

2015 Level III Mock Exam
ANSWERS AND REFERENCES

Litman Case Scenario

Frank Litman, CFA, was recently hired as a portfolio manager by Twain Investments, a fairly small asset management firm. Since attending graduate school 10 years ago, Litman has managed a limited number of accounts belonging to friends. All of these accounts are currently too small to meet Twain's minimum balance requirement of \$5 million and generate only modest fees for Litman. Litman disclosed the arrangement to the human resource (HR) manager when he interviewed for his position with Twain. The HR manager agreed that the accounts were too small and would probably never be large enough to meet Twain's minimum size requirement.

After accepting the position with Twain, Litman met with each of the friends for whom he manages portfolios. He recommended they find another financial adviser. Litman's friends argued that a different adviser would undoubtedly charge higher fees and asked Litman to continue managing their money as a personal favor. Following the meetings, Litman sent separate letters to both the Twain HR manager and his friends explaining his employment relationship and that he also manages some small portfolios for a few of his friends.

The following month, Litman updated the promotional material that he shares with all of his Twain clients and prospects. The material summarizes the portfolio trading strategy Litman developed by analyzing 20 years of historical data. In his analysis, Litman determined his strategy of investing in large-capitalization U.S. stocks would have outperformed the S&P 500 Index over the last 20 years—with an average annual return of 8.91% versus 8.22% for the S&P 500. The concluding paragraph of the brochure states, "We believe long-term use of this trading strategy will lead to superior performance compared with the S&P 500." The brochure includes a footnote in small print stating, "Results are gross before taxes and thus may be higher than actual results would have been over the given period. Past performance cannot guarantee future results."

At Twain, Litman has discretionary authority over 30 individual clients who hold both stocks and bonds in their portfolios. His 10 largest clients vary widely in age, occupation, and wealth. For a variety of reasons, each of these accounts requires significant attention. The remaining two-thirds of Litman's clients are stable, long-term investors, all of whom are saving for retirement. Litman performs comprehensive quarterly reviews with the owners of the 10 largest accounts and similar annual reviews with the remaining clients. Recently, he made an exception to this rule when he learned that one of his smaller, less active clients had unexpectedly inherited \$600,000 from an aunt's estate. Litman met with the client and performed a comprehensive review of the client's financial situation even though only three months had passed since their last meeting.

Twain hires a compliance officer and subsequently experiences significant change during the following year. The compliance officer immediately begins to update the firm's policies and procedures even though Twain adheres to the Asset Manager Code of Professional Conduct. In addition, after a thorough analysis, Twain senior management decides to outsource its back-office operations and hires an independent consultant to review client portfolio information. At the same time, they add several research and investment staff members and upgrade the information management system. They also eliminate paper records in favor of electronic copies and develop a business-continuity plan based on current staffing.

Eighteen months later, the compliance officer resigns. Rather than hire an external replacement, management designates one of Twain's senior portfolio managers as the new compliance officer. The compliance officer reviews both firm and employee transactions and reports to the CEO rather than to the board of directors.

1. According to CFA Institute's *Standards of Practice Handbook*, which of the following additional pieces of information would Litman *least likely* be required to supply to Twain to comply with his duty to employer? The:
 - A. names of his friends who are his clients.
 - B. duration of the investment management agreements with friends.
 - C. amount and type of compensation received from friends.

Answer = A

According to the *Standards of Practice Handbook* IV(B), members should disclose the terms of any agreement under which a member will receive additional compensation. Terms include the nature of the compensation, the approximate amount of compensation, and the duration of the agreement. According to Standard III(E), members must keep information about current and prospective clients confidential. Client names would be considered confidential, particularly when tied to the other previously mentioned information to be given to the employer.

CFA Level III
“Guidance for Standards I–VII,” CFA Institute
Standard IV(B)

2. With regard to managing portfolios for Twain as well as for his friends, Litman should *most likely* undertake which of the following to ensure compliance with CFA Institute Standards of Professional Conduct? He should:
 - A. inform his immediate supervisor.
 - B. obtain written consent from Twain and his friends.
 - C. do nothing further.

Answer = B

According to Standard IV(B)–Additional Compensation Agreements because Litman must obtain written permission from all parties involved when conflicts of interest are present.

CFA Level III

“Guidance for Standards I–VII,” CFA Institute
Standard IV(B)

3. In the footnote of the promotional material about the performance of his portfolio trading strategy, Litman is *least likely* in compliance with the CFA Institute Standards of Professional Conduct with respect to:
- A. taxes.
 - B. results.
 - C. fees.

Answer = B

Standard III(D)–Performance Presentation allows the use of simulated performance analysis as long as it is clearly stated that the results are simulated. Litman uses historical data over 20 years, but he has only managed actual accounts for friends for 10 years. Consequently, he should have stated in the footnote that the results were simulated.

CFA Level III

“Guidance for Standards I–VII,” CFA Institute
Standard III(D)

4. Did Litman violate any CFA Institute Standards of Professional Conduct in regard to his performance reviews for Twain clients?
- A. No
 - B. Yes, with respect to the frequency of reviews for his 10 largest clients
 - C. Yes, with respect to his recent review for the client with the inheritance

Answer = A

Standard III(C)–Suitability requires that members make a reasonable inquiry into a client or prospective client’s investment experience, risk and return objectives, and financial constraints prior to making any investment recommendations or taking investment action and must update this information regularly. Such an inquiry should be repeated at least annually and prior to material changes to

specific investment recommendations or decisions on behalf of the client. The Code and Standards do not require clients to be treated the same.

CFA Level III

“Guidance for Standards I–VII,” CFA Institute
Standard III(C)

5. Are the significant changes made by Twain's management *most likely* in compliance with the Asset Manager Code of Professional Conduct?
- A. Yes
 - B. No, with respect to back-office operations
 - C. No, with respect to the independent consultant

Answer = A

The Asset Manager Code allows outsourcing, although managers retain the liability and responsibility for any outsourced work. Managers have a responsibility to ensure that the information they provide to clients is accurate and complete. By receiving an independent third-party confirmation or review of that information, clients can have an additional level of confidence that the information is correct, which can enhance the manager's credibility. Such verification is also good business practice.

CFA Level III

Asset Manager Code of Professional Conduct, by Kurt Schacht, CFA, Jonathan J. Stokes, and Glenn Doggett, CFA
Section D: Risk Management, Compliance and Support

6. With respect to its current compliance officer, do Twain's actions and procedures *most likely* comply with the recommendations and requirements of the Asset Manager Code of Professional Conduct?
- A. No, with regard to independence
 - B. Yes
 - C. No, with regard to reporting to the CEO

Answer = A

According to the recommendations and guidance in the Asset Manager Code because the compliance officer should be independent of any investment and operations personnel.

CFA Level III

Asset Manager Code of Professional Conduct, by Kurt Schacht, CFA, Jonathan J. Stokes, and Glenn Doggett, CFA
Appendix 6–D2

Rayne Case Scenario

Erin Mutini, CFA, a South African resident, is an employee of Oakwood Asset Management (OAM), an asset management company based in South Africa. OAM manages and sells its branded mutual funds and unit trusts through agents across Africa. Mutini was recently sent to Uganda to oversee OAM's new agency agreement with Rayne Brokers, a licensed Ugandan stock brokerage company with a strong retail customer base.

Part of Mutini's oversight role is to establish policies and procedures to ensure that the Ugandan sales force represents OAM in a professional manner. As a condition of its agency agreement, OAM requires all of Rayne's sales agents to adhere to South African financial regulations, generally considered to be stricter than those in Uganda. OAM also requires all of its sales agents to abide by the CFA Institute Code of Ethics and Standards of Professional Conduct (Code and Standards). OAM's lawyer has indicated South African laws are stricter than the Code and Standards.

To inform Rayne sales agents of their responsibilities under the OAM agency agreement, Mutini holds a meeting with the agents to discuss the financial regulations of South Africa and the Code and Standards. To conclude the meeting, Mutini describes OAM's annual competition among its sales agents, in which the winner is determined by the value of products sold (assets under management), fees generated, and the number of new clients brought in. The competition prize is an all-expense-paid two-week holiday for two to Mauritius. Mutini advises the staff that they should concentrate their sales efforts on OAM's front-end load funds because they earn the highest fees. She adds that staff should not disclose this competition to clients.

Mutini next meets with Rayne supervisors to specifically discuss their roles in upholding the Code and Standards. She informs them that they are responsible for the prevention of any violations of laws, rules, regulations, or the Code and Standards by the staff directly under their supervision. To make their job easier, instead of focusing equally on all of the requirements, Mutini suggests that the supervisors should concentrate on the following:

- communicating compliance policies and procedures to all covered staff,
- undertaking periodic reviews to ensure procedures are followed, and
- enforcing investment-related policies.

