio. Under the sustainable-growth framework used with the dividend discount model, sustainable growth is calculated as return on equity multiplied by the retention ratio: $g = ROE \times (1 - \text{dividend payout ratio})$. The retention ratio is the fraction of earnings reinvested in the business rather than paid out as dividends. Therefore, a company combining a comparatively high ROE with a comparatively high retention ratio has the greatest capacity to compound book value and earnings internally, assuming its ROE can be maintained.

The exhibit's inputs indicate that Able has the highest resulting sustainable growth rate among the three companies. This is the relevant conclusion because the question asks about expected earnings growth, not simply whether a stock has a high accounting return or trades at a particular relationship to book value. In justified-multiple analysis, growth is a fundamental driver of value because it affects future dividends and residual earnings available to shareholders. The sustainable-growth relation is a standard link between profitability, dividend policy, and equity valuation. See the CFA Institute's discussion of equity valuation fundamentals at Equity Valuation: Concepts and Basic Tools and its overview of the Equity Asset Valuation framework.

**QUESTION NO: 31**

Shirley Nolte, CFA, is a portfolio manager for McHugh Investments. Her portfolio includes 5,000 shares of Pioneer common stock (ticker symbol PNER), which is currently trading at $40 per share. Pioneer is an energy and petrochemical business that operates or markets its products in the United States, Canada, Mexico, and over 100 other countries around the world. Pioneer's core business is the exploration, production, and transportation of crude oil and natural gas. Pioneer also manufactures and markets petroleum products, basic petrochemicals, and a variety of specialty products.

Nolte would like to fully hedge her exposure to price fluctuations in Pioneer common stock over the next 90 days. She determines that the continuously compounded risk-free rate is 5%. She also gathers some information on exchange-traded options available on Pioneer stock. This data is shown in Exhibit 1.

**Exhibit 1: Exchange-Traded Options on Pioneer Stock**

| *Maturity* | *Exercise Price* | *Call Option Price* | *Call Option Delta* | *Put Option Price* |
|---|---|---|---|---|
| 1-month | $40 | $2.84 | 0.54 | $2.67 |
| 3-month | $40 | $5.00 | 0.58 | $4.50 |
| 6-month | $40 | $7.14 | 0.61 | $6.15 |
| 9-month | $40 | $8.81 | 0.63 | $7.34 |

From this data, she determines that the put option deltas are equal to:

• 1 -month put option delta = -0.46.

• 3-month put option delta = -0.36.

• 6-month put option delta - - 0.29.• 9-month put option delta = -0.17.

She also concludes that the 9-month put option is mispriced relative to the 9-month call option, and an arbitrage opportunity is possible, but that the 3-month put option is correctly priced relative to its comparable call option. She also estimates the gamma of the 3-month call option to be 0.023.

In an unrelated transaction, Nolte is also considering the purchase of a put option on a futures contract with an exercise price of $22. Both the option and the futures contract expire in six months. The call price is $1 and the futures price today is $20.

Which of the following positions will best delta hedge Nolte's long position in Pioneer?

**A.** Short 9,259 1-month calL options.

**B.** Short 8,197 3-month call options.

**C.** Short 7,937 6-month call options.

**D.** Short 7,813 3-month call options.

**ANSWER: D**

**Explanation:**

Short 7,813 3-month call option contracts is the best delta hedge because the desired hedge horizon is 90 days, which corresponds to the three-month option's expiration. For otherwise comparable European calls and puts on a non-dividend-paying stock, put–call parity implies that call delta equals put delta plus 1. The stated three-month put delta of −0.36 therefore gives a three-month call delta of 0.64. A long position of 5,000 shares has a total delta of +5,000. Short calls contribute negative delta, so the required number of shares represented by calls is 5,000 / 0.64 = 7,812.5 shares-equivalent option units. Since a standard listed equity option contract represents 100 shares, the required position is 7,812.5 / 100 = 78.125 contracts if the quantities are contracts; however, the answer choices' stated figures treat the requested units as individual options/shares-equivalent. Thus, rounding to a whole option unit gives 7,813 short three-month calls. Selecting the maturity that matches the intended hedge period minimizes mismatch between the stock exposure horizon and the option hedge. CFA Institute's derivatives curriculum covers delta-based hedging and put–call parity: CFA Program Curriculum. Standard U.S. equity-option contract conventions are described by The Options Clearing Corporation.

**QUESTION NO: 32**

Carol Blackwell, CFA, has been hired to manage trust assets for Blanchard Investments. Blanchard's trust manager, Thaddeus Baldwin, CFA, has worked in the securities business for more than 50 years. On Blackwell's first day at the office, Baldwin gives her several instructions.

Instruction 1: Limit risk by avoiding stock options.

Instruction 2: Above all, ensure that our clients' capital is kept safe.

Instruction 3: We take pride in our low cost structure, so avoid unnecessary transactions.

Instruction 4: Remember that every investment must have the quality to stand on its own.

Baldwin realizes that many of the firm's practices and policies would benefit from a compliance check. Because Blackwell recently received her CFA charter, Baldwin tells her she is the "perfect person to work with the compliance officer to update the policy on proxy voting and the procedures to comply with Standard VI(B) Priority of Transactions." Baldwin also wants Blackwell to evaluate whether the firm wants to, or can, claim compliance with the soft dollar standards. Baldwin hands Blackwell a handwritten outline he created, which includes the following statements:

Statement 1: CFA Institute's soft-dollar rules are not mandatory. In any case, ' client brokerage can be used to pay for a portion of mixed-use research.

Statement 2: Investment firms can use client brokerage to purchase research that does not immediately benefit the client. Commissions generated by outside trades are considered soft dollars, but commissions from internal trading desks are not.

During a local society luncheon, Blackwell is seated next to CFA candidate Lucas Walters, who has been assigned the task of creating a compliance manual for Borchard & Sons, a small brokerage firm. Walters asks for her advice.

When Walters returns to work, he is apprised of the following situation: Borchard & Sons purchased 25,000 shares of CBX Corp. for equity manager Quintux Quantitative just minutes before the money manager called back and said it meant to buy 25,000 shares of CDX Corp. Borchard then purchased CDX shares for Quintux, but not before shares of CBX Corp. declined by 1.5%. The broker is holding the CBX shares in its own inventory. Borchard proposes three methods for dealing with the trading error.

Method 1: Quintux directs additional trades to Borchard worth a dollar value equal to the amount of the trading loss.

Method 2: Borchard receives investment research from Quintux in exchange for Borchard covering the costs of the trading error.

Method 3: Borchard transfers the ordered CBX shares in its inventory to Quintux, which allocates them to all of its clients on a pro-rata basis.

Which method for dealing with the trading error is most consistent with the Code and Standards?

**A.** Method 1.

**B.** Method 2.

**C.** Method 3.

**ANSWER: B**

**Explanation:**

“Method 2.” is most consistent with the CFA Institute Code and Standards because the erroneous instruction originated with Quintux: it initially caused Borchard to purchase CBX before correcting the intended security to CDX. A firm must establish controls for correcting trade errors and must ensure that clients do not bear losses arising from the investment manager’s mistake. The cost therefore should be borne by Quintux, rather than recovered through activity or allocations that could disadvantage client accounts.

Providing investment research to Borchard in exchange for Borchard’s assumption of the error cost is a negotiated settlement between the two firms. Crucially, it does not require directing client brokerage merely to compensate the broker, and it does not force clients to acquire an unintended security. Quintux remains accountable for the economic consequence of its error while resolving the obligation through an asset it can provide. Compliance procedures should document the error, its financial impact, the settlement terms, and confirmation that no client account is harmed. This approach supports the duty to act for clients’ benefit and to exercise appropriate care in managing their assets. CFA Institute’s ethical framework and Standards guidance are available at CFA Institute Code of Ethics and Standards of Professional Conduct and CFA Institute Ethics and Standards resources.

**QUESTION NO: 33**

The Wyroman International Pension Fund includes a $65 million fixed-income portfolio managed by Susan Evermore, CFA, of Brighton Investors. Evermore is in the process of constructing a binomial interest-rate tree that generates arbitrage-free values for on-the-run Treasury securities. She plans to use the tree to value more complex bonds with embedded options. She starts out by observing that the yield on a one-year Treasury security is 4.0%. She determines in her initial attempt to price the two-year Treasury security that the value derived from the model is higher than the Treasury security's current market price.

After several iterations Evermore determines that the interest rate tree that correctly values the one and two-year Treasury securities has a rate of 5.0% in the lower node at the end of the first year and a rate of 7.5% in the upper node at the end of the first year. She uses this tree to value a two-year 6% coupon bond with annual coupon payments that is callable in one year at 99.50. She determines that the present value at the end of the first year of the expected value of the bond's remaining cash flows is $98.60 if the interest rate is 7.5% and $100.95 if the interest rate is 5.0%. Note: Assume Evermore's calculations regarding the two-year 6% callable bond are correct

Evermore also uses the same interest rate tree to price a 2-year 6% coupon bond that is putable in one year, and value the embedded put option. She concludes that if the yield volatility decreases unexpectedly, the value of the putable bond will increase and the value of the embedded put option will also increase, assuming all other inputs are unchanged.

Evermore also uses the interest rate tree to estimate the option-adjusted spreads of two additional callable corporate bonds, as shown in the following figure.

| *Issuer* | *Option-Adjusted Spread* |
|---|---|
| AA-rated issuer | 53 basis points |
| BB-rated issuer | –18 basis points |

Evermore concludes, based on this information, that the A A-rated issue is undervalued, and the BB-rated issue is overvalued.

At a subsequent meeting with the trustees of the fund. Evermore is asked to explain what a binomial interest rate model is and how it was used to estimate effective duration and effective convexity. Evermore is uncertain of the exact methodology because the actual calculations were done by a junior analyst, but she tries to provide the trustees with a reasonably accurate step-bystcp description of the process:

Step 1: Given the bond's current market price, the on-the-run Treasury yield curve, and an assumption about rate volatility, create a binomial interest rate tree.

Step 2: Add 100 basis points to each of the 1-year rates in the interest rate tree to derive a "modified" tree.

Step 3: Compute the price of the bond if yield increases by 100 basis points using this new tree.

Step 4: Repeat Steps 1 through 3 to determine the bond price that results from a 100 basis point decrease in rates.

Step 5: Use these two price estimates, along with the original market price, to calculate effective duration and effective convexity.

Lucas Davenport, a trustee and university finance professor, immediately speaks up to disagree with Evermore. He claims that a more accurate description of the process is as follows:

Step 1: Given the bond's current market price, the Treasury yield curve, and an assumption about rate volatility, create a binomial interest rate tree and calculate the bond's option-adjusted spread (OAS) using the model.

Step 2: Impose a parallel upward shift in the on-the-run Treasury yield curve of 100 basis points.

Step 3: Build a new binomial interest rate tree using the new Treasury yield curve and the original rate volatility assumption.

Step 4: Add the OAS from Step I to each of the 1-year rates on the tree to derive a "modified" tree.

Step 5: Compute the price of the bond using this new tree.

Step 6: Repeat Steps 1 through 5 to determine the bond price that results from a 100 basis point decrease in rates.

Step 7: Use these two price estimates, along with the original market price, to calculate effective duration and effective convexity.

At the meeting with the trustees. Evermore also presents the results of her analysis of the effect of changing market volatilities on a 1-year convertible bond issued by Highfour Corporation. Each bond is convertible into 25 shares of Highfour common stock. The bond is also callable at 110 at any time prior to maturity. She concludes that the value of the bond will decrease if either (1) the volatility of returns on'Highfour common stock decreases or (2) yield volatility decreases.

Davenport immediately disagrees with her by saying "changes in the volatility of common stock returns will have no effect on the value of the convertible bond, and a decrease in yield volatility will result in an increase in the value of the bond."

The value of the 2-year 6% callable bond today using the interest rate tree is closest to:

**A.** $95.24.

**B.** $101.01.

**C.** $102.21.

**ANSWER: B**

**Explanation:**

The correct value is **$101.01**. At the end of year one, the issuer exercises the call whenever the continuation value exceeds the call price. In the 5.0% rate state, the calculated continuation value is $100.95, so the callable bond's value at that node is capped at $99.50 by the issuer's call right. In the 7.5% rate state, the continuation value is $98.60, which is below the call price; therefore, the bond remains outstanding and its node value is $98.60.

Using the equal probability implicit in this binomial tree, the expected ex-coupon value at the end of year one is ($99.50 + $98.60) / 2 = $99.05. The holder also receives the first annual coupon of $6 at that time. Thus, the expected year-one cash flow/value is $105.05. Discounting this amount for one year at the observed one-year Treasury rate of 4.0% gives $105.05 / 1.04 = $101.01, approximately. This backward-induction approach—evaluating the embedded exercise decision at each node before discounting expected values—is central to lattice valuation of bonds with embedded options. See CFA Institute's Fixed-Income Valuation refresher reading and the U.S. Treasury bond reference.

**QUESTION NO: 34**

$$V = 0.5 \times [(108 / 1.08530) + 8] / 1.0725 + 0.5 \times [(108 / 1.06983) + 8] / 1.0725$$

$$V = 0.5 \times (99.512 + 8) / 1.0725 + 0.5 \times (100.951 + 8) / 1.0725$$

$$V = 50.122 + 50.793 = 100.915$$

| Today | Year 1 | Year 2 |
|---|---|---|
| | | 108 |
| | 107.512 | |
| 100.915 | | 108 |
| | 108.951 | |
| | | 108 |

| Today | Year 1 | Year 2 |
|---|---|---|
| | | 9.324% |
| | 8.530% | |
| 7.250% | | 7.634% |
| | 6.983% | |
| | | 6.250% |

Also, assume that the appropriate spot rates for securities maturing in one, two, and three years are 7.25%, 7.5%, and 7.80%, respectively.

Diffle believes he should begin his analysis with the option-free Bratton bonds. He decides to consider two different approaches to valuing the Bratton Bonds—one that uses the current spot rate curve and another that uses the interest rate tree given above.

For the next step in his analysis, Diffle has decided to calculate the value of the Hardin bonds using the interest rate tree. His assumption is that the bond will be called ai any node of the tree where the calculated value exceeds the call price. Diffle summarizes the results of his bond valuation analysis in a memo to his supervisor, Luke Puldo. In this memo, Diffle makes the following statements:

Statement 1: The value of the option embedded in the Hardin bonds can be derived by simply subtracting the interest rate tree value of the Hardin bonds from the interest rate tree value of the Bratton bonds.

Statement 2: I am concerned that the 10% volatility assumption used to develop the interest rate tree might be too low. A higher volatility assumption would result in a lower value for the Hardin bonds.

After reviewing Diffle's analysis, Puldo notes that Diffle has not included any information on the option adjusted spread (OAS) for the Hardin bonds. Puldo suggests that Diffle should evaluate the OAS in order to get an idea of the liquidity risk of the Hardin bonds. Diffle counters that the OAS may not be very informative in this case, since he is uncertain as to the reliability of the interest rate volatility assumption.

To finish his analysis, Diffle would like to use his binomial model to evaluate the interest rate risk of both the Hardin bonds and the Bratton bonds. Diffle has shocked interest rates by 25 basis points throughout the interest rate tree he has been using to value the two bond issues. Using the new rates, Diffle has calculated values for the bonds assuming a 25-basis-point increase or decrease in rates. He plans to use these values as inputs into the following formulas for duration and convexity:

$$\text{duration} = \frac{V_- - V_+}{2 \times V_0 \times \Delta y} \qquad \text{convexity} = \frac{V_+ + V_- - 2V_0}{2 \times V_0 \times (\Delta y)^2}$$

Using the interest rate tree, and assuming that the bonds will be called at any node of the tree where the calculated value exceeds the call price, which of the following is closest to the value of the Hardin bonds?

**A.** 100.378.

**B.** 100.472.

**C.** 100.915.

**ANSWER: B**

**Explanation:**

The value of the Hardin bonds is **100.472.** A callable bond is valued by backward induction on the interest-rate tree, with the issuer's call right imposed at each node where calling is permitted. At the one-year low-rate node, the continuation value of the remaining payment is 108 / 1.06983 = 100.951. Because the bond is callable at par from six months onward, the issuer will call the bond rather than allow a value above 100; thus, the node value is capped at 100. The other one-year node has a calculated value of 99.512 and is not capped. At time zero, each one-year node is assigned a 0.5 risk-neutral probability, and each includes the 8 coupon received at the one-year date. Discounting at the initial one-year short rate of 7.25% gives: [0.5 × (99.512 + 8) / 1.0725] + [0.5 × (100 + 8) / 1.0725] = 100.472. This procedure reflects the fundamental valuation principle that an embedded issuer call limits the bondholder's value when interest rates decline and the otherwise calculated continuation value rises above the applicable call price. See CFA Institute's Fixed-Income Analysis refresher and FINRA's overview of bond call provisions.

## QUESTION NO: 35

Janice Palmer, CFA, is an international equity analyst at a large investment management firm catering to high net worth U.S. investors. She is assisted by Morgan Greene and Cathy Wong. Both Greene and Wong have prepared their preliminary security selections and are meeting along with Palmer today for detailed security analysis and valuation. They have narrowed their focus to a few closed-end country funds and some firms from Switzerland, Germany, the U.K. and the emerging markets.

The initial decision is to choose between closed-end country funds and direct investment in foreign stock markets. Wong is in favor of country funds because:

1. Country funds provide immediate diversification.

2. Buying country funds is a better choice than direct investment for most emerging markets.

However, Wong has observed a premium to NAV that is prevalent in closed-end country funds.

Wong is curious as to how the observed premiums would affect investments in such instruments.

In contrast to Wong, Greene is more inclined towards individual stocks and has started looking into their financial statements. One firm Greene is analyzing is a German conglomerate. Kaiser Corp. Kaiser has a history of growing by acquiring high-growth firms in niche markets. Exhibit 1 provides key financial information from Greene's analysis of Kaiser Corp.

Exhibit 1: Financial information—Kaiser Corp.

| *(in millions, except the required rate of return)* | |
|---|---|
| Forecasted Net income | $146 |
| Assets | $4,188 |
| Liabilities | $2,859 |
| Equity | $1,329 |
| Dividends | $66 |
| Shares Outstanding | 40 |
| Required rate of return | 15% |

While going through their sample of emerging market stocks, Wong observed that these markets in general have high inflation and that sales for the stocks were extremely seasonal. Wong compensated by adjusting reported sales growth in the emerging market firms by deflating the sales using annual inflation adjustments. Wong also made upward adjustments to reported depreciation figures.

Wong suggested to her colleagues that they add a country risk premium to the discount rate they were using to evaluate emerging market stocks. She further suggested that they estimate country risk premiums by calculating the spread between the yield of U.S. government bonds and that of similar maturity local bonds.

Subsequently they started working on the financial projections for Emerjico, Inc., an emerging market stock. Their assumptions are given in Exhibit 2.

Exhibit 2: Key Assumptions—Emerjico

| | Year 1 |
|---|---|
| Real revenues | 100 |
| Real EBITDA | 27 |
| Real depreciation | 12 |
| Real taxes | 6 |
| Real revenue growth rate | 2% per year for the near future |
| Annual inflation rate | 15% per year for the near future |
| Tax rate | 40% per year |

Based on the spread between local bonds and U.S. Treasuries, is Wong's suggestion of adding a country risk premium to the discount rate being used appropriate or not? Adding a country risk premium is:

**A.** appropriate if the local bonds are dollar denominated.

**B.** not appropriate because country risks are largely diversifiable risks.

**C.** not appropriate because returns on local debt issues are highly correlated with returns on corporate investments.

**ANSWER: B**

**Explanation:**

“not appropriate because country risks are largely diversifiable risks” is correct. For an investor with an internationally diversified portfolio, much country-specific risk can be reduced through holdings across countries, industries, and issuers. Accordingly, mechanically adding a separate country risk premium to the required return for every emerging-market company is generally not the preferred valuation treatment in this framework. Such an adjustment can overstate the required return and thereby understate intrinsic value, particularly when the relevant risks are not systematic from the perspective of the globally diversified investor.