Later that day, Mutini scrutinizes Rayne's marketing material with Rayne's most successful sales agent, Tom Okello, another CFA charterholder. They are preparing for a sales meeting to introduce OAM products to a potential client. Mutini notices Rayne's responsibility to uphold the Code and Standards is not mentioned anywhere in the marketing material. Neither does the material mention that some of Rayne's employees are CFA charterholders. Mutini also notices Okello does not use the CFA designation on his business card. When Mutini asks him why, he responds, "If I use it, people will think I have a duty to Rayne's clients. I do not have a duty to clients because stockbrokers in Uganda are not required to uphold a fiduciary duty. I do not want to mislead our clients by using the CFA designation."

During the sales meeting with the potential client, Okello makes the following statements:

Statement 1: Before making an investment for any of our mutual funds or unit trusts, Rayne follows an extensive due diligence process and research analysis. We will only invest in the company if that investment meets the investment criteria that I have outlined to you.

Statement 2: Every six months, you will be mailed an itemized investment statement with cash flows so that you can see if your portfolio is meeting your investment objectives. In addition, you can obtain other information about our firm and investment process from our website, which is updated on a regular basis to ensure the integrity of the site as well as offer confidentiality and security to our clients. For your security, we do not post client statements on the website.

7. According to the Code and Standards, if there is a conflict, Mutini should *most likely* adhere to:
- A. the Code and Standards.
 - B. Uganda's laws and regulations.
 - C. South Africa's laws and regulations.

Answer = C

Standard I(A)–Knowledge of the Law requires CFA Institute members to understand and comply with all applicable laws, rules, and regulations, including the Code and Standards. In the event of conflict, members must comply with the stricter law, rule, or regulation, including those of the Code and Standards. Because the South African laws are considered to be stricter than the Code and Standards or Ugandan law, where there is conflict, Mutini must adhere to the South African laws and regulations.

CFA Level III

"Guidance for Standards I–VII"

Standard I(A)–Knowledge of the Law

8. By participating in OAM's annual competition, Rayne employees *least likely* violate which of the following CFA Institute Standards of Professional Conduct?
- A. Additional Compensation Arrangements
 - B. Misrepresentation
 - C. Independence and Objectivity

Answer = A

Standard IV(B)–Additional Compensation Arrangements states that members and candidates must not accept gifts, benefits, compensation, or consideration that competes with or might reasonably be expected to create a conflict of interest with their employer's interests. In this case, holding a competition to encourage sales is unlikely to cause a conflict of interest with the employer's interests. But by not disclosing the competition details, the sales agents are likely to misrepresent why they are making the recommendation to a client to buy high-fee, front-end-load financial products, so the sales agents would be in violation of Standard I(C)–Misrepresentation. In addition, by selling only high-fee, front-end-load products in the hopes of winning a competition without consideration of the client's needs compromises the agents' independence and objectivity, thus violating Standard I(B)–Independence and Objectivity.

CFA Level III

"Guidance for Standards I–VII"

Standard I(B)–Independence and Objectivity, Standard I(C)–Misrepresentation, Standard IV(B)–Additional Compensation Arrangements

9. In her meeting with Rayne supervisors, Mutini is *least likely* correct with regard to:
- A. undertaking periodic reviews.
 - B. communicating with staff.
 - C. enforcing investment-related policies.

Answer = C

A member or candidate with supervisory responsibility should enforce investment-related and non-investment-related policies equally (i.e., not concentrate on investment-related over non-investment-related policies).

CFA Level III

"Guidance for Standards I–VII"

Standard IV(C)–Responsibilities of Supervisors

10. Given Okello's comment regarding his reason for not using the CFA designation, he will *most likely* violate which of the following CFA Institute Standards of Professional Conduct?
- A. Duties to Clients
 - B. Misrepresentation
 - C. Reference to CFA Institute, the CFA designation, and the CFA Program

Answer = A

As a CFA charterholder, Okello has a duty to clients under Standard III(A)–Loyalty, Prudence, and Care that requires him to act for the benefit of his clients and place the clients' interest before his employer's or his own. In contrast to Okello's statement that "I do not have a duty to clients because stockbrokers in Uganda are not required to uphold a fiduciary duty," Standard III(A)–Loyalty establishes a minimum benchmark for the duties of loyalty, prudence, and care required of all members and candidates, regardless of whether a legal fiduciary duty applies.

CFA Level III

"Guidance for Standards I–VII"

Standard I(A)–Knowledge of the Law, Standard III(A)–Loyalty, Prudence, and Care, Standard VII(B)–Reference to CFA Institute, the CFA Designation, and the CFA Program

11. Which CFA Institute Standards of Professional Conduct did Okello *most likely* violate in his Statement 1?
- A. Suitability
 - B. Misrepresentation
 - C. Diligence and Reasonable Basis

Answer = B

The sales agent implies that Rayne is the asset manager, when in fact, OAM is the asset manager. By omitting the fact that Rayne is only a sales agent and implying that Rayne manages the portfolio, the sales agent is misrepresenting their professional activities and is thus in violation of Standard I(C)–Misrepresentation.

CFA Level III

"Guidance for Standards I–VII"

Standard I(C)–Misrepresentation, Standard III(C)–Suitability, Standard V(A)–Diligence and Reasonable Basis

12. Does Okello's Statement 2 *most likely* meet the recommended procedures for compliance with the CFA Institute Standards of Professional Conduct?
- A. Yes
 - B. No, with regard to the company's website
 - C. No, with regard to investment statements

Answer = C

Recommended procedures for compliance of Standard III(A)–Loyalty, Prudence, and Care are that regular account information should be submitted to the client at least quarterly, not semiannually.

CFA Level III

"Guidance for Standards I–VII"

Standard I(C)–Misrepresentation, Standard III(A)–Loyalty, Prudence, and Care

Culpepper Case Scenario

Alexandra Sorenson has been made an investment strategist at Culpepper Investment Management (Culpepper) after working as a senior investment analyst the past several years. Sorenson has covered US equities throughout her career and has only limited knowledge of international capital markets. She is reviewing the economic and capital markets forecast report recently prepared by Culpepper's economist as she evaluates the holdings in the firm's investment portfolio.

Exhibit 1 compares growth projections based on the economist's outlook for the United States and EuroCountryX.

Exhibit 1				
20 Year Growth Projections				
Country	Growth in Total Factor Productivity (%)	Output Elasticity of Capital	Growth in Capital Stock (%)	Growth in Labor Input (%)
United States	1.1	0.3	3.9	0.4
EuroCountryX	1	0.4	3.1	0.1

Sorenson discusses the valuation of the EuroCountryX Stock Index with Stefan Dreschler, a fellow investment strategist. The Index comprises mature, large-cap common equities. Sorenson plans to use the Cobb–Douglas model, assuming constant returns to scale, to estimate the country's GDP growth. Given the mature nature of the economy and the market index, growth in both inflation-adjusted earnings and dividends is expected to equal real GDP growth. The current year annual dividend of the EuroCountryX Stock Index is €133.

Sorenson assumes that a 6.0% discount rate is appropriate for the foreseeable future and calculates the fair value of the Index at 31 December.

Sorenson comments to Dreschler:

“I see that at the end of December this year, the index was trading nearly 20% above its level a year ago. What do you think may have caused the price gain?”

The two continue discussing what changes Sorenson might face in her new position. She asks Dreschler:

“What challenges do we face when using discounted dividend models and macroeconomic forecasts to estimate the intrinsic value of an equity market in a developing country?”

Dreschler responds by making several points:

- Discount rates are relatively easy to estimate, whereas growth rates are difficult to estimate.

- Corporate profit trends should be relatively consistent with the overall growth of the country's GDP.
- Gathering accurate and consistent economic data could be a challenge.

As an investment analyst, Sorenson is experienced with bottom-up analysis but realizes that top-down analysis will now be important. She asks Dreschler what they should consider when comparing the two approaches. Dreschler makes the following points:

- Top-down analysis can be slower than bottom-up analysis in detecting cyclical turns.
- Top-down estimates coming out of a recession may be less optimistic than bottom-up estimates.
- We should expect to get the same results regardless of which method we use.

Sorenson is interested in learning how earnings-based and asset-based relative value models can be used to better manage the firm's investment portfolio. She first asks Dreschler to compare the Yardeni and Fed models. Dreschler responds by making these points:

- The Yardeni model assumes that the required rate of return on equity equals the T-bond yield.
- Although the Yardeni model captures a greater portion of the risk premium than the Fed model, it still does not accurately measure equity risk.
- Both the Yardeni model and the Fed model are consistent in the way they measure the earnings growth rate.

Sorenson decides to calculate Tobin's q and determine the relative value of the market assuming an equilibrium level of approximately 1.0. Exhibit 2 provides partial information about the US economy that will be useful in her analysis.

Exhibit 2 Nonfinancial Corporate Business as of 31 December (\$ billions)			
	Assets	Liabilities	Equity
Book value	20,424		5,424
Market value	24,000	14,954	
Replacement value	26,000	na	na
<i>Note: na means not applicable.</i>			

13. Using the data in Exhibits 1 and Sorenson's assumption about the appropriate discount rate, the fair value of the EuroCountryX Stock Index using the Gordon growth model is *closest* to:

A. €3,677.

- B. €4,415.
C. €3,595.