A spread between local sovereign bonds and U.S. Treasuries may contain information about perceived sovereign, liquidity, currency, and default risks, but it is not automatically an equity risk premium applicable to an individual company. Country conditions can affect companies very differently depending on their revenues, inputs, regulation, export exposure, financing, and ability to pass inflation through to customers. A more appropriate approach is to reflect material country-related effects directly in scenario-based cash-flow forecasts and probabilities, rather than apply a uniform discount-rate increment. This is consistent with the CFA Institute’s emphasis on analyzing risk and return in a portfolio context; see CFA Institute Refresher Readings. For further discussion of country-risk estimation and its limits in valuation, see Aswath Damodaran’s country risk premium data and methodology.

**QUESTION NO: 36**

Lauren Jacobs, CFA, is an equity analyst for DF Investments. She is evaluating Iron Parts Inc. Iron Parts is a manufacturer of interior systems and components for automobiles. The company is the world's second largest original equipment auto parts supplier, with a market capitalization of $1.8 billion. Based on Iron Parts's low price-to-book value ratio of 0.9* and low price-to-sales ratio of 0.15x, Jacobs believes the stock could be an interesting investment. However, she wants to review the disclosures found in the company's financial footnotes. In particular, Jacobs is concerned about Iron Parts's defined benefit pension plan. The following information for 2007 and 2008 is provided.

| *In millions, December 31* | *2008* | *2007* |
|---|---|---|
| Projected benefit obligation (PBO) | $635 | $510 |
| Service cost | 37 | 33 |
| Accumulated benefit obligation (ABO) | 570 | 460 |
| Actual return on plan assets | 37 | 32 |
| Benefits paid | 22 | 15 |
| Unamortized past service cost | 37 | 45 |
| Fair market value of plan assets | 395 | 327 |
| Discount rate | 6.0% | 5.5% |
| Expected return on plan assets | 8.2% | 7.5% |
| Rate of compensation increase | 4.0% | 4.0% |

Iron Parts has adopted SFAS No. 158, Employers' Accounting for Defined Benefit Pensions and Other Postretirement Plans.

Jacobs wants to fully understand the impact of changing pension assumptions on Iron Parts's balance sheet and income statement. In addition, she would like to compute Iron Parts's economic pension expense.

How much did Iron Parts contribute to its pension plan during 2008?

**A.** $31 million.

**B.** $36 million.

**C.** $53 million.

**ANSWER: C**

**Explanation:**

**$53 million.** is the pension-plan contribution implied by the reconciliation of plan assets. The accounting identity for the year begins with the fair value of plan assets at the start of the period, adds the plan's actual return on assets and employer contributions, and subtracts benefits paid to participants. Using the disclosed figures, ending plan assets of $395 million equal beginning plan assets of $327 million plus actual asset return of $37 million plus contributions, less benefits paid of $22 million. Rearranging this roll-forward gives contributions of $53 million: $395 − $327 − $37 + $22 = $53 million.

This calculation uses actual return rather than expected return because the question asks for the cash amount contributed to the plan. Expected return is an income-statement component used in determining periodic pension cost under the applicable accounting framework; it is not the amount by which the plan's asset balance actually changed. The asset reconciliation therefore isolates the employer's funding contribution from the other changes in fair value. SFAS No. 158's recognition and disclosure requirements are incorporated into the pension guidance in ASC 715; see the FASB ASC 715 topic page and the FASB Accounting Standards Codification overview.

**QUESTION NO: 37**

Kevin Rathbun, CFA, is a financial analyst at a major brokerage firm. His supervisor, Elizabeth Mao, CFA, asks him to analyze the financial position of Wayland, Inc. (Wayland), a manufacturer of components for high quality optic transmission systems. Mao also inquires about the impact of any unconsolidated investments.

On December 31,2007, Wayland purchased a 35% ownership interest in a strategic new firm called Optimax for $300,000 cash. The pre-acquisition balance sheets of both firms are found in Exhibit 1.

**Exhibit 1: Pre-Acquisition Balance Sheets for Wayland and Optimax**

| Balance sheets as of Dec. 31, 2007<br>*in thousands* | Wayland | Optimax |
|---|---|---|
| **Assets** | | |
| Cash | $710 | $100 |
| Marketable securities | 2,550 | – |
| Inventory | 2,000 | 400 |
| Accounts receivable | 3,000 | 500 |
| Property, plant, and equipment | 2,450 | 1,000 |
| **Total assets** | **$10,710** | **$2,000** |
| **Liabilities** | | |
| Accounts payable | $3,310 | 400 |
| Long-term debt | 5,000 | 1,000 |
| Equity | 2,400 | 600 |
| **Total liabilities and equity** | **$10,710** | **$2,000** |

On the acquisition date, all of Optimax's assets and liabilities were stated on its balance sheet at their fair values except for its property, plant, and equipment (PP&E), which had a fair value of $1.2 million. The remaining useful life of the PP&E is ten years with no salvage value. Both firms use the straight-line depreciation method.

For the year ended 2008, Optimax reported net income of $250,000 and paid dividends of $100,000.

During the first quarter of 2009, Optimax sold goods to Wayland and recognized $15,000 of profit from the sale. At the end of the quarter, half of the goods purchased from Optimax remained in Wayland's inventory.

Wayland currently uses the equity method to account for its investment in Optimax. However, given the potential significance of the investment in the future, Rathbun believes that a proportionate consolidation of Optimax may give a clearer picture of the financial and operating characteristics of Wayland.

Rathbun also notes that Wayland owns shares in Vanry, Inc. (Vanry). Rathbun gathers the data in Exhibit 2 from Wayland's financial statements. The year-end portfolio value is the market value of all Vanry shares held on December 31. All security transactions occurred on July 1, and the transaction price is the price that Wayland actually paid for the shares acquired. Vanry pays a Which of the following best describes WaylancTs treatment of the intercompany sales transaction for the quarter ended March 31, 2009? Wayland should reduce its equity income by:

**A.** $2,625.

**B.** $7,500.

**C.** $15,000.

**ANSWER: A**

**Explanation:**

**$2,625.** is the required reduction to Wayland’s equity income. Wayland accounts for its 35% investment in Optimax using the equity method, under which it recognizes its proportionate share of Optimax’s earnings. However, equity-method income

must be adjusted for Wayland’s share of profit on transactions between the investor and investee when that profit has not yet been realized through a sale to an external party. This sale is an upstream transaction because Optimax, the investee, sold goods to Wayland, the investor.

Optimax recorded total profit of $15,000 on the sale. At March 31, one-half of the purchased goods remained in Wayland’s inventory; therefore, one-half of Optimax’s profit, or $7,500, remains unrealized from the combined economic perspective. Wayland defers only its ownership share of that unrealized profit: $7,500 × 35% = $2,625. Accordingly, Wayland reduces the equity income otherwise recognized from Optimax by $2,625. The deferred amount is recognized in a later period when Wayland sells the inventory to an outside customer. This treatment ensures that equity-method income reflects profits realized with third parties rather than profits created solely within the investor–associate relationship. See IAS 28 Investments in Associates and Joint Ventures and PwC guidance on equity-method intercompany transactions.

## QUESTION NO: 38

Fashion Inc. is a major U.S. distributor of high quality women's jewelry and accessories. The company's growth in recent years has been moderately above the industry average. However, competition is intensifying as a number of overseas competitors have entered this mature market. Although Fashion has been a publicly held company for many years, members of senior management and their families control 20% of the outstanding common stock. Martin Silver, the Chief Executive Officer, has been under intense pressure from both internal and external large shareholders to find ways to increase the company's future growth.

Silver has consulted with the company's investment bankers concerning possible merger targets. The most promising merger target is Flavoring International, a distributor of a broad line of gourmet spices in the United States and numerous other countries. In recent years, Flavoring's earnings growth rate has been above competitors' and also has exceeded Fashion's experience. Superior income growth is projected to continue over at least the next five years. Silver is impressed with the appeal of the company's products to upscale customers, its strong operating and financial performance, and Flavoring's dynamic management team. He is contemplating retirement in three years and believes that Flavoring's younger, more aggressive senior managers could boost the combined company's growth through increasing Fashion's operating efficiency and expanding Fashion's product line in countries outside the United States. Alan Smith, who is Silver's key contact at the investment banking firm, indicates that a key appeal of this merger to Flavoring would be Fashion's greater financial flexibility and access to lower cost sources of financing for expansion of its products in new geographic areas. Fashion has a very attractive performance based stock option plan. Flavoring's incentive plan is entirely based on cash compensation for achieving performance goals. Additionally, the 80% of Fashion's stock not controlled by management interests is very widely held and trades actively. Flavoring became a publicly held company three years ago and doesn't trade as actively.

Silver has asked Smith to prepare a report summarizing key points favoring the acquisition and an acceptable acquisition price. In preparing his report, Smith relics on the following financial data on Fashion, Flavoring, and four recently acquired food and beverage companies.

**Exhibit 1: Financial and Market Data for Fashion, Inc. and Flavoring International**

| *Financial/Price Data* | *Fashion* | *Flavoring* |
|---|---|---|
| Sales | $400 million | $105 million |
| Net income | $80 million | $22 million |
| Cash Flow | $140 million | $42 million |
| Book Value | $320 million | $72 million |
| Number of common shares outstanding | 50 million | 20 million |
| Current market price of common stock | $30.50 | $20.00 |
| Recent market price range | $34–26 | $22–18 |

**Exhibit 2: Transaction Data for Food and Beverage Industry**

| *Valuation Variables* | *Jones Foods* | *Dale Inc.* | *Hill Brands* | *Lane Co.* | *Mean Multiple* |
|---|---|---|---|---|---|
| Acquisition stock price | $24 | $32 | $40 | $46 | — |
| Price/Sales per share | 5.0 | 3.7 | 4.0 | 3.8 | 4.13 |
| Price/Book Value per share | 6.9 | 5.5 | 5.8 | 5.6 | 5.95 |
| Price/Earnings per share | 20.0 | 22.1 | 18.0 | 19.0 | 19.78 |
| Price/Cash Flow per share | 11.8 | 13.0 | 10.5 | 11.0 | 11.58 |

The least likely reason that Flavoring's management would favor an acquisition by Fashion would be:

**A.** Flavoring management's incentives.

**B.** opportunities to utilize Fashion's larger financial resources to increase, market share of both companies.

**C.** opportunities to utilize Fashion's financial resources to expand the combined company's product line into the higher volume moderately priced market segment.

**ANSWER: C**

**Explanation:**

“Opportunities to utilize Fashion's financial resources to expand the combined company's product line into the higher volume moderately priced market segment” is the least likely motivation because the facts do not establish a strategic rationale for moving Flavoring into that market segment. Flavoring’s described strength is its broad line of gourmet spices and appeal to upscale customers. Its management would therefore be expected to value growth that leverages its existing premium product positioning and geographic reach, rather than a shift toward a high-volume, moderately priced offering.

The transaction narrative instead identifies specific potential synergies that would support management's interest: Fashion can provide greater financial flexibility and lower-cost funding, which can support expansion of Flavoring's existing products into new geographic areas. The combined company may also benefit from stronger operating efficiency, a broader international platform, and a more effective alignment of incentives through Fashion's performance-based equity plan. These are identifiable sources of financing, operating, and managerial value in an acquisition analysis. In contrast, no evidence indicates that Flavoring has a capability, demand opportunity, or strategic intention to enter a lower-priced spice segment. CFA Institute's curriculum overview includes corporate issuer analysis and corporate restructuring topics: CFA Program Curriculum. For general merger-synergy context, see NYU Stern on merger synergies.

## QUESTION NO: 39

The Wyroman International Pension Fund includes a $65 million fixed-income portfolio managed by Susan Evermore, CFA, of Brighton Investors. Evermore is in the process of constructing a binomial interest-rate tree that generates arbitrage-free values for on-the-run Treasury securities. She plans to use the tree to value more complex bonds with embedded options. She starts out by observing that the yield on a one-year Treasury security is 4.0%. She determines in her initial attempt to price the two-year Treasury security that the value derived from the model is higher than the Treasury security's current market price.

After several iterations Evermore determines that the interest rate tree that correctly values the one and two-year Treasury securities has a rate of 5.0% in the lower node at the end of the first year and a rate of 7.5% in the upper node at the end of the first year. She uses this tree to value a two-year 6% coupon bond with annual coupon payments that is callable in one year at 99.50. She determines that the present value at the end of the first year of the expected value of the bond's remaining cash flows is $98.60 if the interest rate is 7.5% and $100.95 if the interest rate is 5.0%. Note: Assume Evermore's calculations regarding the two-year 6% callable bond are correct

Evermore also uses the same interest rate tree to price a 2-year 6% coupon bond that is putable in one year, and value the embedded put option. She concludes that if the yield volatility decreases unexpectedly, the value of the putable bond will increase and the value of the embedded put option will also increase, assuming all other inputs are unchanged.

Evermore also uses the interest rate tree to estimate the option-adjusted spreads of two additional callable corporate bonds, as shown in the following figure.

| *Issuer* | *Option-Adjusted Spread* |
|---|---|
| AA-rated issuer | 53 basis points |
| BB-rated issuer | –18 basis points |

Evermore concludes, based on this information, that the A A-rated issue is undervalued, and the BB-rated issue is overvalued.

At a subsequent meeting with the trustees of the fund. Evermore is asked to explain what a binomial interest rate model is and how it was used to estimate effective duration and effective convexity. Evermore is uncertain of the exact methodology because the actual calculations were done by a junior analyst, but she tries to provide the trustees with a reasonably accurate step-bystcp description of the process:

Step 1: Given the bond's current market price, the on-the-run Treasury yield curve, and an assumption about rate volatility, create a binomial interest rate tree.

Step 2: Add 100 basis points to each of the 1-year rates in the interest rate tree to derive a "modified" tree.

Step 3: Compute the price of the bond if yield increases by 100 basis points using this new tree.

Step 4: Repeat Steps 1 through 3 to determine the bond price that results from a 100 basis point decrease in rates.

Step 5: Use these two price estimates, along with the original market price, to calculate effective duration and effective convexity.

Lucas Davenport, a trustee and university finance professor, immediately speaks up to disagree with Evermore. He claims that a more accurate description of the process is as follows:

Step 1: Given the bond's current market price, the Treasury yield curve, and an assumption about rate volatility, create a binomial interest rate tree and calculate the bond's option-adjusted spread (OAS) using the model.

Step 2: Impose a parallel upward shift in the on-the-run Treasury yield curve of 100 basis points.

Step 3: Build a new binomial interest rate tree using the new Treasury yield curve and the original rate volatility assumption.

Step 4: Add the OAS from Step I to each of the 1-year rates on the tree to derive a "modified" tree.

Step 5: Compute the price of the bond using this new tree.

Step 6: Repeat Steps 1 through 5 to determine the bond price that results from a 100 basis point decrease in rates.

Step 7: Use these two price estimates, along with the original market price, to calculate effective duration and effective convexity.

At the meeting with the trustees. Evermore also presents the results of her analysis of the effect of changing market volatilities on a 1-year convertible bond issued by Highfour Corporation. Each bond is convertible into 25 shares of Highfour common stock. The bond is also callable at 110 at any time prior to maturity. She concludes that the value of the bond will decrease if either (1) the volatility of returns on'Highfour common stock decreases or (2) yield volatility decreases.

Davenport immediately disagrees with her by saying "changes in the volatility of common stock returns will have no effect on the value of the convertible bond, and a decrease in yield volatility will result in an increase in the value of the bond."

Which of the following statements regarding the methodologies for estimating effective duration and convexity is most accurate?

**A.** Davenport's description is a more accurate depiction of the appropriate methodology than Evermore's.

**B.** The two methodologies will result in the same effective duration and convexity estimates only if the same rate volatility assumption is used in each.

**C.** The two methodologies will result in the same effective duration and convexity estimates only if the same rate volatility assumption is used in each and the bond's OAS is equal to zero.

**ANSWER: A**

**Explanation:**

Davenport's description is a more accurate depiction of the appropriate methodology than Evermore's. Effective duration and effective convexity for a bond with embedded options must be estimated by fully repricing the instrument after specified upward and downward changes in the benchmark yield curve. The initial tree is calibrated to the observed Treasury term structure and the assumed interest-rate volatility. The bond's option-adjusted spread is then solved for so that the model price equals the bond's current market price. This spread represents the compensation required beyond the benchmark tree rates and must be retained when evaluating the bond under interest-rate shocks.

For each shock, the appropriate process is to apply a parallel shift to the benchmark Treasury curve, rebuild and recalibrate a new arbitrage-free interest-rate tree using the unchanged volatility assumption, add the original OAS to the applicable node rates, and revalue the bond while allowing its embedded option to be exercised according to its terms. The two resulting prices, together with the initial price, provide the inputs for effective duration and effective convexity. Rebuilding the tree is essential because a curve shift changes the entire term-structure calibration rather than merely increasing every existing node rate by a fixed amount. This framework is consistent with the fixed-income valuation and risk-measurement treatment in the CFA Program curriculum overview and the Federal Reserve's description of the Treasury yield curve.

## QUESTION NO: 40

The New York-based Irwin Goldreich Schmidt (IGS) is a mid-sized private equity firm with $300 million capital raised from its investors. Amid a turbulent year, the firm has recently dropped its unsuccessful $100 million bid for a Norwegian media company and is now aggressively searching for new venture or buyout investments in the Eurozone. After several months of intense search IGS believes it identified two potential investments:

1. Sverig, a rapidly expanding Swedish start-up construction company.

2. L'Offre, a struggling French department store in existence since the late 19th Century.

Following several rounds of successful negotiations, IGS makes a $20 million investment in Sverig and a $100 million leveraged buyout investment in L'Offre, committing to an additional $100 million for possible future capital drawdowns. It retains all of Sverig's managers but replaces

L'Offre's management team with experienced IGS managers, many of whom are former company senior executives.

IGS also sets up Sverig-L'Offre Private Equity Fund (SLPEF), a fund to manage both firms. The fund manager's compensation is set at 20% of profits net of fees. IGS also specifies that the manager's profits are calculated on the entire portfolio when portfolio value exceeds invested capital by 30%.

Despite the market's recent turbulence, Sverig's original founders are extremely optimistic and believe the firm could be sold for $400 million in six years. To achieve this, they speculate the firm needs another capital infusion of $40 million in four years in addition to the $20 million capital investment today. Given the high risk of the firm, SLPEFs private equity investors decide that a discount rate of 40% for the first four years and 30% for the last two years is appropriate. The founders of Sverig want to hold 5 million shares.

Sverig's post-money valuation at the first round of financing, using the NPV venture capital method, is closest to:

**A.** $61.61 million.

**B.** $50.08 million.

**C.** $51.20 million.

**D.** $71.20 million.

**ANSWER: D**

**Explanation:**

The correct post-money valuation at the first financing round is **$71.20 million**. First, discount Sverig's anticipated $400 million exit value from year 6 to year 4 using the 30% required return applicable for the final two years: $400 million / $1.30^2$ = $236.69 million. This is the post-money value at the second financing date, immediately after the planned $40 million capital infusion. Therefore, the corresponding year-4 pre-money value is $236.69 million − $40 million = $196.69 million.

Next, discount that year-4 pre-money value back four years at the 40% required return for the initial period: $196.69 million / $1.40^4$ = $51.20 million. This amount is the *pre-money* valuation at the first round, not its post-money valuation. Post-money valuation must include the $20 million invested at that round: $51.20 million + $20.00 million = $71.20 million. This distinction follows the standard convention that post-money value equals pre-money value plus new capital invested. See Investopedia's definition of post-money valuation and Corporate Finance Institute's pre-money and post-money valuation overview.

## QUESTION NO: 41

William Rogers, a fixed-income portfolio manager, needs to eliminate a large cash position in his portfolio. He would like to purchase some corporate bonds. Two bonds that he is evaluating are shown in Exhibit I. These two bonds are from the same issuer, and the current call price for the callable bond is 100. Assume that the issuer will call if the bond price exceeds the call price.

Rogers is also concerned about increases in interest rates and is considering the purchase of a putable bond. He ants to determine how assumed increases or decreases in interest rate volatility affect the value of the straight bonds and bonds with embedded options. After Rogers performs some analysis, he and his supervisor, Sigourney Walters, discuss the relative price movement

between the two bonds in Exhibit 1 when interest rates change significantly During the discussions, Rogers makes the following statements:

Statement 1: If the volatility of interest rates decreases, the value of the callable bond will increase.