Answer = A

The first step is to calculate the growth in gross domestic product, GDP, using the Cobb-Douglas model:

$$\frac{\Delta Y}{Y} = \frac{\Delta A}{A} + \alpha \frac{\Delta K}{K} + (1-\alpha) \frac{\Delta L}{L}, \text{ where}$$

$\frac{\Delta Y}{Y}$	Growth in gross domestic product, GDP	
$\frac{\Delta A}{A}$	Growth in total factor productivity	1.0%
$\frac{\Delta K}{K}$	Growth in capital stock	3.1%
$\frac{\Delta L}{L}$	Growth in labor input	0.1%
α	Output elasticity of capital	0.4
$1 - \alpha$	Output elasticity of labor	0.6

Thus, $\frac{\Delta Y}{Y} = 1.0 + (0.4 \times 3.1) + (0.6 \times 0.1) = 1.0 + 1.24 + 0.06 = 2.3\%$.

The second step is to calculate the fair value of the EuroCountryX Stock index using the Gordon growth model and the GDP growth rate calculated in the first step.

The Gordon growth model is defined as $V_0 = \frac{D_0 (1+g)}{r-g}$, where

D_0 : Current year dividend (exhibit 2) = €133

r : Discount rate for foreseeable future = 6.0%

g : Forecasted growth rate (from step 1) = 2.3%

Thus, $V_0 = \frac{133 \times (1+0.023)}{0.06-0.023}$

CFA Level III

"Equity Market Valuation," Peter C. Stimes and Stephen E. Wilcox
Sections 2.1, 2.3, 2.4

14. Dreschler's *most* appropriate response to Sorenson's question about the change in value of the EuroCountryX Index is that there was a decrease in the:
- A. long-term, real dividend growth rate.
 - B. discount rate over the period.
 - C. dividends paid.

Answer = B

The most likely cause of the price gain was a decrease in the discount rate over the period. Given the mature nature of the economy and companies in the Index, it is unlikely that the estimate of long-term real dividend growth or dividend payouts changed much, if at all.

CFA Level III

"Equity Market Valuation," Peter C. Stimes and Stephen E. Wilcox
Section 2.4

15. Which of Dreschler's responses to Sorenson's question about the challenges to equity market valuation is *most* accurate? His response concerning:
- A. the gathering of economic data.
 - B. discount rates and growth rates.
 - C. corporate profit and GDP growth.

Answer = A

In a developing country, there may be severe problems with the accuracy of data inputs. It is difficult to obtain macroeconomic data in developed countries with long-established methods and facilities. The problems of obtaining accurate and historically consistent data are multiplied in developing markets.

CFA Level III

"Equity Market Valuation," Peter C. Stimes and Stephen E. Wilcox
Section 2.4

16. Which of Dreschler's points comparing top-down analysis and bottom-up analysis is the *most* accurate? His point regarding:
- A. estimates coming out of a recession.
 - B. consistency of the results.
 - C. detecting cyclical turns.

Answer = C

Most top-down models are of the econometric type and rely on historical relationships to be the basis for assumptions about the future. Thus, they can be slow in detecting cyclical turns.

CFA Level III

"Equity Market Valuation," Peter C. Stimes and Stephen E. Wilcox
Sections 3.2, 3.3

17. Which of Dreschler's comments about the Yardeni and Fed models is the *most* accurate? The comment regarding the:
- A. required return on equity.
 - B. equity risk.
 - C. earnings growth rate.

Answer = B

The Yardeni model uses Moody's A rated corporate bond yield as the risk component of the model. Although an improvement over the Fed model, it is largely a default risk premium that does not accurately measure equity risk.

CFA Level III

"Equity Market Valuation," Peter C. Stimes and Stephen E. Wilcox
Sections 4.1, 4.2

18. Based on the data in Exhibit 2 and the calculation of Tobin's q , the market is *best* described as:
- A. undervalued.
 - B. fairly valued.
 - C. overvalued.

Answer = A

Tobin's q is calculated as follows:

$$\frac{(\text{Liabilities at market value} + \text{Equities at market value})}{\text{Assets at replacement cost}} = \frac{14,954 + 9,046}{26,000} = 0.92$$

With a Tobin's q less than 1.0, the market would be considered undervalued.

CFA Level III

"Equity Market Valuation," Peter C. Stimes and Stephen E. Wilcox

Section 4.2

Kingsbridge Case Scenario

London-based Kingsbridge Partners has been selected to manage a £150 million global bond portfolio for a pension fund. Jonathan Bixby, CFA, Kingsbridge's portfolio manager, meets with Iain Seymour, CFA, a fixed-income analyst at the firm, to review the portfolio and its holdings relative to the client's objectives.

The pension fund allows the use of 100% leverage to generate incremental returns. Bixby evaluates the use of leverage in the portfolio using the data in Exhibit 1.

Exhibit 1
Asset and Liability Data

	Assets	Liabilities
Portfolio (£ millions)	300	150
Duration	5.5	1
Expected return or cost (%)	4.75	3.95

Bixby's current macro view is that the economy is growing at a rate above the trend rate and, as a result, interest rates are likely to rise. Given his view, he is concerned that the portfolio's duration is inappropriate and plans to use the futures market to manage interest rate risk. His new duration target for the asset portfolio is 4.25, and he uses the data in Exhibit 2 to reposition the portfolio.

Exhibit 2
Futures Market Data

Futures contract price	£100,500
Conversion factor	1.12
Duration of cheapest-to-deliver bond	5.3
Price of cheapest-to-deliver bond	£97,750

Seymour suggests to Bixby that, as an alternative to futures, he could use interest rate swaps or options to alter the portfolio's duration. Seymour says he can alter the duration by receiving fixed and paying floating on a swap. Seymour also suggests that buying a protective put will achieve the hedging objective but provide more upside than using the futures market if Bixby is wrong about the future direction of interest rates. He says Bixby can also express his view by writing a covered call and not incur the cost of the premium.

Seymour tells Bixby, “International interest rates are not perfectly correlated. We can see the impact of a change in US interest rates on our model global bond portfolio. This portfolio contains US and German bonds and is not currently hedged with regard to currency or interest rates. Our analysis shows that the country beta between the United States and Germany is 0.62.” Model global bond portfolio data are provided in Exhibit 3.

Exhibit 3
Global Bond Model Portfolio

	Duration	Allocation (%)
US bond issuers	6.6	60
German bond issuers	3.9	40

Bixby asks Seymour whether the model portfolio should be hedged back to its domestic currency, the British pound. Bixby tells Seymour that actively managing currency risk is an expected source of incremental returns for the portfolio and has historically accounted for 25% of Kingsbridge’s alpha relative to the benchmark. Seymour refers to the data in Exhibit 4 to support his current view that currency exposure in the portfolio should be actively managed.

Exhibit 4
Currency Market Data

	United States	Eurozone	United Kingdom
One-year risk-free rate	0.25%	1.50%	0.90%
Spot rate (pound per dollar or euro)	0.6098	0.8929	—
Forward rate (pound per dollar or euro)	0.6137	0.8875	—
Kingsbridge forecasted spot rate in one year	0.6173	0.885	—

Bixby asks whether this global portfolio would benefit from including emerging market debt securities. Seymour responds that returns can be attractive in emerging markets during certain periods, but risks also abound. He notes the following risks:

Risk 1: Returns are frequently characterized by significant negative skewness because the potential large downside is not offset by a comparable potential upside.

Risk 2: Emerging markets offer less protection from interference by the executive branch

than do developed markets.

Risk 3: Emerging market countries have limited access to secondary sources of liquidity.

19. Based on the data in Exhibit 1, the duration of equity in the leveraged portfolio is *closest* to:
- A. 4.50.
 - B. 10.0.
 - C. 5.00.

Answer = B

Kingsbridge can leverage the £150 million portfolio by 100% by borrowing an additional £150 million. The duration of equity is calculated as follows:

$$D_E = \frac{D_A A - D_L L}{E} = \frac{5.50(300) - 1.00(150)}{150} - 10.00$$

= 10.00.

CFA Level III

“Fixed-Income Portfolio Management – Part II,” H. Gifford Fong and Larry D. Guin
Section 5.2

20. Given Bixby's new target duration and the data in Exhibits 1 and 2, the most appropriate action using US Treasury futures is to sell:
- A. 811 contracts.
 - B. 789 contracts.
 - C. 646 contracts.

Answer = A

To hedge against rising rates, Bixby needs to reduce duration by selling the following number of Treasury futures contracts:

$$\left(\frac{(D_T - D_I) \times P_I}{D_{CTD} P_{CTD}} \right) \times \text{Conversion factor for the CTD bond}$$

where D = duration, T = target, I = initial, and CTD = cheapest to deliver. So,

$$\left(\frac{(4.25-5.50) \times 300,000,000}{5.3 \times 97,750} \right) \times 1.12 = \frac{-375,000,000}{518,075} \times 1.12 = -810.69$$

CFA Level III

“Fixed-Income Portfolio Management – Part II,” H. Gifford Fong and Larry D. Guin

Section 5.3.4

21. Which of Seymour’s comments regarding alternative ways to alter the portfolio’s duration is *most likely* correct?
- A. The comment regarding a protective put
 - B. The comment regarding interest rate swaps
 - C. The comment regarding the covered call

Answer = A

The protective put buying strategy establishes a minimum value for the portfolio if interest rates rise but allows the manager to benefit from a decline in rates if the manager’s view does not materialize.

CFA Level III

“Fixed-Income Portfolio Management – Part II,” H. Gifford Fong and Larry D. Guin

Section 5.3.5; 5.3.6

22. Based on Seymour’s statement regarding international interest rates, as well as the data in Exhibit 3, the impact of a 100bp decline in US interest rates on the model portfolio’s value would be *closest* to:
- A. 3.41%.
 - B. 4.02%.
 - C. 4.93%.

Answer = C

The US component contributes 3.96 in duration to the portfolio ($0.60 \times 6.6 = 3.96$); therefore, a 1% change will contribute $\pm 3.96\%$ to the value of the portfolio. The German component contributes 1.56 in duration ($0.4 \times 3.9 = 1.56$) but moves only 0.62 times the movement in US rates, thus contributing $\pm 0.97\%$ to portfolio return ($1.56 \times 0.62 = 0.97$). The total impact is $\pm 4.93\%$ ($3.96 + 0.97 = 4.93$).

CFA Level III

“Fixed-Income Portfolio Management – Part II,” H. Gifford Fong and Larry D. Guin
Section 6.1

23. Based on the data in Exhibit 4, the *most likely* action that Kingsbridge would take to actively manage the portfolio’s currency exposure in the currency forward markets is to:
- A. sell dollars and buy euros.
 - B. sell dollars, sell euros, and buy pounds.
 - C. sell euros and buy dollars.

Answer = C

The forward rates for both the dollar and euro fully reflect the interest rate differentials as expected by interest rate parity. As such, forwards reflect that the dollar is expected to appreciate relative to the pound and the euro to depreciate relative to pound. Kingsbridge’s view, however, is that the dollar will appreciate more than the forward implies and the euro will depreciate more than the forward implies. The result in actively managing the portfolio is that Kingsbridge should hedge the the euro bonds into the dollar.

CFA Level III
“Fixed-Income Portfolio Management – Part II,” H. Gifford Fong and Larry D. Guin
Section 6.2

24. Seymour is *least likely* correct with respect to which risk regarding investing in emerging market debt?
- A. Risk 1
 - B. Risk 3
 - C. Risk 2

Answer = B

The statement for Risk 3 is incorrect. Emerging market countries, in fact, have access to lenders on the world stage, such as the International Monetary Fund and the World Bank.

CFA Level III
“Fixed-Income Portfolio Management – Part II,” H. Gifford Fong and Larry D. Guin
Section 6.4

Goldsboro Case Scenario

Goldsboro Partners, an investment management firm, intends to offer more products invested in equities traded on the Singapore Exchange (SGX).

Goldsboro is developing the Goldsboro Singapore Index (GSI), a proprietary index of Singapore equities composed of five stocks traded on the SGX with the largest market capitalization. Goldsboro must decide how to structure the GSI. Information about the prices and market caps of these firms is presented in Exhibit 1.

Exhibit 1

Five Largest Singapore Firms

Firm	Price at 1 January 2009 (US\$)	Price at 1 January 2010 (US\$)	Change in Price	Market Cap at 1 January 2009	Market Cap at 1 January 2010	Change in Market Cap
SingTel	2.35	2.53	7.70%	48.5	52.5	8.20%
Wilmar	5.77	6.8	17.90%	32.7	41.2	26.00%
DBS Group	11.62	13.28	14.30%	26.6	30.1	13.20%
Jardine Matheson	23.94	26.71	11.60%	25.3	27.6	9.10%
UOB	<u>12.73</u>	<u>14.07</u>	10.50%	<u>23.9</u>	<u>26.8</u>	12.10%
Total	56.41	63.39		157	178.2	

Goldsboro has four large institutional clients that indicated they might invest a total of \$240 million in a fund indexed to the GSI. These clients are very cost sensitive.

Goldsboro already offers two mutual funds that consist of stocks that are part of the Straits Times Index (STI), a value-weighted index of the 30 largest firms traded on the SGX. Exhibit 2 provides information about these two funds (GB1 and GB2), the STI, and all stocks traded on the SGX.

Exhibit 2

Comparison of Goldsboro's Two Funds, the STI, and the SGX

	Fund GB1	Fund GB2	STI	SGX
Number of stocks	12	12	30	612
Average market cap	US\$12.4 billion	US\$13.2 billion	US\$13.7 billion	US\$2.7 billion
Dividend yield	1.50%	2.10%	1.60%	0.80%
P/E	21.7	16.8	21.4	24.7
P/B	2.6	2.1	2.7	2.9
Projected EPS growth rate	11.00%	8.40%	11.20%	13.70%

Goldsboro also offers three independently managed funds, GB-STI-1, GB-STI-2, and GB-STI-3. The three funds are benchmarked against the STI. In 2009, Jason Briggs, a client whose Singapore benchmark is the MSCI Singapore Free Index, pursued a core–satellite approach by investing in these three funds, and he earned a return of 12.4%. Information about these three funds, their returns, and Briggs’s investments is presented in Exhibit 3.

Exhibit 3
Briggs’s Investments in Goldsboro’s STI-Benchmarked Funds

	GB-STI-1	GB-STI-2	GB-STI-3
Fund expected alpha	5%	2%	0%
Fund expected tracking risk	9%	5%	0%
Briggs’s investment	US\$20 million	US\$20 million	US\$10 million
Return during 2009	15%	10%	12%

In 2009, the return on the MSCI Singapore Free Index was 11.7%, and the return on the STI was 12.0%.

25. Based on Exhibit 1, for the year 2009, assuming no stock splits or stock dividends for the stock components and no rebalancing, which of these index structures would have *most likely* resulted in the largest return for the GSI?
- A. A value-weighted index
 - B. An equal-weighted index
 - C. A price-weighted index

Answer = A

This weighting methodology produced the largest return of 13.5% for the GSI. The return on a value-weighted index is the percentage change in the total market capitalization of the firms in the index, or

$$13.5\% = \frac{178.2}{157.0} - 1$$

CFA Level III

“Equity Portfolio Management,” Gary L. Gastineau, Andrew R. Olma, and Robert G. Zielinski
 Section 4.1

26. Goldsboro's *best* choice for the GSI portfolio structure is:

- A. an exchange-traded fund.
- B. a mutual fund.
- C. a pooled account.

Answer = C

The clients are identified as being cost sensitive and, of the three choices offered, pooled accounts generally have the lowest fees.

CFA Level III

"Equity Portfolio Management," Gary L. Gastineau, Andrew R. Olma, and Robert G. Zielinski
Section 4.2

27. According to the information provided in Exhibit 2, Fund GB1 is *best* characterized as having which equity style?

- A. Market oriented
- B. Growth
- C. Value

Answer = A

A market-oriented equity style is one that is neither value nor growth. Fund GB1 has characteristics that are almost identical to the broader STI. Although two (dividend yield and P/E) of the four reported characteristics lean slightly toward a growth style, the other two (P/B and projected EPS growth) lean slightly toward a value style.

CFA Level III

"Equity Portfolio Management," Gary L. Gastineau, Andrew R. Olma, and Robert G. Zielinski
Section 5.1.4

28. Goldsboro's Fund GB2 would appeal to an investor who is *most* closely focused on:

- A. earnings momentum.
- B. price relative to intrinsic value.
- C. relative strength.

Answer = B

Fund GB2 follows a value style (higher dividend yield, lower P/E, P/B, and earnings growth). Value investors are focused on price relative to intrinsic value.

CFA Level III

"Equity Portfolio Management," Gary L. Gastineau, Andrew R. Olma, and Robert G. Zielinski
Section 5.1

29. The characterization of Briggs's investment as following a core–satellite approach is *most likely*:
- A. correct.
 - B. incorrect, because the funds invested in are benchmarked against the wrong index.
 - C. incorrect, because too little of the portfolio was passively invested.

Answer = A

Fund GB-STI-3 has an expected alpha and expected tracking error of 0% and can thus be characterized as an index fund. Twenty percent of the investment was placed in this fund, creating a core, with the remainder invested in non-index funds, creating a satellite. A small core allocation might be indicative of a high risk tolerance.