Statement 2: The noncallable bond will not be affected by a change in the volatility or level of interest rates.

Statement 3: When interest rates decrease, the value of the noncallable bond increases by more than the callable bond.

Statement4: If the volatility of interest rates increases, the value of the putable bond will increase.

Walters mentors Rogers on bond concepts and then asks him to consider the pricing of a third bond. The third bond has five years to maturity, a 6% annual coupon, and pays interest semiannually. The bond is both callable and putable at 100 at any time. Walters indicates that the holders of the bond's embedded options will exercise if the option is in-the-money.

**Exhibit 1: Bond Descriptions**

| | *Noncallable Bond* | *Callable Bond* |
|---|---|---|
| Price | 99.77 | 98.21 |
| Time to maturity (years) | 5 | 5 |
| Time to first call date (years) | n/a | 4 |
| Annual coupon | 6.00% | 6.00% |
| Interest payment | Semiannual | Semiannual |
| Yield to maturity | 6.0542% | 6.4227% |

Exhibit 2: Interest Rate Lattice (Annualized Interest Rates)

Evaluate Rogers' statements.

**A.** Only Statement 1 is correct.

**B.** Only Statement 3 is correct.

**C.** Both statements are correct.

**ANSWER: C**

**Explanation:**

Statements 1 and 3 are correct. A callable bond can be viewed as a straight, noncallable bond minus the value of the call option granted to the issuer. Interest-rate volatility raises the value of this issuer-held option because a wider range of future rate outcomes increases the potential benefit of refinancing the debt by calling it. Therefore, when assumed interest-rate volatility decreases, the call option's value decreases. Holding the straight-bond value otherwise constant, subtracting a smaller call-option value increases the value of the callable bond.

When interest rates decline, the price of a straight, noncallable bond rises. For the callable bond, however, declining rates also make an issuer call more likely and increase the value of the issuer's call option. This increased option value offsets part of the straight bond's price gain. The callable bond consequently has less upside price appreciation than the otherwise comparable noncallable bond when rates fall. This asymmetric response is commonly described as negative convexity: the embedded call limits the investor's benefit from favorable rate declines, particularly as the bond's price approaches the call price. CFA Institute discusses embedded options and their impact on bond valuation in its Fixed-Income refresher readings; see also the CFA Program curriculum overview.

**QUESTION NO: 42**

Marsha McDonnell and Frank Lutge are analysts for the private equity firm Thorngate Ventures.

Their primary responsibility is to value the equity of private firms in developed global economies. Thorngate's clients consist of wealthy individuals and institutional investors. The firm invests in and subsequently actively manages its portfolio of private firms.

During a discussion with junior analysts at the firm, McDonnell compares the characteristics of private firms with that of public firms and makes the following statements:

Statement 1: Private firms typically have higher risk premiums and required returns than public firms because private firms are usually smaller and thus thought to be riskier. Furthermore, the lack of access to liquid public equity markets can limit a private firm's growth.

Statement 2: Because of their higher risk, private firms may not be able to attract as many qualified applicants for top positions as public firms. Due to the higher risk, the managers they do attract tend to have a shorter-term view of the firm and their tenure at the firm, compared to public Firm managers. As a result, the private firm may neglect profitable long-term projects.

Due to its considerable success, Thorngate has recently attracted a substantial inflow of capital from investors. To deploy that capital, McDonnell and Lutge are considering the purchase of Albion Biotechnology. Albion is using advances in biotechnology for application in the pharmaceutical field. The analysts are primarily interested in Albion because the firm's research team is developing a drug that Thomgate's current pharmaceutical firm is also working on. McDonnell estimates that combining research teams would result in advances that no pharmaceutical competitor could match for at least two years. The firm is currently owned by its founders, who are familiar to Lutge through previous social contacts. Lutge hopes to avoid a competitive bidding process for the firm, because its founders have not advertised the firm's sale publicly.

McDonnell is also examining the prospects of Balanced Metals, a metal fabrication firm. Thorngate currently does not have any manufacturing firms in its portfolio, and Balanced would provide needed exposure. The growth in sales at Balanced has been impressive recently, but it is expected to slow considerably in the years ahead due to increased competition from overseas firms. The firm's most valuable assets are its equipment and factory, located in a prime industrial area.

Balanced was previously considered for possible purchase by a competitor in the metal fabrication industry. Although (he sale was not consummated, McDonnell has learned that the firm estimated that costs could be reduced at Balanced by eliminating redundant overhead expenses. McDonnell has obtained the following financial figures from (he Balanced Metals CFO as well as the previously estimated synergistic savings from cost reductions. Capital expenditures will equal depreciation plus approximately 4% of the firm's incremental revenues.

Current revenues $22,000,000

Revenue growth 7%

Gross profit margin 25%

Depreciation expense as a percent of sales 1%

Working capital as a percent of sales 15%

SG&A expenses $5,400,000

Synergistic cost savings $1,200,000

Tax rate 30%

Lutge is valuing a noncontrolling equity interest in Jensen Gear, a small outdoors equipment retailer. Jensen has experienced healthy growth in earnings over the past three years. However, given its size and private status, Lutge does not expect that Jensen can be easily sold. To obtain the appropriate price multiple for the Jensen valuation, he has prepared a database of price multiples from the sale of entire public and private companies over the past ten years, organized by industry classification. Using historical data, Lutge estimates a control premium of 18.7% and discount for lack of marketability of 24%.

To obtain the cost of capital for Jensen, Lutge uses a cost of capital database that includes public company betas, cost of equity, weighted average cost of capital, and other financial statistics by industry. Given Jensen's small size, Lutge obtains a size premium using the smallest size decile of the database. McDonnell examines Lutge's cost of capital calculations and makes the following statements.

Statement 1: I am concerned about the use of this database. The estimation of the size premium may result in an undervaluation of the Jensen equity interest.

Statement 2: The use of betas and the CAPM from the database may be inappropriate, [f so, Lutge should consider using the build-up method where an industry risk premium is used instead of beta.

Regarding the statements made by McDonnell on the comparison of private firms and public firms, are both statements correct?

**A.** Yes.

**B.** No. both statements are incorrect.

**C.** No, one statement is correct but the other statement is incorrect.

**ANSWER: C**

**Explanation:**

No, one statement is correct but the other statement is incorrect. Private companies commonly warrant higher required returns than otherwise comparable public companies because they are often smaller, less diversified, and subject to greater information, financing, and liquidity constraints. In particular, an ownership interest in a private business generally cannot be sold quickly in an active public market. This illiquidity raises the return an investor requires and can constrain the company's ability to raise new equity capital to support expansion. These characteristics support the statement that private firms tend to carry higher risk premiums and required returns and that lack of access to liquid public equity markets may limit growth.

The comparison also requires recognizing that private ownership can support a longer investment horizon. Private-company managers and controlling owners frequently have substantial equity stakes and are less exposed to the pressure of public-market reporting cycles. That alignment can facilitate investment in projects whose benefits occur over a longer period. CFA Institute describes private markets as investments that are not publicly traded and therefore have distinctive liquidity and ownership characteristics; see CFA Institute's private-markets research. For valuation context, the liquidity limitations of private-company interests are also addressed in Damodaran's implied equity risk premium data and methodology resources.

**QUESTION NO: 43**

James Kelley is the CFO of X-Sport Inc., a manufacturer of high-end outdoor sporting equipment. Using both debt and equity, X-Sport has been acquiring small competitor companies rather rapidly over the past few years, leading Kelley to believe that the firm's capital structure may have drifted from its optimal mix. Kelley has been asked by the board of directors to evaluate the situation and provide a presentation that includes details of the firm's capita! structure as well as a risk assessment. In order to assist with his analysis, Kelley has collected information on the current financial situation of X-Sport. He has also projected the financial information for alternative financing plans. This information is presented in Exhibit 1.

**Exhibit 1**

| | X-Sport Inc. | | | | | Industry Average |
|---|---|---|---|---|---|---|
| | *Current* | *Plan A* | *Plan B* | *Plan C* | *Plan D* | |
| Debt/equity | 1.50 | 2.33 | 1.86 | 1.22 | 0.82 | 1.27 |
| $K_d$ (after-tax) | 5.0% | 8.5% | 6.2% | 4.4% | 3.9% | 5.9% |
| $K_e$ | 12.0% | 16.0% | 13.5% | 11.2% | 10.9% | 12.8% |
| Expected EPS | $5.67 | $6.00 | $6.33 | $5.47 | $4.89 | $6.31 |
| Payout ratio | 45% | | | | | 42% |
| Growth rate | 6.1% | | | | | 5.9% |
| Stock price | $43 | | | | | |

After carefully analyzing the data, Kelley writes his analysis and proposal and submits the report to Richard Haywood, the chairman and CEO of X-Sport Inc. Excerpts from the analysis and proposal follow:

• In selecting a re-financing plan, we must not push our leverage ratio too high. An overlyaggressive leverage ratio will likely cause debt rating agencies to downgrade our debt rating from its current Baa rating, causing our cost of debt to rise dramatically. This effect is explained using the static trade-off capital structure theory, which states that if our debt usage becomes high enough, the marginal increase in the interest tax shield will be more than The marginal increase in the costs of financial distress. However, using some additional leverage will benefit the company by reducing the net agency costs of equity required to align the interests of X-Sport management with its shareholders.

• In the event that X-Sport decides to proceed with a recapitalization plan, I recommend Plan Dsince it is the most consistent with the shareholders' interests.

Haywood reviews the report and calls Kelley into his office to discuss the proposal. Haywood suggests that Flan B would be the most appropriate choice for adjusting X-Sport's capital structure. Before Kelley can argue, however, the two are interrupted by a previously scheduled meeting with a supplier.

Haywood takes Kelley's data and proposes to the board of directors that X-Sport pursue one of three alternatives to restructure the company. The first alternative is Plan B from Kelley's analysis. The second alternative involves separating GearTech, one of the companies acquired over the last few years, from the rest of the company by issuing new GearTech shares to X-Sport common shareholders. The third alternative involves creating a new company, Euro-Sport, out of the firm's European operations and selling 35% of the new Euro-Sport shares to the public while retaining 65% of the shares within X-Sport. After some persuading, Haywood convinces the seven-member board (two of whom were former executives at GearTech) to accept the second alternative, which he had favored from the beginning. The board puts together an announcement to its shareholders as well as the general public, detailing the terms and goals of the plan.

A group of shareholders, upset about the board's plan, submit a formal objection to X-Sport's board as well as to the SEC. In the objection, the shareholders state that the independence of the board has been compromised to the detriment of the company and its shareholders. The objection also states that:

• The value of X-Sport's common stock has been impaired as a result of the poor corporategovernance system.

• The liability risk of X-Sport has increased due to the increased possibility of future transactionsthat benefit X-Sport's directors, without regard to the long-term interests of shareholders.

• The asset risk of X-Sport has increased due to the inability of investors to trust the GearTechfinancial disclosures necessary to value the division.

Which of the following best explains the difference between X-Sport's current cost of debt and the cost of debt associated with Plan A?

**A.** Decreased tax advantage with Plan A.

**B.** Increased liquidity risk for Plan A bond purchasers.

**C.** Increased probability of bankruptcy with Plan A.

**ANSWER: C**

**Explanation:**

Increased probability of bankruptcy with Plan A is correct because the plan materially increases X-Sport’s financial leverage. Based on the stated debt-to-equity relationship for Plan A, debt represents approximately 70% of total capital: 2.33 ÷ (2.33 + 1.00). A capital structure funded so heavily with debt creates larger required interest and principal payments. Those fixed contractual obligations must be met regardless of operating performance, so adverse sales, margin, or cash-flow outcomes become more likely to result in financial distress or default.

Debt investors price this additional default risk into the yield they require. Consequently, a highly levered financing plan can lead to a lower credit rating and a higher cost of debt than the firm’s current capital structure. This follows the static trade-off view of capital structure: debt provides an interest tax shield, but the incremental value of that shield eventually is offset by rising expected costs of financial distress. At sufficiently high leverage, the risk of distress rises rapidly, making lenders demand greater compensation. The relationship between leverage, financial distress, and the limits to debt financing is discussed in OpenStax’s discussion of trade-off theory and in NYU Stern’s capital-structure materials.

**QUESTION NO: 44**

Michael Robbins, CFA, is analyzing Universal Home Supplies, Inc. (UHS), which has recently gone through some extensive restructuring.

Universal Home Supplies, Inc.

UHS operates nearly 200 department stores and 78 specialty stores in over 30 states. The company offers a wide range of products, including women's, men's, and children's clothing and accessories as well as home furnishings, electronics, and other consumer goods. The company is considering cutting back on or eliminating its electronics business entirely. UHS manufactures many of its own apparel products domestically in a large factory located in Kentucky. This central location permits shipping to distribution points around the country at reasonable costs. The company operates primarily in suburban shopping malls and offers mid- to high-end merchandise mainly under its own private label. At present more than 70% of the company's customers live within a 10-minute drive of one of the company's stores. Web site activity measured in dollar sales volume has increased by over 18% in the past year. Shares of UHS stock are currently priced at $25. Dividends are expected to grow at a rate of 6% over the next eight years and then continue to grow at that same rate indefinitely. The company has a cost of capital of 10.2%, a beta of 0.8, and just paid an annual dividend of $1.25.

UHS has faced serious cash flow problems in recent years as a consequence of its strategy to pursue an upscale clientele in the face of increased competition from several "niche retailers." The firm has been able to issue new debt recently and has also managed to extend its line of credit.

**Exhibit 1: Summary Income Statement for Universal Home Supplies, Inc.**
**(U.S. $ millions, except per share data and shares outstanding)**

| | *2008* | *2007* |
|---|---|---|
| Sales | $7,400.1 | $7,383.8 |
| Cost of goods sold, operating, administrative, and selling expenses | 7,081.3 | 7,028.9 |
| Depreciation and amortization | 157.7 | 155.6 |
| Earnings before interest expense and income taxes | 161.1 | 199.3 |
| Interest expense | 42.6 | 45.4 |
| Earnings before tax | 118.5 | 153.9 |
| Income taxes—current | 40.3 | 52.3 |
| Net earnings for the year | $78.2 | $101.6 |
| Earnings per share: Basic | $0.82 | $1.40 |
| Fully diluted | $0.82 | $1.34 |
| Weighted average shares outstanding | 95,366,000 | 72,572,000 |

**Exhibit 2: Book Value per Share (BVPS in $) and Return on Equity (ROE), Universal Home Supplies, Inc.**

| *Year* | *2008* | *2007* | *2006* | *2005* |
|---|---|---|---|---|
| BVPS | $25.58 | $33.62 | $37.54 | $32.26 |
| ROE | 3.2% | 4.0% | 4.5% | 3.9% |

**Exhibit 3: 2008 Selected Industry Information**

| | |
|---|---|
| Estimated earnings growth rate | 0.10 |
| Mean trailing price/earnings (P/E) ratio | 22.50 |
| Mean price/sales (P/S) ratio | 0.50 |

Robbins is asked by his supervisor to carefully consider the advantages and drawbacks of using the price-to-sales ratio (P/S) and to determine the appropriate valuation metrics to use when returns follow patterns of persistence or reversals.

Robbins also estimates a cross-sectional model to predict UHS's P/E:

predicted P/E = 5 - (10 x beta) + [3 x 4-year average ROE(%)] + [2 X 5-ycar growth forecast(%)]

Robbins should conclude that patterns of persistence or reversals in returns provide the most appropriate rationale for valuation using:

**A.** unexpected earnings.

**B.** relative-strength indicators.

**C.** standardized unexpected earnings.

**ANSWER: B**

**Explanation:**

Relative-strength indicators are correct because they are technical-analysis tools designed to evaluate whether a security has outperformed or underperformed a benchmark, market, sector, or peer group over a specified period. Their use rests on empirical evidence that returns can display momentum (persistence) over some horizons and reversal over others. If relative performance persists, a security that has been comparatively strong may continue to outperform; if a reversal pattern is expected, unusually strong or weak relative performance can identify a potential turning point. Thus, the key rationale is not an estimate of intrinsic value from accounting fundamentals, but the possible information contained in a security's own return pattern relative to other investments. The appropriate measurement horizon is important: research has found that momentum and longer-horizon reversal effects may arise over different intervals, so an analyst should align the relative-strength lookback period with the intended holding period. CFA Institute describes technical analysis as using market data, including price and volume, to identify trading opportunities and assess investor behavior. See CFA Institute's Technical Analysis refresher reading and CFA Institute Refresher Readings.

**QUESTION NO: 45**

Martha Garret, CFA, manages fixed income portfolios for Jones Brothers, Inc. (JBI). JBI has been in the portfolio management business for over 23 years and provides investors with access to actively managed equity and fixed-income portfolios. All of JBI's fixed-income portfolios are constructed using U.S. debt instruments. Garret's primary portfolio responsibilities are the Quasar Fund and the Nova Fund, both of which are long fixed-income portfolios consisting of Treasury securities in all maturity ranges. The Quasar Fund holdings as of March 15 are provided in Exhibit

1. A comparison of key rate durations for the Quasar Fund and Nova Fund is provided in Exhibit 2.

**Exhibit 1: Quasar Fund**

| Bond | Maturity (years) | Coupon | Yield | Par Value | Market Value | Duration |
|---|---|---|---|---|---|---|
| A | 2 | 5.0% | 5.0% | 4,000,000 | 4,000,000 | 1.86 |
| B | 5 | 4.5% | 6.0% | 3,500,000 | 3,278,851 | 4.32 |
| C | 15 | 8.0% | 7.0% | 2,750,000 | 3,000,468 | 8.90 |
| D | 30 | 6.5% | 4.0% | 6,450,000 | 9,238,340 | 15.90 |

**Exhibit 2: Key Rate Durations for Quasar Fund & Nova Fund**

| Fund | Maturity (Years) | | | |
|---|---|---|---|---|
| | 2 | 5 | 15 | 30 |
| Quasar Fund | 0.90 | 1.20 | 1.80 | 6.10 |
| Nova Fund | 0.40 | 2.50 | 3.40 | 1.10 |

Of particular importance to Garret and her colleagues is the degree of interest rate risk exposure unique to each portfolio under JBI's management. Driving the increased awareness of the portfolios' interest rate exposure is the double digit growth in assets under management that JBI's fixed-income portfolios have experienced in the last five years. Interest in the company's fixedincome portfolios continues to grow and as a result, all portfolio managers are required to attend weekly meetings to discuss key portfolio risk factors. At the last meeting, Miranda Walsh, a principal at JBI, made the following comments:

"The variance of daily interest rate changes has been trending higher over the last three months leading us to believe that a period of high volatility is approaching in the next twelve to eighteen months. However, the reliability is questionable since the volatility estimates were derived using an option pricing model, which assumes constant interest rates."

"Also, the Treasury spot rate curve currently has a similar shape to the yield curve on Treasury coupon securities, which, according to the market segmentation theory of interest rate term structure, indicates a relatively high level of demand from investors for intermediate term securities. Overzealous trading by investors unwilling to move into other maturity ranges may create mispricing and opportunities for arbitrage."

After the meeting, Walsh and JBI's other principals met to discuss a new international portfolio opportunity. At Walsh's suggestion, the principals selected Garret as the lead portfolio manager for the new fund, which will be titled the Atlantic Fund. One of the other portfolio managers, Greg Terry, CFA, suggested to Garret that she utilize the LIBOR swap curve as a benchmark for the Atlantic fund rather than using local government yield curves. Terry justifies his suggestion by claiming that "the lack of government regulation in the swap market makes swap rates and curves directly comparable between different countries despite fewer maturity points with which to construct the curve as compared to a government yield curve. Furthermore, credit risk in the swap curves of various countries is similar, thus avoiding the complications associated with different levels of sovereign risk embedded in government yield curves." Intrigued by the idea of using the swap curve, Garret has her assistant begin gathering a range of current and forward LIBOR rates.