CFA Level III

"Equity Portfolio Management," Gary L. Gastineau, Andrew R. Olma, and Robert G. Zielinski
Section 7.1

30. During 2009, the "misfit" active return earned by Briggs's investments was *closest to*:
- A. 0.4%.
 - B. 0.7%.
 - C. 0.3%.

Answer = C

A "misfit" active return is equal to the return of the manager's normal benchmark minus the return of the investor's benchmark: $0.3\% = 12\% - 11.7\%$, where 12% is the return on the STI fund and 11.7% is the return on the MSCI Singapore Free Index.

CFA Level III

"Equity Portfolio Management," Gary L. Gastineau, Andrew R. Olma, and Robert
G. Zielinski

Section 7.1

Zubov Case Scenario

Andrei Zubov is a portfolio manager at Greenhill Trust, based in Connecticut. Greenhill provides a range of wealth advisory and institutional client services. Zubov is preparing to meet with three new clients.

CHM Corporation is a US company that manufactures sports equipment. The company's employees participate in a defined contribution plan whose investments are participant directed. Greenhill has been asked to develop an investment policy statement for the plan and help select a menu of investment options for plan participants.

Jennifer Zola is a member of the investment committee that oversees the defined benefit pension plan at CGI Products, a company that manufactures beauty, health care, and home care products. The company's pension assets are currently managed in-house, and Zola would like Greenhill to assume management of CGI Products' pension assets. Selected information regarding the company and its pension plan is provided in Exhibit 1.

Exhibit 1
Selected Pension Plan Information for CGI Products

Funded status, excess or (deficit)	\$25 million
Liability discount rate	5.0%
Annual liquidity need as percentage of plan assets	1.0%

Zola asks Zubov, "Based on the information provided, could you give us some preliminary guidance on an appropriate return objective?" Zubov responds, "In this instance, a return objective of up to 100 bps higher than the liability discount rate would be appropriate. This return objective could potentially minimize future pension contributions and maintain or increase future pension income."

Zola provides the following additional information:

- The company has enjoyed steadily rising earnings for the past 10 years and expects this trend to continue.
- The company has a ratio of debt to total assets of approximately 10%.
- The company would like to discuss the possibility of modifying the current pension plan by offering an early-retirement provision allowing for lump-sum distributions.

Zola asks Zubov to explain his overall approach to pension asset risk management. Zubov explains that there are two important considerations: "The first consideration is portfolio allocations to different sectors. Specifically, the plan's risk tolerance will be higher if we overweight the pension portfolio with equity investments in companies in the beauty, health care, and home care industries. The second consideration is to view risk from an asset liability management approach. That is, the focus should be on managing the volatility of the pension surplus."

Hoven University (HU) has asked Greenhill to manage the university's endowment. The endowment's spending rule dictates that it make an annual contribution of 4% of its year-end portfolio market value to support HU's operating budget. The annual endowment contribution represents 25% of HU's annual operating budget. The university's operating expenses are expected to grow at a rate of 2.5% annually, while the rate of inflation in the economy is expected to be 1% a year. Investment management expenses are estimated to be 0.65% of the endowment's market value. The investment committee has asked Zubov to present his views on the risk and return objectives and liquidity constraints for the endowment. Zubov responds with the following statements:

- Based on the information provided, an annual total return objective in the range of 7%–7.5% would be appropriate for the fund.
 - To meet the endowment's spending needs for this year, the liquidity need is in the range of 4.5% –5% of the year-end portfolio value.
 - Given the return objective and liquidity needs, the endowment's risk tolerance is high.
-

31. For the pension plan offered by CHM Corporation, it is *most likely* true that :

- A. plan participants bear the risk of early termination.
- B. the risk of investing is borne by the plan sponsor.
- C. once vested, retirement assets are readily portable.

Answer = C

The pension plan offered by CHM Corporation is a defined contribution plan in which vested pension assets are readily portable by plan participants.

CFA Level III

“Managing Institutional Investor Portfolios,” R. Charles Tschampion, Laurence B. Siegel, Dean J. Takahashi, and John L. Maginn
Section 2

32. An appropriate element of the investment policy statement for CHM Corporation's pension plan is *most likely* a specification of:

- A. investment alternatives.
- B. return objectives.
- C. strategic asset allocation.

Answer = A

For participant-directed defined contribution pension plans, such as the one offered by CHM Corporation, the investment policy statement describes the investment alternatives offered. It does not describe risk and return objectives, constraints, or strategic asset allocation; those decisions are made by the plan participants.

CFA Level III

“Managing Institutional Investor Portfolios,” R. Charles Tschampion, Laurence B. Siegel, Dean J. Takahashi, and John L. Maginn
Section 2.2

33. Is Zubov's response to Zola regarding the return objective *most likely* correct?
- A. No, he is incorrect with regard to future pension contributions.
 - B. No, he is incorrect with regard to future pension income.
 - C. Yes

Answer = C

The plan is fully funded, with a surplus of \$25 million, and has minimal liquidity needs. Earning a return in excess of the liability discount rate of 5% by up to 100 bps will likely help meet such objectives as minimizing future pension obligations and maintaining or increasing future pension income.

CFA Level III

“Managing Institutional Investor Portfolios,” R. Charles Tschampion, Laurence B. Siegel, Dean J. Takahashi, and John L. Maginn
Section 2.1.2

34. Based on information provided by Zola, a higher risk tolerance for CGI Products' pension plan is *least likely* supported by:
- A. Zola's proposed modification to the current pension plan.
 - B. the ratio of debt to total assets.
 - C. earnings expectations for the company.

Answer = A

Zola would like CGI to introduce an early retirement provision that allows for lump-sum distributions. This increases immediate liquidity requirements and reduces the level of risk tolerance. In contrast, the company's expected growth in earnings and the low debt to total asset ratio imply a higher risk tolerance.

CFA Level III

"Managing Institutional Investor Portfolios," R. Charles Tschampion, Laurence B. Seigal, Dean J. Takahashi, and John L. Maginn

Section 2.1.1

35. Is Zubov's response to Zola's question about his overall approach to pension asset risk management *most likely* correct?
- A. Yes
 - B. No, the first consideration is incorrect
 - C. No, the second consideration is incorrect

Answer = B

Zubov is incorrect with respect to the first consideration. CGI manufactures beauty, health care, and home care products. By overweighting the pension portfolio's exposure to the beauty, health care, and home care industries, Zubov risks increasing the correlation between the company's operating results and pension asset returns. The increased correlation will result in a lower risk tolerance, all else being equal.

CFA Level III

"Managing Institutional Investor Portfolios," R. Charles Tschampion, Laurence B. Siegel, Dean J. Takahashi, and John L. Maginn

Section 2.1.8

36. Considering Zubov's statements to the investment committee regarding Hoven University's endowment, he is *least likely* correct with respect to:
- A. liquidity need.
 - B. total return objective.
 - C. risk tolerance.

Answer = C

The endowment's risk tolerance is low to moderate, not high, because the endowment's contribution represents 25% of the university's operating budget. Thus, a modest drop in the endowment's value may have a significant impact on university operations. Another factor supporting a lower risk tolerance is the use of a simple spending rule. The absence of a smoothing rule means the endowment has less tolerance for short-term portfolio risk. Although a return objective of 7%–7.5% may ostensibly be used to support a higher risk tolerance, the risk of a short-term drawdown poses a much larger risk and thus, on balance, a low to moderate risk tolerance is more appropriate for the endowment.

CFA Level III

“Managing Institutional Investor Portfolios,” R. Charles Tschampion, Laurence B. Siegel, Dean J. Takahashi, and John L. Maginn

Sections 3.1.2, 3.2.1, 3.2.2, and 3.2.3

Mamani Case Scenario

Karina Mamani is a senior partner at Trujillo Partners, an investment advisory firm headquartered in Lima, Peru. Mamani specializes in domestic (Peruvian) markets. Peru's currency is the nuevo sol (PEN). Its major stock exchange is the Bolsa de Valores de Lima (BVL), and the primary index for that market is the Indice General Bolsa de Valores (IGBVL).

One of Mamani's clients, Angel Huanca, anticipates receipt of PEN10,000,000 from debt investments that are maturing in two months. He will invest these proceeds in an IGBVL index fund. Huanca expects the Peruvian stock market to increase dramatically in the next two months and does not want to miss out on the expected gain. He asks Mamani to recommend a way to obtain exposure to the IGBVL immediately. Mamani recommends a long futures position using a two-month futures contract on the IGBVL that is priced at PEN21,800 and has a contract size of PEN10 times the price. The index has a beta of 0.98, and the futures contract has a beta of 1.05.

Huanca owns a company that produces auto parts, primarily for export to the United States. He tells Mamani he is worried the nuevo sol will strengthen relative to the US dollar and other currencies, making it more difficult for him to compete with firms in the United States and elsewhere. He asks Mamani to help him devise long-term strategies to deal with this risk.

Huanca recently received 3.2 million common stock shares of Urubamba Copper, Ltd. in partial payment for a mining equipment company he sold to Urubamba. The terms of the sale require him to hold this stock for at least 18 months before selling it. Although Huanca believes Urubamba is a well-run company, its share price is closely tied to commodity prices, which he believes might decline. He tells Mamani, "I know I can use options on Urubamba to manage the risk of my concentrated stock position. Either a covered call strategy or a protective put strategy will reduce the volatility of my position and establish a minimum value for it, but the covered call strategy will also enhance my return if Urubamba's price remains stable, and the protective put strategy will not."

Another of Mamani's clients, Arequipa Industries (AI), is about to borrow PEN120 million for two years at a floating rate of 180-day Libor (currently 3.25%) plus a fixed spread of 90 basis points with semiannual resets, interest payments based on actual days/360, and repayment of principal at maturity. AI's management is worried that Libor might rise during the term of the loan and asks Mamani to recommend strategies to reduce this risk. Mamani suggests a zero-cost collar on 180-day Libor with a cap of 4.70% and a floor of 2.25%, payment dates matching the loan payments (on 30 June and 31 December, with the first payment on 31 December), and interest based on actual days/360. She develops various examples of the collar's impact, including one using the interest rate scenario in Exhibit 1.

Exhibit 1
180-Day Libor Rates

Date	Libor	Days in Period
30-Jun-12	2.60%	182
31-Dec-12	2.25%	183
30-Jun-13	2.00%	183
30-Dec-13	2.50%	182

Mamani informs AI's management that, as an alternative, it could enter into an interest rate swap to effectively convert its floating-rate loan to a fixed-rate loan. Mamani states, "You would take a position in a two-year swap with semiannual payments and a notional principal equal to your loan balance. You would pay a fixed rate equal to current two-year Libor and receive 180-day Libor." Mamani adds, "Entering into the swap would reduce your firm's market value risk and cash flow risk."

37. The number of IGBVL futures contracts needed to establish the position recommended by Mamani for Huanca is *closest to*:
- A. 46.
 - B. 43.
 - C. 49.

Answer = B

The number of futures contracts is $\left(\frac{\beta_T - \beta_S}{\beta_f}\right)\left(\frac{S}{f}\right)$, where T is the target, S is the current position, and f is the futures contract. In this case, the number of contracts is

$$\left(\frac{0.98 - 0}{1.05}\right)\left(\frac{10,000,000}{10 \times 21,800}\right) = 42.8 = 43$$

CFA Level III

"Risk Management Applications of Forward and Futures Strategies," Don M.

Chance

Section 4.2

38. The type of exchange rate risk Huanca is concerned about is *most likely*:

- A. economic exposure.
- B. translation exposure.
- C. transaction exposure.

Answer = A

Economic exposure is the type of exchange rate risk that refers to changes in exchange rates that make a business less price competitive in other countries.

CFA Level III

"Risk Management Applications of Forward and Futures Strategies," Don M. Chance
Section 5

39. Huanca's comment about using options to manage the risk of his Urubamba common stock position is *least likely* correct regarding:

- A. establishing a minimum value.
- B. reduction of volatility.
- C. return enhancements.

Answer = A

Although a protective put establishes a minimum value for the position when the price of the underlying stock declines, a covered call does not. Therefore, Huanca's statement is incorrect.

CFA Level III

"Risk Management Applications of Option Strategies," Don M. Chance
Section 2.2

40. Using the Libor scenario shown in Exhibit 1 and under the assumption that the zero-cost collar is put in place, the effective interest due on AI's loan for the semiannual period ended on 31 December 2013 is *closest to*:

- A. PEN1,911,000
- B. PEN1,365,000
- C. PEN2,062,667

Answer = A

The effective interest in period t is:

$\text{Loan balance} \times (\text{Actual days in period}/360) \times [\text{Libor}_{t1} + \text{Spread} + \max(0, \text{Libor}_{t-1} - \text{Cap rate}) + \max(0, \text{Floor rate} - \text{Libor}_{t-1})]$

$$120,000,000 \times (182/360) \times [0.02 + 0.009 + \max(0, 0.02 - 0.047) + \max(0, 0.0225 - 0.02)] = 1,911,000.$$

CFA Level III

"Risk Management Applications of Option Strategies," Don M. Chance
Section 3.5

41. Mamani's description of the interest rate swap to be used to convert AI's floating-rate loan to a fixed-rate loan is *least likely* correct regarding the:
- A. notional principal amount.
 - B. fixed interest rate to be paid.
 - C. floating interest rate to be received.

Answer = B

The fixed interest rate on the swap would not equal the Libor rate for the maturity of the swap but rather the rate that would make the present value of the fixed and floating payments equal.

CFA Level III

"Risk Management Applications of Swap Strategies," Don M. Chance
Section 2.1

42. Is Mamani's explanation of the impact of the interest rate swap on AI's risk *most likely* correct?
- A. No, it is incorrect regarding cash flow risk.
 - B. Yes.
 - C. No, it is incorrect regarding market value risk.

Answer = C

Although converting the loan from a floating rate to a fixed rate using the swap reduces AI's cash flow risk (because the firm's loan payments become known), it

increases the firm's market value risk because the value of the firm will be negatively affected if market interest rates decrease.

CFA Level III

"Risk Management Applications of Swap Strategies," Don M. Chance
Section 2.1

Kohler Case Scenario

The Kohler Family Foundation, an entity not subject to taxes, partially supports the financing of annual operating expenses for Kohler College . In addition to these annual costs, the Foundation has just committed itself to partially fund five different campus building renovation projects over the next 15 years, including student housing renovations in three dormitories and the expansion of classroom wings in two academic buildings.

Because of these new financial commitments, the Foundation's investment committee, chaired by Frederick Schumacher, has decided to engage ECU Investment Management for advice on changing the Foundation's portfolio asset allocation.

Thomas Roth, CFA, a senior investment consultant at ECU, conducts an introductory meeting with Schumacher to examine the Foundation's asset allocation.

Schumacher explains to Roth:

"Our investment committee has discussed the necessity for changes to our approach to strategic asset allocation. We believe that these three standards should drive the Foundation's strategic asset allocation and we want your opinion of them:

- Standard 1: Our allocation should include long-term exposures to the systematic risks of the various asset classes.
- Standard 2: Asset class weights should satisfy our investment objectives and constraints.
- Standard 3: Perceived disequilibriums in markets in a given period should affect our asset weightings in the subsequent period."

Roth states: "Your future building renovation projects indicate that an asset/liability management (ALM) approach to the Foundation's strategic asset allocation would be appropriate . ALM seeks to adopt the optimal asset allocation in relationship to funding financial obligations."

Schumacher replies:

"That seems to be an intelligent suggestion. I imagine the following three outcomes would result from adopting that approach:

- Outcome 1: We would have a higher allocation to fixed income.
- Outcome 2: The global market equilibrium portfolio would be our default asset allocation to which we would make adjustments to meet our future liabilities.
- Outcome 3: Portfolio risk control related to our future spending needs would likely not be very precise."

Roth inquires: "Can you explain how the Foundation has approached asset allocation in the past ? I would also like to understand your asset class specification methods."

Schumacher explains: “Historically, our portfolio has comprised a diversified collection of domestic large-cap equities. We now believe we should diversify into additional asset classes, such as domestic mid-cap and small-cap equities. I have listed the asset classes we are considering in Exhibit 1 for your review.”

Exhibit 1

Asset Class Correlations and 12-Month Sharpe Ratios

Asset Class		Large Cap	Mid Cap	Small Cap	Agricultural Commodities Index	All Commodities Index	Municipal Bonds	Sharpe Ratio
1	Large cap	1						2.31
2	Mid cap	0.992	1					2.1
3	Small cap	0.978	0.983	1				2.54
4	Agricultural Commodities Index	0.112	0.112	0.094	1			0.998
5	All Commodities Index	0.102	0.095	0.085	0.553	1		0.026
6	Taxable municipal Bonds	0.109	0.119	0.117	0.108	0.146	1	-0.055

Schumacher observes: “Asset classes 4, 5, and 6 all have low correlations with equities . For diversification purposes, does it really make a difference which one we add?”

Roth comments: “We believe the addition of asset classes to your existing equity portfolio should be done with the goal of achieving a mean–variance improvement when including the new asset class. The Foundation should invest a major portion of the portfolio internationally, diversified across asset classes. As an example, our ECU Global Tactical Allocation Fund invests in non–US dollar (USD) equities, fixed income, and real estate, as well as in real return assets, such as commodities. The primary inputs to our tactical asset allocation decisions are a long-term outlook for the next three to five years and a six-month short-term forecast for each asset class. The weighted foreign currency exposure of our equities and fixed income mirrors the US Dollar Index, and we value our real estate and real return assets in USD. Exhibit 2 shows our fund’s strategic asset allocation weightings plus investment return and currency forecasts.”