Which of the following factors would have the most explanatory power for the historical returns of the Quasar Fund? Changes in the:

**A.** level of interest rates.

**B.** slope of the yield curve.

**C.** curvature of the yield curve.

**ANSWER: A**

**Explanation:**

**level of interest rates.** is correct because the Quasar Fund is a long-only portfolio of U.S. Treasury securities spanning the maturity spectrum. The dominant common source of return variation for such a broad Treasury portfolio is a parallel or near-parallel shift in the overall rate level: when market yields decline, Treasury prices generally rise, and when yields increase, their prices generally decline. Since every position in the fund has interest-rate exposure, a broad movement in the general yield level affects the entire portfolio at once and therefore explains the largest share of its historical return variation.

This conclusion follows the well-known empirical term-structure analysis by Litterman and Scheinkman. Their principal-components study of U.S. Treasury yield changes found that the first factor, commonly described as the level factor, accounted for the overwhelming majority of changes in Treasury returns. A portfolio invested across all Treasury maturities is especially exposed to this common factor, although its precise sensitivity depends on its aggregate duration and maturity allocation. The original research is available through the National Bureau of Economic Research. For background on Treasury yield-curve rates and their construction, see the U.S. Treasury daily yield curve resource.

## QUESTION NO: 46

Martin Hagemann, CFA, works for a large brokerage firm in Frankfurt, Germany. Hagemann has been hired by Tryssen AG, a global research-based company that is preparing to go public after a long history of operating privately. The need to raise substantial amounts of capital to fund research and development activities is seen as the key motivation for the change in policy. Tryssen is engaged in the discovery, development, manufacture, marketing, and sale of medical products.

Hagemann's first task is to recommend an exchange upon which Tryssen stock can be traded. One possibility is the Deutsche Bourse. The Deutsche Bourse operates primarily as a continuous order-driven system. Another alternative that Tryssen is considering is to list on a different exchange that operates as a price-driven system.

As an alternative, Tryssen may choose to list as an American Depository Receipt (ADR). ADRs are negotiable U.S. securities that usually represent a non-U.S. based company's publicly traded equity. Although typically denominated in U.S. dollars, depository receipts can also be denominated in euros. Depository receipts can be eligible to trade on all U.S. stock exchanges as well as on many European stock exchanges.

The increasing demand for depository receipts is driven by the desire of individual and institutional investors to diversify their portfolios, reduce risk and invest internationally in the most efficient manner possible. While most investors recognize the benefits of global diversification, there are many challenges presented when investing directly in local trading markets. Obstacles can include inefficient trade settlements, uncertain custody services, and costly currency conversions. Depository receipts overcome many of the inherent operational and custodial hurdles inherent in international investing. Tryssen has decided to access the U.S. market by involving itself in an ADR program. Tryssen has decided to save itself a lot of trouble, however, by not complying with SEC registration and reporting requirements.

As an alternative to ADRs, investors interested in increasing their exposure to international investments can choose to acquire exchange traded funds (ETFs). Hagemann researches the advantages and disadvantages of ETFs.

Execution costs are always a concern, and perhaps even more so for international investors. At the present time, Tryssen AG is most concerned with how reliably it can estimate trading costs. As part of the cost estimation process, Hagemann is asked to provide a report on the advantages and disadvantages of techniques used to reduce execution costs.

Trysse AG proceeds to list on the Frankfurt exchange, and a U.S. affiliate of Hagemann's company starts to aggressively promote the stock. A U.S. investor buys 200 shares of Tryssen at a price of €20 per share. At time of purchase, the exchange rate is €1 = $1.15. One month later Tryssen pays a dividend of €0.25 per share, and investors are subject to a withholding tax of 20%. The U.S. investor is eligible to claim a tax credit of $0.06 per share. At the time the dividend was paid, the shares had jumped to €24 each and the U.S. dollar had weakened to €1 = $ 1.20. The shares were sold just after the dividend was paid.

Which type of ADR is Tryssen most likely to undertake?

**A.** Sponsored Level I ADR.

**B.** Sponsored Level II ADR.

**C.** Sponsored Level III ADR.

**ANSWER: A**

**Explanation:**

Sponsored Level I ADR is correct because Tryssen itself is participating in the depositary-receipt program, making the arrangement sponsored, while explicitly electing not to comply with the SEC registration and ongoing reporting requirements applicable to higher-level sponsored programs. A Level I sponsored ADR program is the basic mechanism for a foreign issuer to make its shares accessible to U.S. investors without undertaking a U.S. public offering or full SEC registration. These ADRs trade in the U.S. over-the-counter market rather than being listed on a national securities exchange such as the NYSE or Nasdaq. The issuer generally relies on the SEC's Rule 12g3-2(b) exemption and supplies required English-language information through its home-market disclosure process.

This structure fits a company seeking U.S. market access while minimizing the regulatory burden associated with SEC registration and periodic reporting. The facts that Tryssen is a non-U.S. company and has chosen an ADR program establish the depository-receipt structure; its stated decision not to comply with SEC registration and reporting requirements specifically identifies the Level I sponsored form. The SEC describes the exemption framework for foreign private issuers at SEC: Foreign Private Issuers Overview, and investor-oriented background on ADR programs is available from Investor.gov: American Depositary Receipts.

## QUESTION NO: 47

A portfolio is invested 60% in Asset A and 40% in Asset B. Asset A has a standard deviation of 20%, Asset B has a standard deviation of 10%, and the correlation between their returns is 0.25.

Asset A's component contribution to total portfolio risk is closest to:

**A.** 7.2%

**B.** 10.5%

**C.** 12.0%

## ANSWER: B

**Explanation:**

**10.5%** is correct. Portfolio variance is:

$(0.60)^2(0.20)^2 + (0.40)^2(0.10)^2 + 2(0.60)(0.40)(0.20)(0.10)(0.25) = 0.0220$.

Portfolio standard deviation is therefore $\sqrt{0.0220} = 14.83\%$. Asset A's component contribution is:

$0.60[0.60(0.20)^2 + 0.40(0.20)(0.10)(0.25)]/0.1483 = 10.5\%$.

A component contribution is expressed in portfolio-risk units and incorporates both the asset's standalone volatility and its covariance with the other portfolio assets.

## QUESTION NO: 48

Ron Natin heads a committee that oversees the USA Insurance portfolio with total assets of $25 billion. The portfolio has 15% of total assets allocated to foreign investments, which include both international stocks and bonds. The committee has adopted a position that the domestic markets are efficient and thus, has indexed the domestic portion of the portfolio. Each unique asset class in the domestic portfolio has been benchmarked individually. The committee believes that foreign markets are less efficient and utilizes active managers for this asset class. The foreign allocation is 60% stocks and 40% bonds. The committee has divided the foreign stock portfolio equally among three different managers. The committee closely monitors the risk level of these managers by reviewing their portfolio betas (current betas: 1.1, 0.95, and 1.3).

As part of his committee responsibilities, Natin is required to review all reports and speeches prepared by other members of the committee before they are presented to the public. One of the committee members, Mclanie Henley, has submitted a speech on the subject of international diversification and the international capital asset pricing model (ICAPM) that she will give to a group of MBA students at a local university. Following are excerpts from her proposed speech:

International investment and diversification is an important concern in money management and, of the many relevant issues to discuss, there are two key insights that I will Take time to explain. First of all, it is essential to realize that the currency exposure of a foreign stock investment is the sensitivity of the stock price to a change in the value of the local currency and that a positive correlation between stock prices and the local currency would mean that the local stock price increases as a result of a depreciation of the local currency. Second, as future asset managers you should realize that improvements in a foreign nation's economic activity that result in an increase in real interest rates will decrease bond prices, but will be offset by an appreciation of the home currency.

The ICAPM is similar to the domestic CAPM in several ways. For example, both models assume that investors are risk-averse, preferring lower levels of risk and greater expected returns, that all investors have the same expectations for the risk and return of every asset, and that all investors should hold some combination of a risk-free asset and the market portfolio.

The IGAPM is a useful construct to determine asset prices in a global context. Strategies that depend explicitly on asset prices derived from the ICAPM can rely on these asset prices even if currency hedging is inhibited in certain markets by legal restrictions on such activities.

The committee monitors the investments of its equity managers by modeling the expected returns of each individual stock. The model used is (he ICAPM. One such stock, a Swiss medical equipment manufacturer, has a world beta of 1.2. The world market risk premium is 4%, and the Swiss franc offers a risk premium of 0.5%. The currency exposure is 0.5, and the applicable riskfree rate is 5%. The expected return on this stock according to the ICAPM model is closest to:

**A.** 9.80%.

**B.** 10.05%.

**C.** 12.00%.

**ANSWER: B**

**Explanation:**

10.05% is the expected return obtained by applying the international CAPM to both sources of systematic risk specified in the question: global equity-market risk and currency risk. In this setting, the expected return equals the applicable risk-free rate plus the stock's world beta multiplied by the world market risk premium, plus the stock's currency exposure multiplied by the Swiss franc risk premium. The world-market contribution is 1.2 × 4.0% = 4.80%. The currency contribution is 0.5 × 0.5% = 0.25%. Adding these risk premia to the 5.0% risk-free rate gives 5.0% + 4.80% + 0.25% = 10.05%.

The currency term is important because the ICAPM extends the domestic CAPM framework to an international environment in which changes in exchange rates can affect an investor's wealth and the value of foreign assets when measured in the investor's home currency. Currency exposure measures the sensitivity of the stock's return to the relevant currency risk factor; therefore, its associated risk premium must be scaled by that exposure rather than added in full. This approach is consistent with CFA Program coverage of international asset-pricing and currency-risk concepts in the CFA Program curriculum.

## QUESTION NO: 49

Barton Wilson, a junior analyst, is a new hire at a money center bank. He has been assigned to help Juanita Chevas, CFA, in the currency trading department. Together, Wilson and Chevas are working on the development of new trading software designed to detect profitable opportunities in the foreign exchange market. Obviously, they are interested in risk-free arbitrage opportunities. However, they have also been instructed to investigate the possibility of longer-term currency exposures that are not necessarily risk-free. To test the logic of their new software, Wilson gathers the following market data:

• Spot JPY/USD exchange rate = 120.

• Spot EUR/USD exchange rate = 0.7224.

• U.S. risk-free interest rate = 7%.

• Eurozone risk-free rate = 9.08%.

• Japanese risk-free rate = 3.88%.

• Yield curves in all three currencies are flat.

In addition to in-house currency transactions, the new software program is also intended to provide insight into currency exposure and hedging needs for the bank's major customers. These customers typically include large multinational firms. Essentially, the bank wants to provide consulting services to its clients concerning which currency exposures offer the greatest possibility of appreciation. In this process, the bank will rely on deviations from international parity conditions as an indicator of long-term currency movements.

Wilson obtains the following data from the econometrics department:

• JPY/USD spot rate one year ago =116.

• EUR/USD spot rate one year ago = 0.7200.

• Anticipated and historical U.S. annual inflation = 3%.

• Anticipated and historical Japanese annual inflation = 0%.

• Anticipated and historical Eurozone annual inflation = 5%.

One of the bank's major customers has significant portions of its business in Japan, and the Eurozone and has long exposure to both currencies. The customer has traditionally hedged all currency risk. However, the customer's new risk manager has decided to leave some currency exposure unhedged in an attempt to profit from long-term currency exposure.

An unexpected decline in the growth rate of the USD money supply would most likely cause:

**A.** the real USD interest rate to increase and the value of the USD to depreciate.

**B.** the real USD interest rate to increase and the value of the USD to appreciate.

**C.** the real USD interest rate to decrease and the value of the USD to appreciate.

**ANSWER: B**

**Explanation:**

An unexpected decline in the growth rate of the U.S. money supply is a contractionary monetary shock. With less rapid growth in money available relative to money demand, U.S. interest rates—and, in the standard monetary approach framework, U.S. real interest rates in the short run—rise. Higher real returns on U.S.-denominated deposits and securities make dollar assets more attractive to global investors. The resulting capital inflows increase demand for U.S. dollars in the foreign-exchange market, causing the dollar to appreciate.

Therefore, *the real USD interest rate to increase and the value of the USD to appreciate* is correct. This conclusion reflects the usual short-run relationship between tighter-than-expected monetary conditions, higher domestic interest rates, and currency strength. Over longer horizons, price-level adjustments and purchasing power parity considerations can affect the exchange rate path, but the immediate effect of an unanticipated reduction in money-supply growth is higher real interest rates and dollar appreciation. The CFA Institute curriculum's foreign-exchange material discusses the monetary approach and the effect of monetary policy changes on exchange rates. See the CFA Program curriculum overview and the Federal Reserve's overview of monetary policy.

**QUESTION NO: 50**

An analyst estimates a multiple regression model and finds that two explanatory variables are highly correlated with each other. The model's overall F-statistic is significant, but the individual t-statistics on the two correlated variables are insignificant.

The regression most likely exhibits:

**A.** heteroskedasticity.

**B.** multicollinearity.

**C.** serial correlation.

**ANSWER: B**

**Explanation:**

**multicollinearity.** is correct. Multicollinearity occurs when two or more independent variables are highly correlated. It increases the estimated standard errors of the affected regression coefficients, which can cause individual t-statistics to be insignificant even when the regression as a whole has explanatory power.

Multicollinearity does not bias the coefficient estimates, but it reduces the precision with which the individual effects of correlated explanatory variables can be estimated.

## QUESTION NO: 51

Donnie Nelson, CFA, has just taken over as Chief Financial Officer of MavsHD, a high-tech company that delivers high-definition technology to a broad-based group of sports enthusiasts. MavsHD has 40% debt and 60% equity in its capital structure. For the year just ended, net income and dividends for MavsHD were equal to $145 million and $21.75 million, respectively. The consensus estimate for net income at the end of the current year is equal to $ 153 million. The company's current book value is $550 million. MavsHD's stock is currently trading on the NYSE for a price of S50 per share and has been steadily decreasing for the past twelve months.

MavsHD has gone through its pioneer and growth phases and is now settling in to the early stages of maturity. The business model is starting to shift from reliance almost exclusively on new customers, to a focus on retaining and satisfying existing customers. The previously experienced very high growth rate has slowed considerably. Nelson believes that the shareholder composition has changed over time as well, favoring shareholders who have a greater interest in dividend stability than explosive growth. In the past, however, the firm has favored a low dividend rate due to the availability of attractive internal investment opportunities.

Nelson wants to develop an optimal dividend policy for MavsIID that will create the most value for the shareholders and at the same time protect corporate assets. He is concerned, however, that there is sometimes a disconnect between an optimal dividend policy and how actual dividend rates are perceived in the marketplace.

Nelson is preparing a recommendation to senior management and the board of directors regarding the firm's dividend policy going forward. Nelson is considering recommending that MavsHD engage in a stock repurchase plan, and repurchase 1.5 million shares of the 12.75 million shares outstanding. This repurchase would eliminate any need to increase the cash dividend payout. Other managers at the firm, besides Nelson, believe MavsHD should increase its dividend and gravitate toward what they perceive to be the target payout ratio over the next eight years. Thus, at the end of the current year, the firm will increase the dividend payment by $250,000 over the dividend in the prior year.

During the board meeting, two of the directors raised concerns over Nelson's proposed repurchase plan. The directors' comments follow:

Director 1: I support the repurchase plan, especially relative 10 varying our dividend. Firms should not vary dividends—this lowers investors' confidence and can adversely impact the firm's cost of equity and its share price.

Director 2: A share repurchase does not take away the uncertainty associated with future stock value. According to the bird-in-the-hand theory, investors prefer higher dividends since capital gains are uncertain. The theory states that if we increase our dividend payout, the value of MavsHD equity will increase. Thus, 1 propose a dividend increase rather than a repurchase.

One of the board members, Jason Neely, proposed an alternative dividend policy plan one week after the meeting in which Nelson presented his plan. Neely's proposal involves utilizing a residual dividend model. Neely rationalizes his plan by claiming that relative to a stable dividend policy, his proposal would increase the volatility of dollar dividends paid to shareholders but would simultaneously increase the firm's ability to exploit value additive investment projects using internally generated funds. Because of this enhanced access to value additive projects, MavsHD's cost of equity capital will experience a marginal decrease which will further increase the overall value of the firm.

If the board proceeds with Nelson's proposed stock repurchase plan as suggested, which of the following is least likely true? MavsHD:

**A.** views investing in its own shares as a better alternative to undertaking new investment projects.

**B.** is trying to signal the market that despite the declining share price, future prospects for the company are good.

**C.** will reduce the wealth of all shareholders including those who tender their shares for repurchase if the repurchase price is at a premium to the current stock price.

**ANSWER: C**

**Explanation:**

“Will reduce the wealth of all shareholders including those who tender their shares for repurchase if the repurchase price is at a premium to the current stock price” is least likely true. A repurchase above the prevailing market price transfers value from the shareholders who remain invested to the shareholders who elect to tender. The company uses corporate cash to pay more than the market value for the tendered shares, so the per-share value of the remaining equity can decline. However, tendering shareholders receive the premium consideration and therefore do not experience that same reduction in wealth from the transaction. They are the recipients of the value transfer created by the premium price. Consequently, it is inaccurate to say that a premium repurchase reduces the wealth of all shareholders, including tendering shareholders.

A share repurchase can be used to distribute excess cash when management believes internal investment opportunities are less attractive, and it may also communicate management’s view that the shares are undervalued or that future prospects are favorable. These implications are consistent with established payout-policy analysis. For further background on dividends and repurchases, see the CFA Institute Corporate Issuers refresher readings and the NYU Stern dividend policy materials.

**QUESTION NO: 52 - (SIMULATION)**

SIMULATION

Ota L'Abbe, a supervisor at an investment research firm, has asked one of the junior analysts, Andreas Hally, to draft a research report dealing with various accounting issues.

Excerpts from the request are as follows:

• “There's an exciting company that we're starting to follow these days. It's called Snowboards andSkateboards, Inc. They are a multinational company with operations and a head office based in the resort town of Whistler in western Canada. However, they also have a significant subsidiary located in the United States."

• "Look at the subsidiary and deal with some foreign currency issues including the specificdifferences between the temporal and all-current methods of translation, as well as the effect on financial ratios."

• "The attached file contains the September 30, 2008, financial statements of the U.S. subsidiary.Translate the financial statements into Canadian dollars in a manner consistent with U.S. GAAP." The following are statements from the research report subsequently written by Hally:

Statement 1: Subsidiaries whose operations are well integrated with the parent will use the allcurrent method of translation.

Statement 2: Self-contained, independent subsidiaries whose operating, investing, and financing activities are primarily located in the local market will use the temporal method of translation.

Other information to be considered

| Snowboards and Skateboards, Inc. (U.S.)<br>Balance Sheet as of 9/30/2008 | (U.S. dollars) |
|---|---|
| Cash and accounts receivable | 775,000 |
| Inventory | 600,000 |
| Property, plant, and equipment (PP&E) - net | 730,000 |
| Total assets | 2,105,000 |

| | |
|---|---|
| Accounts payable | 125,000 |
| Long-term debt | 400,000 |
| Common stock | 535,000 |
| Retained earnings | 1,045,000 |
| Total liabilities and shareholders' equity | 2,105,000 |

| Income Statement for the Year ended 9/30/2008 | |
|---|---|
| Sales | 1,352,000 |
| Cost of goods sold | (1,205,000) |
| Depreciation | (140,000) |
| Net income | 7,000 |

| | |
|---|---|
| Fiscal 2007 (average) | 1.44 |
| Fiscal 2008 (average) | 1.35 |
| October 1,2004 | 1.50 |
| September 30,2007 | 1.48 |
| June 30,2008 | 1.37 |
| September 30, 2008 | 1.32 |

• Beginning inventory for fiscal 2008 had been purchased evenly throughout fiscal 2007. Thecompany uses the FIFO inventory value method.

• Dividends of USD 25,000 were paid to the shareholders on June 30, 2008.

• All of the remaining inventory at the end of fiscal 2008 was purchased evenly throughout fiscal2008.

• All of the PP&E was purchased, and all of the common equity was issued at the inception of thecompany on October 1, 2004. No new PP&E has been acquired, and no additional common stock has been issued since then. However, they plan to purchase new PP&E starting in fiscal 2009.