Exhibit 2
ECU Global Tactical Allocation Fund

Asset class	Asset weightings	LT Outlook	ST Forecast
Developed market equities	55%	9.00%	12%
Developed market fixed income	25%	3.00%	0%
International real estate	10%	11.00%	12%
Real return assets	15%	4.00%	7%

Note: Short-term US Dollar Index forecast versus weighted currencies in portfolio: +3%.

Schumacher says: “I have the following three concerns with respect to investing internationally:

- Concern 1: In times of market stress, diversification benefits can be drastically reduced.
- Concern 2: Capital in some countries does not flow freely across borders, which can result in increased market segmentation.
- Concern 3: Traditional mean–variance analysis may not apply.”

Roth replies: “Your concerns pertain to conditional correlation, market integration, and the efficient frontier; however, they are not all necessarily disadvantages.”

43. Which of the Kohler Foundation investment committee's three standards is *least* consistent with strategic asset allocation?
- A. Standard 3
 - B. Standard 2
 - C. Standard 1

Answer = A

Standard 3 is not consistent with strategic asset allocation; it is tactical asset allocation that is based on short-term expectations and perceived short-term disequilibria in markets. Strategic asset allocation sets an investor’s desired long-term exposures to systematic risk. Investment objectives and constraints are inputs in determining strategic asset allocation.

CFA Level III

“Asset Allocation,” William F. Sharpe, Peng Chen, Jerald E. Pinto, and Dennis W. McLeavey
Sections 2, 2.2

44. Which of Schumacher's three outcomes is *most likely* consistent with the ALM approach?
- A. Outcome 1
 - B. Outcome 3
 - C. Outcome 2

Answer = A

Outcome 1 is consistent with the ALM approach. The ALM approach to strategic asset allocation, which involves explicitly modeling liabilities and adopting the optimal asset allocation in relation to funding liabilities, characteristically results in a higher allocation to fixed-income instruments than an asset-only (AO) approach. Compared with AO, an ALM approach affords much more precision in controlling risk related to the funding of liabilities. The global market equilibrium portfolio is the default strategic asset allocation for the Black–Litterman AO approach.

CFA Level III

“Asset Allocation,” William F. Sharpe, Peng Chen, Jerald E. Pinto, and Dennis W. McLeavey
Section 3.1

45. When evaluating the asset classes in Exhibit 1, Roth would *most likely* criticize the specification of which of the following asset classes?
- A. Mid cap equities
 - B. Taxable municipal bonds
 - C. All Commodities Index

Answer = A

Roth would most likely criticize the specification of mid-cap equities because they are not mutually exclusive with respect to domestic large-cap and small-cap equities. Asset class specification should support the purposes of strategic asset allocation. Domestic large-, mid-, and small-cap equities are assets within the asset class of domestic equities and have little diversification benefit between them, with the correlation between their returns being very high. Five criteria are helpful in effectively specifying asset classes:

1. Assets within an asset class should be relatively homogeneous.
2. Asset classes should be mutually exclusive.
3. Asset classes should be diversifying.

4. The asset classes as a group should make up the preponderance of world investable wealth.
5. The asset classes should have the capacity to absorb a significant fraction of the investor's portfolio without seriously affecting the portfolio's liquidity.

CFA Level III

"Asset Allocation," William F. Sharpe, Peng Chen, Jerald E. Pinto, and Dennis W. McLeavey
Section 4.1

46. Based on the information contained in Exhibit 1 and mean-variance analysis, Roth is *least likely* to improve the Foundation's portfolio by the inclusion of:

- A. taxable municipal bonds.
- B. the Agricultural Commodities Index.
- C. the All Commodities Index.

Answer = A

Roth would obtain the smallest mean–variance improvement by including taxable municipal bonds. For an investor to gain by adding a new asset class, that asset class's Sharpe ratio must exceed the product of the existing portfolio's Sharpe ratios and the correlation of the asset class's return with the current portfolio's return. All three asset classes have similar low correlations with large-cap equities; however, with a negative Sharpe ratio, municipal bonds could never produce a greater product than the product of the other two positive inputs and the existing portfolio's Sharpe ratio.

CFA Level III

"Asset Allocation," William F. Sharpe, Peng Chen, Jerald E. Pinto, and Dennis W. McLeavey
Section 4.2.1

47. Based on the return and currency forecasts in Exhibit 2, ECU's tactical asset allocation shifts would *most likely* increase weightings in:

- A. real estate and real return assets and decrease equities and fixed income.
- B. fixed income and real return assets and decrease equities and real estate.
- C. equities and real return assets and decrease fixed income.

Answer = A

Tactical asset allocation involves making short-term adjustments to asset class weights based on short-term predictions of relative performance among asset

classes. Equities are forecast to perform 3% above their long-term outlook in the next six months; however, the weighted currencies are forecast to drop 3% (a gain of 3% in USD). Fixed income is forecast to return 3% less than the long-term outlook and is also forecast to be exposed to a 3% currency loss (a gain of 3% in USD). Real estate and real return assets are both forecast to perform above their long-term expected returns and are not exposed to a weakening in the currencies.

CFA Level III

“Asset Allocation,” William F. Sharpe, Peng Chen, Jerald E. Pinto, and Dennis W. McLeavey
Section 10

48. Schumacher's concern about international investments that Roth might find advantageous *most likely* pertains to:
- A. conditional correlation.
 - B. the efficient frontier.
 - C. market integration.

Answer = C

The lack of market integration (or the absence of free cross-border capital flows) can be an advantage if it increases market segmentation and helps prevent correlations with other markets from rising. Increased integration of markets can decrease diversification benefits, whereas returns in segmented markets will be influenced mostly by a specific country's own macroeconomy and will be less subject to changes in correlations when volatility increases. Global correlations tend to increase in times of increased volatility and even appear to be conditional on global volatility. The efficient frontier and traditional mean–variance analysis using unconditional correlations would not apply because correlations remain low when returns are high but become high when returns are negative.

CFA Level III

“Asset Allocation,” William F. Sharpe, Peng Chen, Jerald E. Pinto, and Dennis W. McLeavey
Sections 4.2.2.3, 4.2.3

Subramaniam Case Scenario

Asis Subramaniam was recently hired by the pension fund Nash, Barwich, and Stuart (NBS) as a Portfolio Performance Evaluation Specialist. NBS does not have a formal performance evaluation policy and Dev Radia, Director of Portfolio Management, asks Subramaniam to develop such a policy for the firm.

Collecting research related to performance evaluation, Subramaniam tells Radia that a performance evaluation policy should address the following three major issues:

1. Performance measurement defined as the calculation of the rates of return based on investment-related changes in an account's value over specified time periods;
2. Performance attribution which investigates the sources of the account's performance relative to a manager's past performance and the importance of those sources; and
3. Performance appraisal which attempts to answer the question whether the account's performance is due to luck or skill.

The two start their discussion of other issues relating to performance evaluation by comparing time-weighted return (TWR) to money-weighted return (MWR). Subramaniam provides an example of the two methods using the recent month's history of the West Riverdale Defined Benefit Plan. As indicated in Exhibit 1, the start of month value of the plan was \$20,000,000. The portfolio is revalued whenever a cash flow arises and all daily cash flows occur at the end of the stated day, e.g., on the eight day into the month the account received a contribution of \$200,000 and had an end of the day value of \$21,200,000. At the end of the month (day 30), the terminal value of the account was \$20,255,000.

Exhibit 1		
West Riverdale Defined Benefit Plan		
Recent month's history		
Day	Contributions (+) and Withdrawals (-) (\$)	Market Value Post Cash Flow (\$)
0		20,000,000
8	200,000	21,200,000
11	-250,000	20,025,000
22	180,000	20,300,000
30		20,255,000

Radia picks up the discussion at this point, saying, "Having calculated TWR and/or MWR, one needs a benchmark against which the account return can be compared. Many issues arise in this choice of a benchmark." Radia points out three:

1. Consultants and fund sponsors frequently use the median manager or fund from a broad universe of managers or funds as a performance evaluation benchmark. This approach is flawed, as it fails the test of being measurable.
2. A drawback of a style index is that the definition of investment style implied in the benchmark may be inconsistent with the investment process of the manager.
3. The absolute return objective is generally the preferred approach.

The two move on to consider performance evaluation of hedge funds and agree that hedge fund performance can be especially difficult to evaluate. They provide three reasons why this is so:

1. If the hedge fund consists of a long-short portfolio which nets to an initial market value of zero, the rate of return on the portfolio would be undefined, approaching either positive infinity or negative infinity due to this division by zero problem.
2. Even when the hedge fund's assets do not net to zero, the vagueness of defining "hedge funds" makes it difficult to assign specific benchmarks.
3. The option-like features of many hedge funds make the use of the Sharpe ratio a preferred approach to performance measurement.

The two agree that investment skill requires a manager to outperform an appropriate benchmark, on average over time, and on a risk-adjusted basis. Commonly used measures that adjust for risk are the Treynor measure, the Sharpe ratio, and M^2 . To demonstrate the differences between these three measures, Subramaniam collects the data given in Exhibit 2 along with his partially completed calculations on three accounts.