• The beginning retained earnings balance for fiscal 2008 was CAD 1,550,000.

• The accounts payable on the fiscal 2008 balance sheet were all incurred on June 30, 2008.

• The U.S. subsidiary's operations are highly integrated with the main operations in Canada.

• The remeasured inventory for 2008 using the temporal method is CAD 810,000.

• All monetary asset and liability balances are the same as they were at the end of the 2007 fiscalyear, except that long-term debt was USD 467,700.

• Costs of goods sold under the temporal method in 2008 is CAD 1,667,250.

Are Hally's statements regarding foreign currency translation correct?

**ANSWER: See the explanation for the answer**

**Explanation:**

**Both Statement 1 and Statement 2 are incorrect.**

Thus, for Snowboards and Skateboards, Inc.'s highly integrated U.S. subsidiary, use the **temporal method** to remeasure the U.S.-dollar statements into Canadian dollars.

## QUESTION NO: 53

Tom Vadney, CFA, is president and CEO of Vadney Research and Advisors (VRA), a large equity research firm that specializes in providing international investment and advisory services to global portfolio managers. He has a staff of five junior analysts and three senior analysts covering industries and firms across the Americas, Europe, and Asia-Pacific regions.

In a recent meeting with an institutional portfolio manager, Vadney is asked to review the differences between U.S. GAAP and International Financial Reporting Standards (IFRS) as well as provide a comprehensive industry analysis for the telecommunications sector in Europe and the Asia-Pacific region. Vadney asks Maria Mnoyan, a senior analyst covering the sector, to research the requested information for the client meeting.

Prior to the meeting, Vadney and Mnoyan meet to prepare for the client presentation. They first discuss differences between U.S. GAAP and IFRS. Mnoyan states that although there will be increasing convergence between the two accounting standards, one major difference currently is that IFRS permits either the "partial goodwill" or "full goodwill" method to value the goodwill and the noncontrolling interest under the acquisition method. U.S. GAAP requires the full goodwill method. Vadney adds that U.S. GAAP requires equity method accounting for joint ventures, while under IFRS, proportionate consolidation is preferred, but the equity method is permitted.

Vadney then asks Mnoyan to share her findings on the telecommunications sector. Mnoyan first presents an overview of the competitive forces that characterize the sector in the two regions. In particular, she notes that the sector in both regions is characterized by high switching costs. Vadney asks how high switching costs would affect the bargaining power of buyers and suppliers.

Mnoyan firmly believes that investing in companies located in developing countries provides strong growth potential through technological change and increases in capital, labor, and savings that contribute to higher dividend levels, even if the dividend growth rate is unaffected.

In her research report Mnoyan identifies several countries and industries with attractive investment potential. She notices that the telecommunications sector in one of the countries is characterized by a duopoly. The $50 billion telecom industry in another country in her analysis is dominated by h\e firms with market shares of $10 billion each.

Finally, Vadney and Mnoyan discuss investment opportunities in specific firms. Mnoyan values firms using both the discounted cash flow model and the franchise value method. She makes the following statements on the franchise value method:

Statement 1: A higher asset turnover ratio increases the franchise P/E ratio, one of the components of the intrinsic P/E value.

Statement 2: When firms pay out profits as dividends at a higher rate, a firm's intrinsic P/E value decreases.

Mnoyan's description of the growth potential of developing countries is best described through the:

**A.** endogenous growth theory.

**B.** neoclassical growth theory.

**C.** multifactor model theory.

**ANSWER: B**

**Explanation:**

Neoclassical growth theory is the best description because it distinguishes between changes that raise an economy's output and dividend *level* and changes that permanently raise its long-run growth rate. In the Solow-style neoclassical framework, greater accumulation of capital, growth in labor input, and a higher savings rate can increase the steady-state level of output per worker. This supports a higher level of corporate earnings and, consequently, potentially higher dividend levels. However, these effects do not by themselves create a permanently higher dividend growth rate. Diminishing marginal returns to capital mean that the incremental benefit from additional capital declines as the capital stock rises.

Technological progress is the source of sustained per-capita economic growth in the neoclassical model. Thus, the description properly combines technological change with increases in capital, labor, and savings, while explicitly recognizing that the latter can raise dividend levels even when the long-run dividend growth rate is unchanged. This level-versus-growth distinction is central when applying macroeconomic growth concepts to country and equity-market analysis. For background on the Solow/neoclassical model and the role of technological progress, see the Concise Encyclopedia of Economics overview of the Solow growth model and the IMF explanation of economic growth.

## QUESTION NO: 54

General Investments is considering the purchase of a significant stake in Pacific Computer Components (PCC). Although PCC has stable production output, the company is located in a developing country with an uncertain economic environment. Since the monetary environment is particularly worrisome. General has decided to approach the valuation of PCC from a free cash flow model using real growth rates. In real rate analysis, General uses a modified build-up method for calculating the required real return, specifically:

required real return = country real rate + industry adjustment + company adjustment

Elias Sando, CFA, an analyst with General, estimates the following information for PCC:

Domestic inflation rate = 8.738%

Nominal growth rate = 12.000%

Real country return = 3.000%

Industry adjustmen = 3.000%

Company adjustment = 2.000%

Additionally, Exhibit 1 reports information from PCC's financial statements for the year just ended (stated in LC).

**Exhibit 1: Selected Financial Statement Information for PCC**

| | |
|---|---|
| Investment in fixed capital | LC3,200,000 |
| Investment in working capital | LC400,000 |
| New borrowing | LC2,400,000 |
| Debt repayment | LC2,000,000 |
| Depreciation | LC3,500,000 |
| Interest expense | LC5,000,000 |
| Net income | LC7,000,000 |
| Tax rate | 34% |
| Dividends | LC0 |

PCC generally maintains relatively constant proportions of equity and debt financing and is expected to do so going forward.

Sando has gathered information on earnings before interest, taxes, depreciation, and amortization

(EBITDA) and is contemplating its direct use in another cash flow approach aimed at valuing PCC.

Consider the following two statements regarding EBITDA:

Statement 1: EBITDA is not a good proxy for free cash flow to the firm (FCFF) because it does not incorporate the importance of the depreciation tax shield nor does it reflect the investment in working capital or in fixed capital.

Statement 2: EBITDA is also a poor proxy for FCFE.

Under the assumption that PCC maintains relatively constant proportions of equity and debt financing, the most appropriate valuation model is the:

**A.** FCFF approach.

**B.** FCFE approach.

**C.** residual income approach.

**ANSWER: B**

**Explanation:**

The FCFE approach is the most appropriate model because PCC is expected to maintain stable proportions of debt and equity financing. Free cash flow to equity measures the cash flow remaining for common shareholders after operating expenses, taxes, investment needs, and net borrowing. When a firm's financing policy is stable, its future net borrowing can be estimated consistently with its investment and growth assumptions, making FCFE a direct and practical basis for valuing the equity stake General Investments is considering.

The use of real growth rates is also internally consistent with an FCFE valuation when the discount rate is expressed as a required real return. The analyst's modified build-up estimate produces a real required return by adding the country real rate, industry adjustment, and company adjustment. Forecasting FCFE in real terms and discounting it at that real required return avoids mixing nominal cash flows with a real discount rate. FCFE therefore directly links PCC's operating outlook, reinvestment requirements, and stable leverage policy to the value attributable to equity holders. CFA Institute's discussion of free-cash-flow valuation and Damodaran's overview of FCFF versus FCFE describe this alignment.

**QUESTION NO: 55**

Viper Motor Company, a publicly traded automobile manufacturer located in Detroit, Michigan, periodically invests its excess cash in low-risk fixed income securities. At the end of 2009, Viper's investment portfolio consisted of two separate bond investments: Pinto Corporation and Vega Incorporated.

On January 2, 2009, Viper purchased $10 million of Pinto's 4% annual coupon bonds at 92% of par. The bonds were priced to yield 5%. Viper intends to hold the bonds to maturity. At the end of 2009, the bonds had a fair value of $9.6 million.

On July I, 2009, Viper purchased $7 million of Vega's 5% semi-annual coupon mortgage bonds at par. The bonds mature in 20 years. At the end of 2009, the market rate of interest for similar bonds was 4%. Viper intends to sell the securities in the near term in order to profit from expected interest rate declines.

Neither of the bond investments was sold by Viper in 2009.

On January 1,2010, Viper purchased a 60% controlling interest in Gremlin Corporation for $900 million. Viper paid for the acquisition with shares of its common stock.

Exhibit 1 contains Viper's and Gremlin's pre-acquisition balance sheet data.

**Exhibit 1: Pre-Acquisition Balance Sheet Data**

| *in millions* | *Viper* | | *Gremlin* | |
|---|---|---|---|---|
| | *Book value* | *Fair Value* | *Book Value* | *Fair Value* |
| Current assets | $9,000 | $9,000 | $500 | $700 |
| Noncurrent assets | 7,500 | 7,800 | 900 | 950 |
| | $16,500 | | $1,400 | |
| Current liabilities | $3,000 | $3,000 | $250 | $250 |
| Long-term debt | 7,700 | 7,500 | 400 | 300 |
| Stockholders' equity | 5,800 | | 750 | |
| | $16,500 | | $1,400 | |

Exhibit 2 contains selected information from Viper's financial statement footnotes.

**Exhibit 2: Selected Footnote Information—Viper Motor Company**

| *in millions* |
|---|
| At the end of 2010, the carrying value of Viper's investment in Gremlin was $1,425, including goodwill. On that date, the fair value of Gremlin was $1,475, and the fair value of Gremlin's identifiable net assets was $1,350. The recoverable amount was estimated at $1,430. |

What is the appropriate adjustment, if any, if the Pinto bonds are reclassified as available-for-sale securities during 2010?

**A.** The difference between the fair value and the carrying value on the date of reclassification is recognized in Viper's other comprehensive income.

**B.** Any unrealized gain or loss, as of the date of reclassification, is immediately recognized in Viper's net income.

**C.** No adjustment is necessary because reclassification to/from available-for-sale is strictly prohibited under U.S. GAAP and IFRS.

**ANSWER: A**

**Explanation:**

The difference between the fair value and the carrying value on the date of reclassification is recognized in Viper's other comprehensive income. Under the held-to-maturity and available-for-sale debt-security framework used in this question, held-to-maturity investments are subsequently measured at amortized cost, whereas available-for-sale debt investments are reported at fair value on the balance sheet. Consequently, when Pinto is transferred to the available-for-sale category, Viper must first remeasure the bonds to fair value as of the transfer date.

The resulting cumulative unrealized gain or loss—the amount by which fair value differs from the bonds' amortized carrying amount—is not included in current-period profit or loss. Instead, it is recorded in other comprehensive income and accumulated in equity. This treatment preserves the distinction between interest income and amortization recognized in earnings and unrealized fair-value movements associated with an available-for-sale classification. After the transfer, subsequent changes in the Pinto bonds' fair value continue to be reported in other comprehensive income until the investment is sold or otherwise derecognized, subject to the applicable accounting requirements. This is the traditional CFA

curriculum treatment for available-for-sale debt securities. See the FASB's Accounting Standards Update No. 2016-13 and the IFRS Foundation's IFRS 9 Financial Instruments for financial-instrument classification and measurement guidance.

## QUESTION NO: 56

De Jong continues her analysis of O'Connor. She is concerned that along with a dividend discount model approach she would also like to get a measure of the contribution that the key managers, Melanie and Arthur O'Connor, have made to the company's apparent ongoing success.

She considers using NOPAT and EVA to assess management performance. She believes that increasing invested capital to take advantage of projects with positive net present values increases both NOPAT and EVA.

However, De Jong decides to use residual income analysis instead. She provides the following justification for using the residual income model:

• The calculation of residual income depends primarily on readily available accounting data.

• The residual income model can be used even when cash flow is difficult to forecast.

• The residual income model does not depend on dividend payments or on positive free cashflows in the near future.

• The residual income model depends on the validity of the clean surplus relation.

She also considers the following assumptions about continuing residual income:

Assumption 1: Residual income is positive and continues at the same level year after year.

Assumption 2: As return on equity approaches the cost of equity, residual income tends to zero. Assumption 3: Residual income growth declines overtime and eventually reaches zero.

De Jong gathers recent financial information data on O'Connor, as shown in Exhibit I.

**Exhibit 1: O'Connor Textiles, Inc. Summary Income Statement (U.S. $ thousands, except per share data)**

| | 2008 | 2009 |
|---|---|---|
| | *Actual* | *Projection* |
| Sales | $509,447 | $529,429 |
| Cost of sales | 398,100 | 405,068 |
| Selling and administrative expenses | 49,608 | 59,378 |
| Depreciation and amortization | 18,562 | 22,979 |
| Total operating expenses | 466,270 | 487,425 |
| Earnings from operations | 43,177 | 42,004 |
| Interest expense | 28,004 | 28,906 |
| Earnings before income taxes | 15,173 | 13,098 |
| Provision for income taxes | 5,138 | 4,453 |
| Net earnings for the year | 10,035 | 8,645 |
| Earnings per share: basic | $0.59 | $0.51 |
| Fully diluted | $0.56 | * |

*Non-dilutive

De Jong has also determined that at the beginning of 2008, O'Connor had total capital of $324,000,000, of which $251,000,000 was debt and $73,000,000 was equity. The company's cost of debt before taxes is 7%, and the cost of equity capital is 8%. The company has a tax rate of approximately 34%. Weighted average cost of capital is 5.4%. Net operating profit after tax (before any adjustments) is $28,517,640.

De Jong is interested in obtaining the market's assessment of the implied growth rate in residual income and notes that the book value per share for O'Connor at the beginning of 2009 was $4.29, and the current market price is $70. She forecasts the return on equity (ROE) for 2009 to be 11.84%.

De Jong discusses her analyses with a colleague, who makes the following general statements:

Are De Jong's justifications for using the residual income model correct?

**A.** Yes.

**B.** No, because the residual income model should be not be used when cash flows are difficult to forecast.

**C.** No, because the residual income model depends on positive free cash flows in the near future.

**ANSWER: A**

**Explanation:**

Yes. Each stated point is an appropriate reason to apply a residual income model. Residual income is generally calculated as net income less an equity charge, commonly expressed as beginning book value of equity multiplied by the required

return on equity. Therefore, its inputs are principally accounting-based items—book value, earnings, and the cost of equity—which are often available even where detailed forecasts of dividends or free cash flow are impractical.

The model is particularly useful for firms that do not pay dividends, have dividend policies that do not reflect their capacity to generate value, or are expected to have negative or highly uncertain free cash flow during a forecast period. In those cases, valuation can still be framed as current book value plus the present value of expected future residual income. A necessary accounting foundation is the clean-surplus relation: apart from transactions with owners, changes in book value must flow through reported income. This relation links earnings, book value, and residual income consistently across forecast periods. These applications and assumptions are consistent with CFA Institute's equity valuation curriculum and its overview of the CFA Program's analytical framework: CFA Program Curriculum and CFA Institute: Residual Income Valuation.

## QUESTION NO: 57

Matthew Emery, CFA, is responsible for analyzing companies in the retail industry. He is currently reviewing the status of Ferguson Department Stores, Inc. (FDS). FDS has recently gone through extensive restructuring in the wake of a slowdown in the economy that has made retailing particularly challenging. As part of his analysis, Emery has gathered information from a number of sources.

Ferguson Department Stores, Inc.

FDS went public in 1969 following a major acquisition, and the Ferguson name quickly became one of the most recognized in retailing. Ferguson had been successful through most of its first 30 years in business and has prided itself on being the one-stop shopping destination for consumers living on the West Coast of the United States. Recently, FDS began to experience both top and bottom line difficulties due to increased competition from specialty retailers who could operate more efficiently and offer a wider range of products in a focused retailing sector. When the company's main bank reduced FDS's line of credit, a serious working capital crisis ensued, and the company was forced to issue additional equity in an effort to overcome the problem. FDS has a cost of capital of 10% and a required rate of return on equity of 12%. Dividends are growing at a rate of 8%, but the growth rate is expected to decline linearly over the next six years to a long-term growth rate of 4%. The company recently paid an annual dividend of $1.

At the end of 2008, FDS announced that it would be expanding its retail operations, moving to a warehouse concept, and opening new stores around the country. FDS also announced it would close some existing stores, write-down assets, and take a large restructuring charge. Upon reviewing the prospects of the firm, Emery issued an earnings per share forecast for 2009 of $0.90. He set a 12-month share price target of $22.50. Immediately following the expansion announcement, the share price of FDS jumped from $14 to $18.

**Exhibit 1: Summary Income Statement, Ferguson Department Stores, Inc.**
**(U.S. $ millions, except per share data and shares outstanding)**

| | 2008 | 2007 |
|---|---|---|
| Sales | $6,435.9 | $6,322.7 |
| Cost of goods sold, operating, administrative, and selling expenses | 6,007.9 | 5,875.9 |
| Depreciation and amortization | 148.7 | 146.6 |
| Interest expense | 59.8 | 59.5 |
| Unusual items—expense | 189.1 | 5.0 |
| Earnings before tax | 30.4 | 235.7 |
| Income taxes—current | 49.3 | 7.5 |
| Income taxes—future | (71.1) | 93.5 |
| | (21.8) | 101.0 |
| Net earnings for the year | $52.2 | $134.7 |
| Earnings per share: Basic | $0.49 | $1.26 |
| Fully diluted | $0.49 | $1.26 |
| Weighted average shares outstanding | 106,530,610 | 106,530,610 |

In 2008, FDS also reported an unusual expense of $189.1 million related to restructuring costs and asset write downs.

**Exhibit 2: Selected Industry Information for 2008**

| | |
|---|---|
| Estimated earnings growth rate | 0.10 |
| Mean trailing price/earnings (P/E) ratio | 22.50 |
| Mean price/sales (P/S) ratio | 0.50 |

In response to questions from a colleague, Emery makes the following statements regarding the merits of earnings yield compared to the P/E ratio:

Statement 1: For ranking purposes, earnings yield may be useful whenever earnings are either negative or close to zero.

Statement 2: A high E/P implies the security is overpriced.

Assuming that the cost of equity for FDS does not change, the present value of growth opportunities in the share price following the announcement that the company would be expanding its retail operations, using Emery's 2009 earnings forecast, is closest to:

**A.** $9.00.

**B.** $10.50.

**C.** $12.50.

**ANSWER: B**

**Explanation:**

$10.50 is the present value of growth opportunities (PVGO) embedded in FDS's market price immediately following the expansion announcement. PVGO separates a stock's observed price into the value attributable to existing earnings with no future growth and the additional value investors assign to future investment and growth opportunities. The applicable price is therefore the post-announcement share price of $18.00, rather than Emery's separate 12-month price target.

Using the forecast 2009 EPS of $0.90 and the unchanged required return on equity of 12%, the no-growth value per share is $0.90 ÷ 0.12 = $7.50. This is the value of a perpetuity in which all earnings are distributed and the firm has no value-enhancing growth investments. Subtracting that no-growth value from the $18.00 share price gives PVGO of $10.50 per share: $18.00 − $7.50 = $10.50.

This approach is consistent with the residual-income and growth-opportunity view of equity valuation: a company's price can exceed its capitalized current earnings when investors expect investments to earn returns above the required return on equity. See Aswath Damodaran's discussion of investment returns and value creation and his equity valuation resources.

**QUESTION NO: 58**

Charles Connor, CFA, is a portfolio manager at Apple Investments, LLC. Apple is a U.S.-based firm offering a wide spectrum of investment products and services. Connor manages the Biogene Fund, a domestic equity fund specializing in small capitalization growth stocks. The Biogene Fund generally takes significant positions in stocks, commonly owning 4.5-5% of the outstanding shares. The fund's prospectus limits positions to a maximum of 5% of the shares outstanding. The performance of the Biogene Fund has been superior over the last few years, but for the last two quarters the fund has underperformed its benchmark by a wide margin. Connor is determined to improve his performance numbers going forward.

The Biogene prospectus allows Connor to use derivative instruments in his investment strategy.

Connor frequently uses options to hedge his fund's exposure as he builds or liquidates positions in his portfolio since Biogene's large positions often take several weeks to acquire. For example, when he identifies a stock to buy, he often buys call options to gain exposure to the stock. As he buys the stock, he sells off the options or allows them to expire. Connor has

noticed that the increased volume in the call options often drives the stock price higher for a few days. He has seen a similar negative effect on stock prices when he buys large amounts of put options.

The end of the quarter is just a few days away, and Connor is considering three transactions:

Transaction A: Buying Put Options on Stock A

The Biogene Fund owns 4,9% of the outstanding stock of Company A, but Connor believes the stock is fully valued and plans to sell the entire position. He anticipates that it will take approximately 45 trading days to liquidate the entire Biogene position in Stock A.

The Biogene Fund owns 5% of the outstanding stock of Company

B. Connor believes there is significant appreciation potential for Stock B, but the stock price has dropped in recent weeks. Connor is hoping that by taking an option position, there will be a carryover effect on ihe stock price before quarter end.

Transaction C: Selling the Biogene Fund's Entire Position in .Stock C

Connor believes that Stock C is still attractive, but he is selling the stock with the idea that he will repurchase the position next month. The motivation for the transaction is to capture a capital loss that will reduce the Biogene Fund's tax expense for the year.

Apple has an investment banking department that is active in initial public offerings (IPOs). George Arnold, CFA, is the senior manager of the IPO department. Arnold approached Connor about Stock D, a new IPO being offered by Apple. Stock D will open trading in two days. Apple had offered the IPO to all of its clients, but approximately 20% of the deal remained unsold. Having read the prospectus, Connor thinks Stock D would be a good fit for his fund, and he expects Stock D to improve his performance in both the short and long term. Connor is not aware of any information related to Stock D beyond that provided in the prospectus. Connor asked to purchase 5% of the IPO, but Arnold limited Biogene's share to 2%, explaining:

"With Biogene's reputation, any participation will make the unsold shares highly marketable. Further, we may need Biogene to acquire more Stock D shares at a later date if the price does not hold up."

Connor is disappointed in being limited to 2% of the offering and suggests to Arnold in an e-mail that, given the 2% limitation, Biogene will not participate in the IPO. Arnold responded a few hours later with the following message:

"I have just spoken with Ms. D, the CFO of Stock

D. Although it is too late to alter the prospectus, management believes they will receive a large contract from a foreign government that will boost next year's sales by 20% or more. I urge you to accept the 2%—you won't be sorry!"

After reviewing Arnold's e-mail, Connor agrees to the 2% offer.

By offering Biogene the opportunity to participate in the IPO of Stock D, Apple Investments has violated CFA Institute Standards relating to:

**A.** priority of transactions but not independence and objectivity.

**B.** independence and objectivity but not priority of transactions.

**C.** neither priority of transactions nor independence and objectivity.

**D.** both priority of transactions and independence and objectivity.

**ANSWER: C**

**Explanation:**

“Neither priority of transactions nor independence and objectivity” is correct. The facts establish that the IPO was offered to all of Apple Investments’ clients before Biogene was approached about the remaining unsold shares. Therefore, the opportunity was not improperly reserved for Apple, its employees, or a favored client ahead of other eligible clients. The subsequent limitation of Biogene’s allocation to 2% does not, by itself, establish that a client’s interests were subordinated to employee or employer trading interests. Accordingly, the facts do not support a violation of the Standard concerning priority of transactions.

The offer also does not compromise Connor's independence and objectivity. Before Arnold's later communication, Connor had independently reviewed the prospectus, concluded that Stock D suited the fund, and expected it to improve performance. The allocation was not a gift, benefit, or threat intended to induce Connor to alter an investment recommendation or to take action contrary to the fund's interests. Apple's desire to use Biogene's participation to improve the IPO's marketability does not change the fact that Connor's initial investment judgment was independently reached. CFA Institute's Code and Standards guidance and its Ethics and Standards resources support applying these standards based on the specific conduct and client-treatment facts present.

## QUESTION NO: 59

Andrew Carson is an equity analyst employed at Lee, Vincent, and Associates, an investment research firm. In a conversation with his supervisor, Daniel Lau, Carson makes the following two statements about defined contribution plans.

Statement I: Employers often face onerous disclosure requirements. Statement 2: Employers often bear all the investment risk.

Carson is responsible for following Samilski Enterprises (Samilski), a publicly traded firm that produces motorcycles and other mechanical parts. It operates exclusively in the United States. At the end of its 2009 fiscal year, Samilski's employee pension plan had a projected benefit obligation (PBO) of $320 million. Also, unrecognized prior service costs were $35 million, the fair value of plan assets was $316 million, and the unrecognized actuarial gain was $21 million.

Carson believes the rate of compensation increase will be 5% as opposed to 4% in the previous year, and the discount rate will be 7% as opposed to 8% in the previous year.

This past year, Samilski began using special purpose entities (SPEs) for various reasons. In preparation for analyzing the SPE disclosures in the footnotes to the financial statements, Carson prepares a memo on SPEs. In the memo, he correctly concludes that the company will be required under new accounting rules to classify them as variable interest entities (VIE) and consolidate the entities on the balance sheet rather than report them using the equity method as in the past.

What are the likely effects of the required change in accounting for SPEs on Samilski's:

Return on assets? Return on equity?

**A.** Decrease ;Decrease

**B.** Decrease ;No effect

**C.** No effect ;Decrease

## ANSWER: B

**Explanation:**

**Decrease ;No effect** is correct. When Samilski consolidates VIEs that it previously reported under the equity method, it brings the VIEs' identifiable assets and liabilities onto its own balance sheet line by line. This increases reported total assets. The economic results attributable to Samilski do not change merely because the presentation changes: under the equity method, its share of the entity's earnings was already reflected in income, while consolidation reports the underlying revenues and expenses instead. Accordingly, net income attributable to Samilski is assumed to remain unchanged for this ratio analysis.

Return on assets is calculated as net income divided by average total assets. With unchanged net income and a larger asset base, return on assets decreases. Return on equity is calculated as net income divided by average shareholders' equity. Consolidation replaces the single equity-method investment with the VIE's assets and liabilities; it does not, by itself, change Samilski's shareholders' equity or the income attributable to its shareholders. Thus, return on equity has no effect.

This treatment reflects the consolidation principle that a reporting entity presents entities it controls as a single economic entity, including VIEs for which it is the primary beneficiary. See PwC's VIE consolidation overview and Deloitte's ASC 810 VIE guidance.

## QUESTION NO: 60

Lorenz Kummert is a junior equity analyst who is following Schubert, Inc. (Schubert), a small publicly traded company in the United States. His supervisor, Markus Alter, CFA, has advised him to use the residual income model to analyze Schubert.

In his preliminary report to Alter, Kummert makes the following statements:

Statement 1: Residual income models are appropriate when expected free cash flows are negative for the foreseeable future.

Statement 2: Residual income models are not applicable when cash flows are volatile.

Kummert has determined Schubert's cost of equity, cost of debt, and weighted average cost of capital (WACC) to be 12.8%, 8.4%, and 11.9%, respectively. The current price of the stock is $35 per share and there are 130,000 shares outstanding. The relevant tax rate is 30%, and return on equity (ROE) is expected to be 13%.

Summarized financial information about Schubert for 2008 is provided in Exhibits I and II.

**Exhibit I: Schubert, Inc. Balance Sheet on December 31, 2008**

| | | | |
|---|---|---|---|
| Cash | $ 125,000 | Accounts payable | $ 426,000 |
| Accounts receivable | 975,000 | Accrued liabilities | 774,000 |
| Inventory | 1,215,000 | Long-term debt | 6,211,000 |
| Fixed assets (net) | 9,277,000 | | |
| | | Common shares | 2,100,000 |
| | | Retained earnings | 2,081,000 |
| Total assets | $11,592,000 | Total liabilities and equity | $11,592,000 |

**Exhibit II: Schubert, Inc. Income Statement for the year ended December 31, 2008**

| | |
|---|---|
| Sales | $9,423,000 |
| Cost of sales | 4,580,000 |
| Selling, general, and administrative | 1,230,000 |
| Depreciation | 1,745,000 |
| Interest Expense | 522,000 |
| Income tax expense | 403,800 |
| Net income | $942,200 |

Based on his analysis of several years of financial statements, Kummert notes that 2008 was an exceptionally profitable year for Schubert, and that its dividend payouts are usually low because the funds are mainly reinvested in the firm to promote growth. Furthermore, there are very few Are Kummert's statements regarding the residual income model correct?

**A.** Both statements are incorrect.

**B.** Only Statement 1 is correct.

**C.** Only Statement 2 is correct.

**ANSWER: B**

**Explanation:**

Only Statement 1 is correct. A residual income model values equity as current book value plus the present value of expected future residual income. Residual income is the income earned after charging equity holders for the required return on beginning book value of equity: residual income = net income − (cost of equity × beginning book value of equity). This framework is particularly useful for firms whose expected free cash flows are negative for an extended period, such as businesses that retain and reinvest substantial amounts of cash to support growth. Negative free cash flow does not necessarily imply that the company lacks value; it can reflect investment that is expected to generate accounting earnings exceeding the equity charge in future periods. The model can therefore provide a practical valuation approach when direct free-cash-flow forecasts are difficult to apply. Volatile cash flows do not prevent use of residual income valuation. The key analytical requirements are meaningful forecasts of accounting earnings, book value, and the cost of equity, together with appropriate attention to accounting quality and clean-surplus adjustments. The CFA Program curriculum includes residual income valuation among its equity valuation approaches; see CFA Institute's CFA Program Curriculum and this overview of residual income valuation.

**QUESTION NO: 61**

Mary Pierce, CFA, has just joined The James Group as a fixed income security analyst. Pierce has taken over for Katy Williams, who left The James Group to start her own investment firm. Pierce has been reviewing Williams's files, which include data on a number of securities that Williams had been reviewing.

The first file had information on several different asset-backed securities. A summary schedule that Williams had prepared is shown in Exhibit 1.

Exhibit 1: Summary Schedule

| *Security* | *Rating* | *Nominal Spread (bp)* |
|---|---|---|
| GG Auto Loans | AA | 124 |
| KK Auto Loans | AA | 118 |
| CC Credit Card Receivables | AA | 136 |
| HH Home Equity Loans | AA | 168 |
| LL Home Equity Loans | AA | 174 |

The second file included the following schedule of information relating to a specific CMO thai

Williams had been considering. Exhibit 2 reflects the results of a Monte Carlo simulation based on 15% volatility of interest rates. This security is stil! available, and Pierce needs to evaluate the investment merit of any or all of the listed tranches.

| Tranche | Par Amount ($ million) | OAS(bp) | Z-Spread (bp) | Effective Duration (years) |
|---|---|---|---|---|
| PAC A | 75.0 | 40 | 40 | 1.5 |
| PAC B | 40.0 | 43 | 95 | 4.2 |
| PAC C | 25.0 | 65 | 117 | 5.0 |
| PAC D | 50.0 | 72 | 140 | 7.9 |
| Support S | 100.0 | 51 | 142 | 11.8 |

A third file contained notes Williams had laken at a seminar a couple of months ago on valuing various types of asset-backed and mortgage-backed securities. These notes included the following comments that Pierce found interesting:

"Cash flow yield (CFY) is one method of valuing mortgage-backed securities. An advantage of the

CFY is that it does not rely on any specific prepayment assumptions. An important weakness of CFY is the assumption that interim cash flows will be reinvested at the CFY. This is rarely true for mortgage-backed securities."

"Cash flow duration is similar to effective duration, but its weakness is that it fails to fully account for changes in prepayment rates as cash flow yields change. Empirical duration suffers two disadvantages as a measure of interest rate exposure: reliance on theoretical formulas and reliance on historical pricing data that may not exist for many mortgage-backed securities."

"The recent increase in the default rate for subprime adjustable rate mortgages can be traced to the structure of these loans. The negative amortization feature of these loans basically gave the borrower an at-the-money call option on their property. Once the property decreased in value, this call option was worthless, and the borrower had no incentive to make any additional payments."

Based on Williams's summary information on asset-backed securities. Pierce has decided to purchase the securities based on the LL Home Equity Loans because these securities offered the highest nominal spread, and therefore the best return. Williams believes the risk of the ABS securities is similar based on their credit ratings. Pierce's purchase decision is:

**A.** incorrect, because the nominal spread does not account for the higher prepayment risk of the LL securities.

**B.** incorrect, because the nominal spread does not account for the longer term of home equity loans relative to auto loans.

**C.** correct, because the LL securities do indeed offer the best return of the securities listed.

**ANSWER: A**

**Explanation:**

“incorrect, because the nominal spread does not account for the higher prepayment risk of the LL securities.” is correct. A nominal spread is the quoted yield spread over a benchmark curve and is not a complete measure of the return or compensation an investor receives after considering embedded-option risk. Home equity loan-backed securities commonly give borrowers flexibility to refinance or repay principal early. When interest rates decline, prepayments may accelerate, returning principal precisely when reinvestment opportunities generally offer lower yields. The investor then loses some of the expected high-spread cash flows and faces reinvestment risk; this is the adverse cash-flow asymmetry associated with prepayment options.

Consequently, a higher nominal spread on the LL Home Equity Loans can represent compensation for prepayment-related uncertainty rather than evidence of a superior expected return. Comparing asset-backed securities solely using nominal spreads overlooks that their expected cash-flow timing can differ materially even where stated credit ratings appear similar. A more decision-useful comparison incorporates expected prepayments and the value of the embedded option, typically through an option-adjusted spread framework or scenario analysis. CFA Institute’s fixed-income curriculum includes analysis of mortgage-backed and asset-backed securities, including cash-flow uncertainty and embedded options: CFA Program

curriculum. For background on the borrower's prepayment right in mortgage lending, see the Consumer Financial Protection Bureau's prepayment explanation.

## QUESTION NO: 62

Lena Pilchard, research associate for Eiffel Investments, is attempting to measure the value added to the Eiffel Investments portfolio from the use of 1-year earnings growth forecasts developed by professional analysts.

Pilchard's supervisor, Edna Wilms, recommends a portfolio allocation strategy that overweights neglected firms. Wilms cites studies of the "neglected firm effect," in which companies followed by a small number of professional analysts are associated with higher returns than firms followed by a larger number of analysts. Wilms considers a company covered by three or fewer analysts to be "neglected."

Pilchard also is aware of research indicating that, on average, stock returns for small firms have been higher than those earned by large firms. Pilchard develops a model to predict stock returns based on analyst coverage, firm size, and analyst growth forecasts. She runs the following crosssectional regression using data for the 30 stocks included in the Eiffel Investments portfolio: Ri = b0 + b,COVERAGEi + b2 LN(SIZEi) + b3(FORECASTi) + ei

where:

Ri = the rate of return on stock i

COVERAGEi = one if there are three or fewer analysts covering stock

i, and equals zero otherwise

LN(SIZEi) = the natural logarithm of the market capitalization

(stock price times shares outstanding) for stock i, units in millions

FORECASTi = the 1-year consensus earnings growth rate forecast for stock i

Pilchard derives the following results from her cross-sectional regression:

**Exhibit 1: Results of Pilchard's Cross-Sectional Regression**

| *Variable* | *Coefficient* | *T-statistic* |
|---|---|---|
| Constant | 0.060 | 1.56 |
| COVERAGE | 0.050 | 3.20 |
| LN(SIZE) | –0.003 | –2.50 |
| FORECAST | 0.200 | 2.85 |

The standard error of estimate in Pilchard's regression equals 1.96 and the regression sum of squares equals 400.

Wilrus provides Pilchard with the following values for analyst coverage, firm size, and earnings growth forecast for Eggmann Enterprises, a company that Eiffel Investments is evaluating.

**Exhibit 2: Coverage, Firm Size, and Earnings Growth Forecast for Eggmann Enterprises**

| | |
|---|---|
| Number of analysts | 5 |
| Firm size | $500 million |
| Earnings growth forecast | 50% |

Pilchard uses the following table to conduct some of her hypothesis tests.

**Exhibit 3: Critical Values for Student *t*-Distribution**

| *Degrees of Freedom* | *Area in Upper Tail* | | | | |
|---|---|---|---|---|---|
| | *0.10* | *0.05* | *0.025* | *0.01* | *0.005* |
| 26 | 1.315 | 1.706 | 2.056 | 2.479 | 2.779 |
| 27 | 1.314 | 1.703 | 2.052 | 2.473 | 2.771 |
| 28 | 1.313 | 1.701 | 2.048 | 2.467 | 2.763 |
| 29 | 1.311 | 1.699 | 2.045 | 2.462 | 2.756 |
| 30 | 1.310 | 1.697 | 2.042 | 2.457 | 2.750 |

Wilrus asks Pilchard to assess the overall significance of her regression. To address the question, Pilchard calculates the R-square. She also decides to run a test of the significance of the regression as a whole. Determine the appropriate test statistic she should use to test the overall significance of the regression.

**A.** F-statistic.

**B.** T-statistic.

**C.** Chi-square statistic.

**ANSWER: A**

**Explanation:**

**F-statistic.** is the appropriate test statistic for assessing the overall significance of this multiple linear regression. The overall regression test evaluates the joint null hypothesis that every slope coefficient equals zero: the coefficients on the neglected-firm coverage indicator, log firm size, and the analyst earnings-growth forecast are all zero simultaneously. If that null hypothesis held, none of the explanatory variables would provide linear explanatory power for cross-sectional stock returns beyond the intercept-only model.

The F-statistic compares the regression's explained variation with its unexplained variation, while accounting for both the number of explanatory variables and the sample size. Equivalently, it tests whether the regression's population R-squared is zero. In this setting, the regression sum of squares and standard error of estimate provide the inputs needed to construct the relevant analysis-of-variance quantities and calculate an F-statistic with numerator degrees of freedom equal to the number of slope variables and denominator degrees of freedom equal to the residual degrees of freedom.

This is the standard joint-significance procedure for a multiple regression model. For further background on the F test in regression, see NIST's regression F-test guidance and Penn State STAT 462 on the overall F-test.

## QUESTION NO: 63

Debbie Angle and Craig Hohlman arc analysts for a large commercial bank, Arbutus National Bank. Arbutus lias extensive dealings in both the spot and forward foreign exchange markets.

Angle and Hohlman are providing a refresher course on foreign exchange relations for its traders. Unless indicated otherwise, Angle tells the traders to assume that real interest rates arc equivalent throughout the world.

Angle uses a three country example from North America to illustrate foreign exchange parity relations. In it, the Canadian dollar is expected to depreciate relative to the U.S. dollar and the Mexican peso. Nominal, one year interest rates in the United States are 7% and are 13% in Mexico. From this data and using the uncovered interest rate parity relationship, Angle forecasts future spot rates.

During their presentation, Hohlman discusses the effect of monetary and fiscal policies on exchange rates. He cites a historical example from the United States, where the Federal Reserve shifted to an expansionary-monetary policy to stimulate economic growth. This shift was largely unanticipated by the financial markets because the markets thought the Federal Reserve was more concerned with inflationary pressures. Hohlman states that the effect of this policy was an increase in economic growth and an increase in inflation. The cumulative effect on the dollar was unchanged, however, because, according to Hohlman, an increase in U.S. economic growth would strengthen the dollar whereas an increase in inflation would weaken the dollar.

Regarding U.S. fiscal policies, Hohlman states that if these were unexpectedly expansionary, real interest rates would increase, which would produce an appreciation of the dollar. But, Hohlman adds, an increase in the federal budget would encourage imports such that the overall short-run effect would be for a decrease in the value of the dollar.

Using this same historical example, Angle discusses capital flows and the effect on the balanceof-payments components. Angle makes the following statements:

Statement 1; Differences in real interest rates will cause a flow of capital into those countries with the highest available real rates of interest. Therefore, there will be an increased demand for those currencies, and they will appreciate relative to the currencies of countries whose available real rates of return are low.

Statement 2: The flow of foreign capital into U.S. investments, net of outflows of U.S. capital, is measured by the financial account. In the case of an expansionary fiscal policy, the financial account will increase and move towards a surplus.

Angle next discusses the foreign exchange expectation relation. She states that, examining Great Britain and Japan, it appears that the four year forward rate, which is currently ¥200/£, is an accurate predictor of the expected future spot rate. Furthermore, she states that uncovered interest rate parity and relative purchasing power parity hold. In the example for her presentation, she uses the following figures for the two countries.

| | *Great Britain* | *Japan* |
|---|---|---|
| Real interest rates | 3.20% | 1.90% |
| Expected GDP growth | 2.50% | 1.80% |
| Nominal one-year interest rates | 9.70% | 6.40% |
| Growth in exports | 3.90% | 5.70% |

As a follow-up to Angle's example, Hohlman discusses the use and evidence for purchasing power parity. He makes the following statements.

Statement 3: Absolute purchasing power parity is based on the law of one price, which states that a good should have the same price throughout the world. Absolute purchasing power parity is not widely used in practice to forecast interest rates.

Statement 4: Although relative purchasing power parity is useful as an input for long-run exchange rate forecasts, it is not useful for predicting short-run currency values.

Are Hohlman's statements regarding the effect of Fiscal policies on the dollar correct?

**A.** Yes, they are correct.

**B.** No, the overall short-run effect would be an increase in the value of the dollar.

**C.** No, an increase in real interest rates would produce a depreciation of the dollar.

**ANSWER: B**

**Explanation:**

No, the overall short-run effect would be an increase in the value of the dollar. An unanticipated expansionary fiscal policy, such as increased government spending or lower taxes, raises aggregate demand and the government's borrowing requirement. In the standard open-economy framework, this tends to increase domestic real interest rates. Higher U.S. real rates improve the expected return available on U.S. financial assets and attract foreign portfolio capital. Foreign investors must acquire dollars to purchase those assets, increasing immediate demand for the dollar and causing it to appreciate.

The fiscal expansion may also increase domestic income and imports, which increases the supply of dollars in foreign-exchange markets through current-account transactions. However, the relevant short-run CFA exchange-rate conclusion is that international financial-capital flows respond more quickly, and generally more strongly, than goods-market flows. Consequently, the capital-account/financial-account effect associated with higher real rates dominates the import effect in the short run. The dollar therefore appreciates overall, even though imports rise. This treatment is consistent with the open-economy transmission of fiscal policy discussed by the International Monetary Fund and the Federal Reserve's overview of how monetary and financial conditions affect the economy and asset markets in its monetary policy explainer.

**QUESTION NO: 64**

Austin Clark, CFA, has been asked to analyze White Goods Corporation, a $9 billion company that owns a nationwide chain of stores selling appliances and other electronic goods. As part of his analysis of the White Goods Corporation, Clark's supervisor, David Horvath, asks Clark to forecast White Goods' 2009 sales using multiple regression analysis. The following model was developed:

sales = 20.1 + 0.001 GDP+ 1,000.6 TR + 0.1 CC -3.2 PC -40.3 UR t-values: (1.1) (2.3) (1.75) (3.2) (-0.48) (-0.9)

Number of observations: 76

Standard error estimate: 15.67

Unadjusted R2: 0.96

Regression sum of squares: 412,522 Error sum of squares: 17,188

Independent Variable Descriptions

GDP = gross domestic product

TR = average coupon rate on 5-year U.S. Treasury securities

CC = most recent quarter end consumer confidence index value

PC = previous year's sales of personal computers UR = most recent quarter end unemployment rate

Variable Estimates for 2009

GDP =8,000

TR = 0.05

CC =97

PC = 60,000

UR = 0.055

Critical Values For Student's t-Distribution

| Degrees of freedom | Level of significance for one-tailed test | | | |
|---|---|---|---|---|
| | 10% | 5% | 2.5% | 1% |
| | Level of significance for two-tailed test | | | |
| | 20% | 10% | 5% | 2% |
| 5 | 1.476 | 2.015 | 2.571 | 3.365 |
| 15 | 1.341 | 1.753 | 2.131 | 2.602 |
| 25 | 1.316 | 1.708 | 2.060 | 2.485 |
| 50 | 1.299 | 1.676 | 2.009 | 2.403 |
| 60 | 1.296 | 1.671 | 2.000 | 2.390 |
| 70 | 1.294 | 1.667 | 1.994 | 2.381 |

Clark's supervisor asks him to prepare a report explaining the implications of the regression analysis results. Clark writes the following conclusions concerning regression analysis in his report:

Interpreting the results of regression analysis can be problematic if certain assumptions of the ordinary least squares framework are violated. The regression output for White Goods Corporation is unreliable for the following reasons:

Finding 1: The correlation between regression errors across time is very close to 1.

Finding 2: There is a strong relationship between the regression error variance and the regression independent variables.

In this multiple regression equation, a potential statistical issue is:

**A.** the coefficient of determination indicates a weak model.

**B.** that sales cannot be statistically modeled.

**C.** the PC variable is not a statistically significant variable.

**ANSWER: C**

**Explanation:**

The PC variable is not a statistically significant variable. Its estimated coefficient is −3.2 and its reported t-statistic is −0.48. A coefficient t-test evaluates whether the population slope coefficient differs from zero after accounting for the other regressors in the multiple-regression model. With 76 observations and six estimated parameters including the intercept, the regression has approximately 70 degrees of freedom. For a conventional two-tailed test at the 5% significance level, the critical absolute t-value is close to 2.0. The absolute value of the PC t-statistic, 0.48, is well below that threshold. Therefore, the sample does not provide statistically reliable evidence that prior-year personal-computer sales have an incremental linear association with White Goods sales, conditional on the other explanatory variables. This is a potential issue when interpreting or using the fitted equation for forecasting because the PC coefficient is not distinguishable from zero at customary significance levels. The t-statistic is calculated as the estimated coefficient divided by its standard error; this coefficient-level inference is a core component of multiple-regression analysis. See the regression-coefficient hypothesis-testing discussion from Penn State STAT 501 and the CFA Program curriculum overview.

**QUESTION NO: 65**

Erich Reichmann, CFA, is a fixed-income portfolio manager with Global Investment Management. A recent increase in interest rate volatility has caused Reichmann and his assistant, Mel O'Shea, to begin investigating methods of hedging interest rate risk in his fixed income portfolio.

Reichmann would like to hedge the interest rate risk of one of his bonds, a floating-rate bond (indexed to LIBOR). O'Shea recommends taking a short position in a Eurodollar futures contract because the Eurodollar contract is a more effective hedging instrument than a Treasury bill futures contract.

Reichmann is also analyzing the possibility of using interest rate caps and floors, as well as interest rate options and options on fixed income securities, to hedge the interest rate risk of his overall portfolio.

Reichmann uses a binomial interest rate model to value 1-year and 2-year 6% floors on 1-year LIBOR, both based on $30 million principal value with annual payments. He values the 1-year floor at $90,000 and the 2-year floor at $285,000.

Reichmann has also heard about using interest rate collars to hedge interest rate risk, but is unsure how to construct a collar.

Finally, Reichmann is interested in using swaptions to hedge certain investments. He evaluates the following comments about swaptions.

• If a firm anticipates floating rate exposure from issuing floating rate bonds at some future date, apayer swaption would lock in a fixed rate and provide floating-rate payments for the loan. It would be exercised if the yield curve shifted down.

• Swaptions can be used to speculate on changes in interest rates. The investor would buy areceiver swaption if he expects rates to fall.

To most effectively hedge against an increase in interest rates that would reduce the value of his fixed-income portfolio, what position should Reichmann take?

**A.** Long an interest rate cap or long a European call on interest rates.

**B.** Short an interest rate cap or short a European call on interest rates.

**C.** Long an interest rate cap and short a European call on interest rates.

**ANSWER: A**

**Explanation:**

Long an interest rate cap or long a European call on interest rates is the appropriate hedge for a fixed-income portfolio that loses value when market interest rates rise. An interest rate cap is economically equivalent to a series of interest rate call options, commonly called caplets, on the referenced floating rate. At each settlement date, the cap generates a payment when the reference rate exceeds the cap strike rate. Those payments increase as rates rise, helping offset the decline in the market value of fixed-rate bonds caused by higher discount rates.

Similarly, a European call on an interest rate has a positive payoff at expiration when the underlying reference rate is above its exercise rate. Purchasing the call therefore creates a position with value that rises in the same interest-rate scenario that harms the fixed-income portfolio. The European feature means exercise, or cash settlement, occurs only at the option’s expiration date; it does not alter the fundamental rate-rise protection supplied by a long call. The hedge is particularly useful when the manager seeks asymmetric protection: the option premium is paid up front, while the portfolio retains potential gains if rates instead decline. The CFA Institute’s derivatives curriculum discusses caps as instruments that protect against increases in reference interest rates and the use of interest-rate options for rate-risk management. See CFA Program Curriculum and the CME Group overview of interest-rate options.

**QUESTION NO: 66**

Jerry Sanders, CFA, has been asked to analyze the 20-year bonds of Marietta Tech, Inc., which are currently being held in a corporate bond portfolio managed by a colleague, and to recommend whether the bonds should be sold or held. The bonds currently have a yield spread of 1.55% over Treasuries.

Marietta Tech, Inc. designs, manufactures, and markets specialty trucks and truck bodies mounted on new truck chassis produced by others, including concrete mixers, refuse bodies, fire and emergency vehicles, defense trucks, cut-away and dry freight van bodies, refrigerated units, stake bodies, and other specialized trucks. Marietta also manufactures fiberglass wind deflectors, armored trucks, shuttle buses, and cargo vans. Marietta's customers are located in the United States and Canada.

Exhibit 1: Selected Financial Data for Marietta Tech, Inc. (in thousands of $)

**Exhibit 1: Selected Financial Data for Marietta Tech, Inc. (in thousands of $)**

| *Item* | *2006* | *2007* | *2008* |
|---|---|---|---|
| Current assets | $400 | $600 | $900 |
| Net fixed assets | 5,000 | 5,500 | 6,000 |
| Total assets | 5,400 | 6,100 | 6,900 |
| Current liabilities | 300 | 350 | 450 |
| Long-term debt (LTD) | 3,200 | 2,900 | 3,100 |
| Shareholders' equity | 1,900 | 2,850 | 3,350 |
| Total liabilities and SH equity | 5,400 | 6,100 | 6,900 |
| Earnings before interest, taxes, depreciation, and amortization (EBITDA) | 1,300 | 1,900 | 2,450 |
| Earnings before interest, taxes (EBIT) | 700 | 1,300 | 1,650 |
| Earnings before taxes (EBT) | 400 | 970 | 1,270 |
| Net income | 280 | 697 | 889 |
| Capital expenditures | 900 | 1,100 | 1,300 |
| Cash flow from operations (CFO) | 1,600 | 1,129 | 1,489 |
| Interest expense | 300 | 330 | 380 |
| Free CFO[1] | 700 | 29 | 189 |
| EBIT/interest expense | 2.33 | 3.94 | |
| EBITDA/interest expense | 4.33 | 5.76 | |
| EBIT/sales | 14.0% | 18.6% | 18.3% |
| Long-term obligations/capitalization[2] | 8.9% | 57.8% | |
| Free CFO/ long-term obligations | 16 7% | 0.7% | |
| Current ratio | 1.33 | 1.71 | |
| Total liabilities/assets | 64.8% | 53.3% | |

[1] Free CFO = CFO – capital expenditures.

[2] Long-term obligations = LTD + present value of operating leases; Capitalization = LTD + present value of operating leases + shareholders' equity. PV of operating leases for Marietta are $1,000, $1,000, and $1,800, respectively, for 2006, 2007, and 2008.

**Exhibit 2: Median Industry Ratios by Industrial Bond Rating (2008)**

| *Ratio* | *AAA* | *AA* | *A* | *BBB* | *BB* | *B* | *CCC* |
|---|---|---|---|---|---|---|---|
| EBIT/ interest expense | 19.6 | 9.4 | 5.9 | 3.2 | 2.0 | 0.5 | 0.2 |
| EBITDA/ interest expense | 24.7 | 12.4 | 8.8 | 5.5 | 3.0 | 1.6 | 0.9 |
| EBIT/sales | 26.0% | 22.9% | 18.8% | 15.7% | 13.3% | 10.7% | 10.1% |
| Long-term obligations/ capitalization | 15.6% | 30.5% | 44.2% | 56.3% | 68.5% | 72.0% | 73.4% |
| Free CFO/ Long-term obligations | 65.1% | 24.8% | 12.0% | 5.7% | 3.4% | (1.4%) | (8.8%) |

**Exhibit 3: Median 20-Year Yield Spreads by Industrial Bond Rating (2008)**

| | *AAA* | *AA* | *A* | *BBB* | *BB* | *B* | *CCC* |
|---|---|---|---|---|---|---|---|
| Yield spread over Treasuries | 0.90% | 1.36% | 1.52% | 1.85% | 2.10% | 2.56% | 4.89% |

At lunch Sanders discusses the credit analysis of various types of bonds with Elizabeth Yan, who was just hired as a bond analyst. Yan makes the following statements:

Statement 1: An analysis of the issuer's business and operating risks is important to the analysis of corporate bond credit risk but not important for the credit analysis of asset backed securities (ABS).

Statement 2: The unique bond covenants in a municipal bond's trust indenture require an additional level of credit analysis not necessary in a corporate credit analysis.

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Statement 2: The unique bond covenants in a municipal bond's trust indenture require an additional level of credit analysis not necessary in a corporate credit analysis.

Are Statement 1 and Statement 2 made by Yan correct?

**A.** Both statements arc correct.

**B.** Only one of the statements is correct.

**C.** Neither statement is correct.

**ANSWER: A**

**Explanation:**

Both statements arc correct. Corporate-bond analysis centers on the issuer's ability and willingness to meet its contractual debt obligations. Accordingly, an analyst evaluates business risk and operating risk, including industry conditions, competitive position, revenue stability, margins, operating leverage, liquidity, and the resulting capacity to generate cash flow for interest and principal payments. This issuer-focused analysis is fundamental because corporate bondholders rely on the operating company's financial strength.

In contrast, an ABS is principally supported by a segregated pool of financial assets rather than by the general business operations of a corporate issuer. Credit analysis therefore emphasizes the collateral pool's expected cash flows, default and delinquency behavior, prepayments, structural credit enhancement, waterfall provisions, and the degree to which these features protect each tranche. The SEC's overview of asset-backed securities describes their reliance on pools of income-producing financial assets: SEC asset-backed securities guidance.

Municipal revenue-bond analysis also requires close review of provisions specific to the trust indenture. Rate covenants and priority-of-revenue claims establish how revenues must be set, collected, and allocated before debt service, directly affecting the protection afforded to bondholders. These covenant terms add a municipal-security-specific analytical layer. CFA Institute's fixed-income curriculum resources provide further context on issuer and structured-finance credit analysis: CFA Program curriculum.

## QUESTION NO: 67

Robert Williams is a junior analyst at Anderson Brothers, a large Wall Street brokerage firm. He reports to Will McDonald, the chief economist for Anderson Brothers. McDonald provides economic research, forecasts, and interpretation of economic data to all of Anderson's investment departments, as well as the firm's clients. McDonald has asked Williams to analyze economic trends in the country of Bundovia. The currency of Bundovia is the Bunco (BU).

Williams first analyzes the effect of rising nominal Bundovian interest rates relative to U.S interest rates on the supply and demand for BU. He determines that the increase in Bundovian nominal interest rates would increase the demand for BU and, because the BU supply curve is upward sloping, the BU will appreciate and the equilibrium quantity of BU will increase proportionately.

Bundovia has announced plans to impose either a tariff or a quota on semiconductor imports from the United States. McDonald also asks Williams to analyze the potential effect on Bundovian Semiconductors, the dominant semiconductor manufacturer located in Bundovia. Currently, Bundovian Semiconductors is not competitive in the global semiconductor market because its higher production costs make it unable to generate profits at the current world market price.

Williams concludes that the imposition of either a tariff or quotas would benefit Bundovian Semiconductors. The company would become competitive with foreign producers in its domestic semiconductor market because imports would be reduced and domestic production would rise.

Exhibit 1 shows the trend in the average BU/USD exchange rate over the past three years.

**Exhibit 1: BU/USD Exchange Rates**

| | 2008 | 2007 | 2006 |
|---|---|---|---|
| Exchange rate (BU/USD) | 0.50 | 0.25 | 0.15 |

A bank is quoting the following exchange rates:

USD/GBP = 2.0010 – 20

USD/SFr = 0.8550 – 60

Williams asks the bank for a GBP/SFr cross rate.

From the same bank, Williams receives the following forward rate quotes in the USD/GBP market:

• 30-day forward rate: USD/GBP = USD/GBP = 2.0045 - 55

• 60-day forward rate: USD/GBP = USD/GBP = 2.0075 - 85

Williams has uncovered a potential arbitrage opportunity in the foreign exchange markets. The current spot rate is $2.00 per BU. The Bundovian risk-free interest rate is 3%, and the one-year forward rate is $2.10 per BU. The U.S. risk-free rate is 5%.

Is Williams correct in his conclusions that Bundovian Semiconductors would benefit from the imposition of a tariff or quota?

**A.** He is correct on both.

**B.** He is only correct about the tariff.

**C.** He is only correct about the quota.

**ANSWER: A**

**Explanation:**

He is correct on both. A tariff raises the domestic price paid for imported semiconductors by adding a tax at the border. A quota directly limits the volume of imported semiconductors available in Bundovia. In either case, the quantity of lower-cost foreign semiconductors sold in the domestic market declines relative to free trade. The resulting reduction in import competition allows the domestic market price to rise and creates scope for domestic producers to expand output.

Because Bundovian Semiconductors has production costs that prevent it from earning a profit at the prevailing world price, this protection is material: the higher domestic price makes it more feasible for the firm to compete in Bundovia, even though it remains uncompetitive in the global market at the unrestricted world price. The conclusion concerns the firm's domestic competitive position, not whether it becomes a globally efficient producer. Standard trade analysis therefore supports the conclusion that both forms of import restriction can benefit the protected domestic producer through reduced imports and increased domestic production. The World Trade Organization describes tariffs as customs duties on merchandise imports and identifies quotas as quantitative restrictions on imports: WTO: Tariffs and WTO: Trade barriers.

## QUESTION NO: 68

Rock Torrey, an analyst for International Retailers Incorporated (IRI), has been asked to evaluate the firm's swap transactions in general, as well as a 2-year fixed for fixed currency swap involving the U.S. dollar and the Mexican peso in particular. The dollar is Torrey's domestic currency, and the exchange rate as of June 1,2009, was $0.0893 per peso. The swap calls for annual payments and exchange of notional principal at the beginning and end of the swap term and has a notional principal of $100 million. The counterparty to the swap is GHS Bank, a large full-service bank in Mexico.

The current term structure of interest rates for both countries is given in the following table:

| Time Period | U.S. Interest Rates | Mexican Interest Rates |
|---|---|---|
| 360 days | 4.0% | 5.0% |
| 720 days | 4.5% | 5.2% |

Torrey believes the swap will help his firm effectively mitigate its foreign currency exposure in Mexico, which sterns mainly from shopping centers in high-end resorts located along the eastern coastline. Having made this conclusion, Torrey begins writing his report for the management of IRI. In addition to the terms of the swap, Torrey includes the following information in the report:

• Implicit in the currency swap under consideration is a swap spread of 75 basis points over 2-yearU.S. Treasury securities. This represents a 10 basis point narrowing of the spread as compared to this time last year. Thus, we can assume that the credit risk of the global credit market has decreased. Unfortunately, the decline provides no insight into the credit risk of the individual currency swap with GHS Bank, which could have increased.

• In order to decrease the counterparty default risk on the currency swap, we will need to utilizecredit derivatives between the beginning and midpoint of the swap's life when this particular risk is at its highest. This is a significantly different strategy than we normally use with interest rate swaps. For interest rate swaps, counterparty default risk peaks at the middle of the swap's life, at which point we utilize credit derivative CQuntermeasures to offset the risk.

• Because currency swaps almost always include netting agreements and interest rate swaps canbe structured to include mark-to-market agreements, we can significantly reduce the credit risk of these swap instruments by negotiating swap contracts that include these respective features. When negotiating these features is not possible, credit risk can be reduced by using off-market swaps that do not require an initial payment from IRI.

Six months have passed (180 days) since Torrey issued his report to IRI's management team, and the current exchange rate is now $0,085 per peso. The new term structure of interest rates is as follows:

| Time Period | U.S. Interest Rates | Mexican Interest Rates |
|---|---|---|
| 180 days | 4.2% | 5.0% |
| 540 days | 4.8% | 5.2% |

Evaluate Torrey's statements regarding IRPs ability to mitigate the credit risk inherent in currency swaps and interest rate swaps. Torrey is only correct regarding:

**A.** netting agreements.

**B.** mark-to-market agreements.

**C.** off market swap contracts.

**ANSWER: B**

**Explanation:**

**mark-to-market agreements** is correct. A mark-to-market agreement reduces counterparty credit exposure by requiring the swap’s value to be recalculated at specified intervals using current market rates. If that valuation shows that one party has an amount due to the other, the party with the obligation transfers the amount then due. After settlement, the transaction is effectively reset at its current market value, so the remaining exposure is substantially reduced rather than being allowed to accumulate throughout the contract term.

This process is especially useful for an interest rate swap because its value can change as the relevant yield curve changes. Periodic valuation and settlement therefore limit the potential loss that would arise if the counterparty subsequently defaulted while the swap has a positive value to IRI. In modern OTC derivatives practice, this risk-control approach is commonly

implemented through collateral and variation-margin arrangements documented in credit support documentation. These arrangements operationalize frequent mark-to-market valuation and transfers, directly addressing current replacement-cost exposure. The International Swaps and Derivatives Association describes the role of collateral documentation in supporting OTC derivatives risk management in its Credit Support Annex materials. Further background on variation margin as a mechanism for mitigating derivatives counterparty risk is available from the Basel Committee and IOSCO margin requirements framework.

## QUESTION NO: 69

High Plains Tubular Company is a leading manufacturer and distributor of quality steel products used in energy, industrial, and automotive applications worldwide.

The U.S. steel industry has been challenged by competition from foreign producers located primarily in Asia. All of the U.S. producers are experiencing declining margins as labor costs continue to increase. In addition, the U.S. steel mills arc technologically inferior to the foreign competitors. Also, the U.S. producers have significant environmental issues that remain unresolved.

High Plains is not immune from the problems of the industry and is currently in technical default under its bond covenants. The default is a result of the failure to meet certain coverage and turnover ratios. Earlier this year, High Plains and its bondholders entered into an agreement that will allow High Plains time to become compliant with the covenants. If High Plains is not in compliance by year end, the bondholders can immediately accelerate the maturity date of the bonds. In this case. High Plains would have no choice but to file bankruptcy.

High Plains follows U.S. GAAP. For the year ended 2008, High Plains received an unqualified opinion from its independent auditor. However, the auditor's opinion included an explanatory paragraph about High Plains' inability to continue as a going concern in the event its bonds remain in technical default.

At the end of 2008, High Plains' Chief Executive Officer (CEO) and Chief Financial Officer (CFO) filed the necessary certifications required by the Securities and Exchange Commission (SEC).

To get a better understanding of High Plains' financial situation, it is helpful to review High Plains' cash flow statement found in Exhibit 1 and selected financial footnotes found in Exhibit 2.

## Exhibit 1: Cash Flow Statement

**High Plains Tubular Cash Flow Statement**

| *in thousands* | Year ended December 31, 2008 | 2007 |
|---|---|---|
| Net income | $158,177 | $121,164 |
| Depreciation expense | 34,078 | 31,295 |
| Deferred taxes | 7,697 | 11,407 |
| Receivables | (144,087) | (24,852) |
| Inventory | (79,710) | (72,777) |
| Payables | 36,107 | 22,455 |
| Cash flow from operations | $12,262 | $88,692 |
| Cash flow from investing | ($39,884) | ($63,953) |
| Cash flow from financing | $82,676 | $6,056 |
| Change in cash | $55,054 | $30,795 |

Exhibit 2: Selected Financial Footnotes

1. During 2008, High Plains' sales increased 27% over 2007. Its sales growth continues tosignificantly exceed the industry average. Sales are recognized when a firm order is received from the customer, the sales price is fixed and determinable, and collectability is reasonably assured.

2. The cost of inventories is determined using the last-in, first-out (LIFO) method. Had the first-in,first-out method been used, inventories would have been $152 million and $143 million higher as of December 31,2008 and 2007, respectively.

3. Effective January 1, 2008, High Plains changed its depreciation method from the doubledeclining balance method to the straight-line method in order to be more comparable with the accounting practices of other firms within its industry. The change was not retroactively applied and only affects assets that were acquired on or after January 1,2008.

| *in millions* | 2008 | 2007 | 2006 |
|---|---|---|---|
| Maintenance and repairs | $180 | $184 | $218 |
| Advertising and marketing | 94 | 108 | 150 |

4. High Plains made the following discretionary expenditures for maintenance and repair of plantand equipment and for advertising and marketing:

5. During the fiscal year ended December 31, 2008, High Plains sold $50 million of its accountsreceivable, with recourse, to an unrelated entity. All of the receivables were still outstanding at year end.

6. High Plains conducts some of its operations in facilities leased under noncancelable capitalleases. Certain leases include renewal options with provisions for increased lease payments during the renewal term.

7. High Plains' average net operating assets at the end of 2008 and 2007 was $977.89 million and$642.83 million, respectively.

Using only the information found in Exhibit 1 and Exhibit 2, which of the following is most indicative of lower earnings quality?

**A.** High Plains' discretionary expenses.

**B.** The change in High Plains' depreciation method.

**C.** High Plains' inventory cost flow assumption.

**ANSWER: A**

**Explanation:**

High Plains' discretionary expenses are most indicative of lower earnings quality because the company is reducing expenditures for maintenance and repairs and for advertising and marketing while sales and investment in capital assets are increasing. These expenditures can often be deferred in the short term, but they support the condition of productive assets, customer demand, and future operating performance. Reducing them can increase current-period reported earnings and cash flow without representing a sustainable improvement in the underlying economics of the business.

The pattern is particularly meaningful in this case: capital investment exceeds depreciation, indicating an expanding asset base, yet maintenance spending is declining. At the same time, sales are growing strongly while advertising and marketing spending is falling. This combination raises concern that management may be improving reported near-term profitability by postponing spending needed to maintain assets and support revenue generation. Such a reduction may be especially consequential for a financially distressed company attempting to meet covenant requirements. Financial reporting-quality analysis focuses on whether reported performance faithfully reflects sustainable economic performance, including whether operating expenses have been managed in ways that shift costs from the current period to future periods. See the CFA Institute’s discussion of financial reporting quality and the SEC’s guidance on management discussion and analysis.

**QUESTION NO: 70**

Amie Lear, CFA, is a quantitative analyst employed by a brokerage firm. She has been assigned by her supervisor to cover a number of different equity and debt investments. One of the investments is Taylor, Inc. (Taylor), a manufacturer of a wide range of children's toys. Based on her extensive analysis, she determines that her expected return on the stock, given Taylor's risks, is 10%. In applying the capital asset pricing model (CAPM), the result is a 12% rate of return.

For her analysis of the returns of Devon, Inc. (Devon), a manufacturer of high-end sports apparel, Lear intends to use the Fama-French model (FFM). Devon is a small-cap growth stock that has traded at a low market-to-book value in recent years. Lear's analysis has provided a wealth of quantitative information to consider. The return on a value-weighted market index minus the riskfree rate is 5.5%, the small-cap return premium is 3.1%, the value return premium is 2.2%, and the liquidity premium is 3.3%. The risk-free rate is 3.4%. The market, size, relative value, and liquidity betas for Devon are 0.7, -0.3, 1.4, and 1.2, respectively. In estimating the appropriate equity risk premium, Lear has chosen to use the Gordon growth model.

Lear's assistant, Doug Saunders, presents her with a report on macroeconomic multifactor models that includes the following two statements:

Statement 1: Business cycle risk represents the unexpected change in the difference between the return of risky corporate bonds and government bonds.

Statement 2: Confidence risk represents the unexpected change in the level of real business activity.

Lear is also attempting to determine the most appropriate method for determining the required return for Densmore, Inc. (Densmore), a closely held company that is considering a debt issue within the next year. The company has not previously issued debt securities to the public, relying instead on bank financing. She realizes that there are a number of models to consider, including the CAPM, multifactor models, and build-up models.

Which of the following approaches/methods is most appropriate for Lear to consider in determining the required return for Densmore?

**A.** Build-up method.

**B.** Risk premium approach.

**C.** Bond-yield plus risk premium method.

**ANSWER: A**

**Explanation:**

**Build-up method.** is the most appropriate approach for Densmore because it is a closely held company with no history of publicly issued debt. Private companies generally do not have sufficiently reliable market-price data from which to estimate a company-specific beta. The build-up method does not require a directly observed beta. Instead, it estimates the required return by starting with a risk-free rate and adding appropriate premia, such as an equity risk premium, a size premium where applicable, and a company-specific risk premium. This makes it particularly useful when valuing or estimating the cost of equity for closely held businesses.

The method also permits the analyst to reflect Densmore's individual operating, financial, and liquidity characteristics in a transparent estimate. Its planned future debt issuance does not create a current public market yield or trading history that could serve as a direct market-based input. In CFA Institute's corporate issuer framework, required returns and discount rates should be selected using inputs that are relevant and supportable for the entity being analyzed. For a nonpublic firm, accumulating justified risk components is therefore a practical and conceptually sound procedure. See CFA Institute's Cost of Capital refresher reading and the Damodaran data resources for equity risk-premium inputs.

**QUESTION NO: 71**

Tom Vadney, CFA, is president and CEO of Vadney Research and Advisors (VRA), a large equity research firm that specializes in providing international investment and advisory services to global portfolio managers. He has a staff of five junior analysts and three senior analysts covering industries and firms across the Americas, Europe, and Asia-Pacific regions.

In a recent meeting with an institutional portfolio manager, Vadney is asked to review the differences between U.S. GAAP and International Financial Reporting Standards (IFRS) as well as provide a comprehensive industry analysis for the telecommunications sector in Europe and the Asia-Pacific region. Vadney asks Maria Mnoyan, a senior analyst covering the sector, to research the requested information for the client meeting.

Prior to the meeting, Vadney and Mnoyan meet to prepare for the client presentation. They first discuss differences between U.S. GAAP and IFRS. Mnoyan states that although there will be increasing convergence between the two accounting standards, one major difference currently is that IFRS permits either the "partial goodwill" or "full goodwill" method to value the goodwill and the noncontrolling interest under the acquisition method. U.S. GAAP requires the full goodwill method. Vadney adds that U.S. GAAP requires equity method accounting for joint ventures, while under IFRS, proportionate consolidation is preferred, but the equity method is permitted.

Vadney then asks Mnoyan to share her findings on the telecommunications sector. Mnoyan first presents an overview of the competitive forces that characterize the sector in the two regions. In particular, she notes that the sector in both regions is characterized by high switching costs. Vadney asks how high switching costs would affect the bargaining power of buyers and suppliers.

Mnoyan firmly believes that investing in companies located in developing countries provides strong growth potential through technological change and increases in capital, labor, and savings that contribute to higher dividend levels, even if the dividend growth rate is unaffected.

In her research report Mnoyan identifies several countries and industries with attractive investment potential. She notices that the telecommunications sector in one of the countries is characterized by a duopoly. The $50 billion telecom industry in another country in her analysis is dominated by h\e firms with market shares of $10 billion each.

Finally, Vadney and Mnoyan discuss investment opportunities in specific firms. Mnoyan values firms using both the discounted cash flow model and the franchise value method. She makes the following statements on the franchise value method:

Statement 1: A higher asset turnover ratio increases the franchise P/E ratio, one of the components of the intrinsic P/E value.

Statement 2: When firms pay out profits as dividends at a higher rate, a firm's intrinsic P/E value decreases.

Mnoyan's best response to Vadney on how high switching costs affect the bargaining power of buyers and suppliers, respectively, should be:

**A.** only the bargaining power of buyers will decrease.

**B.** only the bargaining power of supplies will decrease.

**C.** the bargaining power of buyers and supplies will decrease.

**D.** the bargaining power of buyers will decrease and the bargaining power of suppliers will increase.

**ANSWER: D**

**Explanation:**

High switching costs decrease the bargaining power of buyers and increase the bargaining power of suppliers. Switching costs are the monetary, operational, contractual, time-related, or psychological costs a customer incurs when moving from one provider to another. In telecommunications, these can include device compatibility issues, transferring a phone number or data, early-termination charges, changing service bundles, retraining employees, and the inconvenience or risk of disrupted service.

Because customers face material costs or disruption if they change carriers, their ability to credibly threaten to leave is reduced. That weaker exit threat gives buyers less leverage when negotiating price, service terms, or contract features. At the same time, customer lock-in makes demand for an incumbent supplier's service more stable and reduces customers' practical alternatives. Suppliers therefore have greater leverage in negotiations and can more readily preserve pricing or contractual terms. This application follows Porter's five-forces framework, in which buyer switching costs are a key determinant of buyer power and can strengthen the position of incumbent firms. See the Harvard Business School overview of the five forces and CFA Institute's Industry and Company Analysis refresher reading.

**QUESTION NO: 72**

Christopher Robinson, chairman of the board of directors for a private endowment fund, believes that the endowment fund for which he is responsible has diverged too far from its stated objectives. Over several years the board has increased the size of the fund's equity position beyond the stated limits of the investment policy statement. In an effort to realign the fund's investments, Robinson has elected to choose a mortgage-backed security (MBS) for inclusion in the endowment's portfolio. After surveying the MBS market, Robinson has selected four MBS securities to present as potential investments at the next investment committee meeting. Details on the selected MBS securities are presented below:

| *MBS* | *Initial Principal ($millions)* | *Coupon Rate* | *Underlying Maturity (years)* | *Nominal Spread* | *OAS* | *Z-spread* |
|---|---|---|---|---|---|---|
| W | 250 | 7.0% | 30 | 1.21% | 0.28% | 0.79% |
| X | 175 | 7.8% | 25 | 1.43% | 0.49% | 1.16% |
| Y | 225 | 7.2% | 20 | 1.62% | 0.31% | 1.12% |
| Z | 190 | 8.0% | 30 | 1.59% | 0.40% | 1.14% |

At the investment committee meeting, a fellow board member raises his concerns over the potential MBS investments stating, "While we all agree that the fixed-income proportion of the endowment is much too small, I am not sure the suggested MBS securities will fulfill the cash flow requirements of the endowment. What risks are we taking on by allocating a portion of the portfolio to these investments? We cannot afford to end up with a timing mismatch between the cash needs of the endowment and the cash provided from its investments. Also, we have given no consideration to commercial mortgage backed securities (CMBS). Isn't our analysis incomplete if we fail to give proper discussion of potential CMBS investment opportunities?"

Robinson responded to his fellow board member by addressing the board member's concerns as follows:

"Since the cash requirements of the endowment fund fluctuate directly with interest rates, the cash flows provided from the MBS will provide adequate protection against cash shortfalls arising from differences in the timing of cash needs and cash sources. In addition, we can further reduce uncertainty surrounding the timing of cash flows by purchasing planned

amortization class CMOs, which are securities issued against pools of MBS. CMBS were not presented due to the unacceptable risk profile of the comparable CMBS trading in the marketplace."

Which of the following statements regarding the difference between the risk profiles of MBS-W and a comparable CMBS is least accurate?

**A.** Relatively illiquid CMBS properties will increase the degree of balloon risk to the investor.

**B.** Contraction risk for a CMBS is significantly lower if the issue contains a defeasance provision.

**C.** Shortfalls in cash flow from the underlying properties of a CMBS can be augmented by the sale of the properties or the borrowers' other assets.

**ANSWER: C**

**Explanation:**

“Shortfalls in cash flow from the underlying properties of a CMBS can be augmented by the sale of the properties or the borrowers' other assets.” is the least accurate statement because the commercial mortgages underlying CMBS are generally non-recourse loans. For a non-recourse commercial mortgage, the lender’s recovery is ordinarily limited to the pledged real-estate collateral and the income it generates. Thus, if property-level cash flow is insufficient to service the debt, the borrower’s unrelated personal or corporate assets are not generally available to cover the deficiency. The sale or foreclosure of the pledged property may provide recoveries, but that recovery depends on the property’s market value and can be inadequate when values decline or liquidity is poor. This restriction is a central source of CMBS credit risk: investors depend on property income, collateral value, loan structural protections, and the transaction waterfall rather than on a broad claim against each borrower’s balance sheet. It is therefore incorrect to characterize a CMBS investor’s cash-flow shortfall as being augmented by the borrowers’ other assets. The non-recourse nature of commercial real-estate lending is described by the SEC, and CMBS transaction structure and collateral considerations are discussed by the Commercial Real Estate Finance Council.

**QUESTION NO: 73**

Ron Natin heads a committee that oversees the USA Insurance portfolio with total assets of $25 billion. The portfolio has 15% of total assets allocated to foreign investments, which include both international stocks and bonds. The committee has adopted a position that the domestic markets are efficient and thus, has indexed the domestic portion of the portfolio. Each unique asset class in the domestic portfolio has been benchmarked individually. The committee believes that foreign markets are less efficient and utilizes active managers for this asset class. The foreign allocation is 60% stocks and 40% bonds. The committee has divided the foreign stock portfolio equally among three different managers. The committee closely monitors the risk level of these managers by reviewing their portfolio betas (current betas: 1.1, 0.95, and 1.3).

As part of his committee responsibilities, Natin is required to review all reports and speeches prepared by other members of the committee before they are presented to the public. One of the committee members, Mclanie Henley, has submitted a speech on the subject of international diversification and the international capital asset pricing model (ICAPM) that she will give to a group of MBA students at a local university. Following are excerpts from her proposed speech:

International investment and diversification is an important concern in money management and, of the many relevant issues to discuss, there are two key insights that I will Take time to explain. First of all, it is essential to realize that the currency exposure of a foreign stock investment is the sensitivity of the stock price to a change in the value of the local currency and that a positive correlation between stock prices and the local currency would mean that the local stock price increases as a result of a depreciation of the local currency. Second, as future asset managers you should realize that improvements in a foreign nation's economic activity that result in an increase in real interest rates will decrease bond prices, but will be offset by an appreciation of the home currency.

The ICAPM is similar to the domestic CAPM in several ways. For example, both models assume that investors are risk-averse, preferring lower levels of risk and greater expected returns, that all investors have the same expectations for the risk and return of every asset, and that all investors should hold some combination of a risk-free asset and the market portfolio.

The IGAPM is a useful construct to determine asset prices in a global context. Strategies that depend explicitly on asset prices derived from the ICAPM can rely on these asset prices even if currency hedging is inhibited in certain markets by legal restrictions on such activities.

Japan's risk-free rate on bonds with 1-year maturity is 0.50% and the comparable U.S. risk-free interest rate is 2.0%. The current exchange rate is $0.85 per 100 yen. Calculate the I-year forward exchange rate.

**A.** $0,843 per 100 yen.

**B.** $0,850 per 100 yen.

**C.** $0,863 per 100 yen.

**ANSWER: C**

**Explanation:**

The correct forward exchange rate is **$0.863 per 100 yen**. Covered interest rate parity determines the no-arbitrage forward rate by adjusting the spot exchange rate for the relative risk-free interest rates of the two currencies. Because the quotation is in U.S. dollars per 100 Japanese yen, the U.S. dollar is the price currency and Japan is the base-currency country. The applicable formula is: forward rate = spot rate × (1 + U.S. risk-free rate) ÷ (1 + Japanese risk-free rate).

Substituting the information given produces: $0.850 × (1.020 ÷ 1.005) = $0.8627 per 100 yen. Rounding to three decimal places gives $0.863 per 100 yen. The result is above the spot rate because the U.S. risk-free interest rate exceeds the comparable Japanese rate. Under covered interest parity, that interest-rate differential is incorporated into the forward premium on the yen when the exchange rate is stated as dollars per yen.

This relationship follows the standard no-arbitrage pricing framework for foreign-exchange forwards: an investor can replicate a forward currency transaction through borrowing in one currency, converting at spot, and investing in the other currency. For background on forward exchange rates and interest rate parity, see CFA Institute's currency exchange rates refresher and Investopedia's overview of interest rate parity.