Exhibit 2						
Data Relating to Common Risk-Adjustment Tools						
Account	Average Asset Return	Standard Deviation of Asset Returns	Ex Post Beta of the Asset	M^2	Sharpe Ratio	Treynor Measure
W-Life	15%	22%	1.35	0.11	0.5	
Lee Co	9%	6%	1.05		0.83	4.76
G. Ltd	8%	7%	0.85	0.12		4.71
Market Data:						
Average Risk-free Return				4%		
Average Return on the Market				12%		
Standard Deviation of the Market Return				14%		

Finally, Radia asks Subramaniam if there are any issues to be considered regarding manager continuation policy. Subramaniam answers that there are two types of mistakes you can make:

- one mistake is to fire (or not hire) a manager with positive value-added management;
 - a second mistake is to keep (or hire) managers that provide zero value-added.
-

49. In describing the three major issues relating to a performance evaluation policy, Subramaniam is *least* accurate with respect to performance:

- A. management.
- B. attribution.
- C. appraisal.

Answer = B

Subramaniam is least accurate with respect to performance attribution. Performance attribution investigates the sources of the account's performance relative to a specific investment benchmark, not a manager's past performance.

CFA Level III

"Evaluating Portfolio Performance," Jeffrey V. Bailey, Thomas M. Richards, and David E. Tierney
Section 3

50. Based on the data given in Exhibit 1, the time-weighted return (TWR) is *closest* to:

- A. 0.63%.
- B. 0.67%.
- C. 1.27%.

Answer = B

The time-weighted return is calculated for each subperiod using the formula:

$$I_t = \frac{(MV_1 - CF) - MV_0}{MV_0}$$

where,

r_t = time period return

MV_1 = the market value at the end of the period

CF = the cash inflow (+) or cash outflow (-) during the period

MV_0 = the market value at the beginning of the period

Subperiod 1 Days 1-8	$r_{t,1} = \frac{(21,200,000 - 200,000) - 20,000,000}{20,000,000} = 0.05 = 5.000\%$
Subperiod 2 Days 9-11	$r_{t,2} = \frac{(20,025,000 + 250,000) - 21,200,000}{21,200,000} = -0.043632 = -4.3632\%$
Subperiod 3 Days 12-22	$r_{t,3} = \frac{(20,300,000 - 180,000 - 20,025,000)}{20,025,000} = 0.00474 = 0.474\%$
Subperiod 4 Days 23-20	$r_{t,4} = \frac{(20,255,000 - 20,300,000)}{20,300,000} = -0.002217 = -0.2217\%$
Treatment of end of day cash flows: <ul style="list-style-type: none">• Contributions received are subtracted from the end of day value of the fund.• Withdrawals from the fund are added back to the end of day value of the fund.	

Then subperiod returns are combined using the formula:

$$R_{\text{twr}} = (1 + r_{t,1}) \times (1 + r_{t,2}) \times (1 + r_{t,3}) \times (1 + r_{t,4}) - 1$$

$$R_{\text{twr}} = (1 + 0.05) \times (1 - 0.043632) \times (1 + 0.00474) \times (1 - 0.002217) - 1 = 1.00671 - 1 = 0.00671 = 0.67\%$$

CFA Level III

"Evaluating Portfolio Performance," Jeffrey V. Bailey, Thomas M. Richards, and David E. Tierney
Sections 4.1, 4.3

"Overview of the Global Investment Performance Standards," Phillip Lawton
Section 3.4

51. Which of Radia's points regarding the choice of a benchmark is the *most* accurate? His point regarding the:

- A. median manager or fund.
- B. absolute return objective.
- C. style index.

Answer = C

The ability of style indexes to pass tests of benchmark validity can be problematic as the definition of investment style implied in the benchmark may be ambiguous or inconsistent with the investment process of the manager being evaluated.

CFA Level III

"Evaluating Portfolio Performance," Jeffrey V. Bailey, Thomas M. Richards, and David E. Tierney

Sections 5.2, 5.3

52. Which of Subramaniam's and Radia's reasons as to why hedge funds are difficult to evaluate is the *least* accurate? The statement regarding:
- A. undefined rate of return.
 - B. vagueness of definition.
 - C. option-like features.

Answer = C

The reason related to the option-like features is the least accurate. The denominator of the Sharpe ratio is the standard deviation of returns. However, the option-like features of many hedge funds make the use of standard deviation as a measure of risk questionable.

CFA Level III

"Evaluating Portfolio Performance," Jeffrey V. Bailey, Thomas M. Richards, and David E. Tierney
Section 5.7

53. Using the data in Exhibit 2, the account which has produced the *highest* return per unit of systematic risk is:
- A. Lee Co.
 - B. G. Ltd.
 - C. W-Life.

Answer = C

The highest return per unit of systematic risk is measured by the Treynor measure. Of the given assets, the W-Life account has the highest Treynor measure.

$$T_A = \frac{(\bar{R}_A - \bar{r}_f)}{\hat{\beta}_A}$$

\bar{R}_A = average asset return

\bar{r}_f = average risk-free return

$\hat{\beta}_A$ = ex post Beta of the asset

For the **W-Life account**, it is $(15 - 4) \div 1.35 = 8.15$

CFA Level III

"Evaluating Portfolio Performance," Jeffrey V. Bailey, Thomas M. Richards, and David E. Tierney

Section 7.1

54. Subramaniam's answers to Radia's question regarding manager continuation policy *best* describes a Type I error for:
- A. both statements.
 - B. the second statement and a Type II error for the first statement.
 - C. the first statement and a Type II error for the second statement.

Answer = B

The null hypothesis is that the manager has no skill while the alternative is that the manager is skillful. The first statement describes a Type II error (not rejecting the null when it is incorrect) and the second statement describes a Type I error (rejecting the null when it is correct).

CFA Level III

"Evaluating Portfolio Performance," Jeffrey V. Bailey, Thomas M. Richards, and David E. Tierney

Section 8.3

Walter Case Scenario

Bud Walter is the chief investment officer of Wryte Capital Management (WCM). He is meeting with T.M. McGourn, a prospective client, to discuss Wryte's investment performance as presented in Exhibit 1 and subsequent disclosure notes:

Exhibit 1
Wryte Capital Management
US Large-Cap Equity Composite

Year	Gross Return (%)	Benchmark Return (%)	Internal Dispersion (%)	Number of Portfolios	Composite Assets (\$ millions)	Firm Assets (\$ millions)
2007	15	15	5.2	20	100	175
2008	22	20	6.1	40	200	275
2009	-20	-25	5.7	30	150	200
2010	11	10	5.2	45	225	300
2011	20	20	4.7	50	250	350

WCM has prepared this report in compliance with the Global Investment Performance Standards (GIPS). The US Large-Cap Equity Composite has been independently verified by a qualified third party to be GIPS compliant. The verification report was issued only for the composite and not for WCM. It states that during 2009, 2010, and 2011, WCM complied with all composite construction requirements for the composite and that WCM policies are designed to calculate and present performance in compliance with GIPS standards.

Notes:

1. The firm is defined as an independent investment manager that invests exclusively in US large-cap, US midcap, and US small-cap equity securities for US resident clients. WCM's policy for valuing portfolios and calculating performance is available upon request. WCM's calculation methodology is to use time-weighted rates of return. Subperiod rates of return are geometrically linked. Cash equivalent instruments are included in rate-of-return calculations. Returns are calculated quarterly or when large external cash flows (as defined by WCM) take place.
2. The US Large-Cap Equity Composite includes all actual fee-paying portfolios. Each portfolio contains positions in large-cap stocks, which are selected by WCM after an extensive independent analysis. Nondiscretionary portfolios are not included in any composite. WCM does not include in any composite its large-cap model portfolio, which is used during the investment selection process.

3. The composite benchmark is the S&P 500 Index, which represents the size-weighted returns of the 500 largest (as measured by market capitalization) US-based publicly traded companies.
4. Gross-of-fees returns are presented before investment management fees but after trading expenses, which include custodial fees. All clients pay an investment management flat fee of 75 basis points on the month-end account value plus a 10-basis-point performance fee whenever the composite return exceeds the benchmark return by 100 basis points.
5. Internal dispersion is the equal-weighted standard deviation of the annual gross returns of the five portfolios included in WCM's US Large-Cap Equity Composite.

McGourn asks Walter why he uses standard deviation as the measure of internal dispersion and whether there are better dispersion measures. Walter responds, "Standard deviation has the advantage of comparability across investment firms. Other measures, such as the high/low range and the interquartile range, are skewed by outliers."

Finally, McGourn asks Walter about WCM's investment valuation policies. Walter states that WCM uses a valuation hierarchy based on items 1 through 4 as follows:

- Item 1. Observable quoted market prices for similar investments in active markets
 - Item 2. Quoted prices for similar investments in markets that are not active
 - Item 3. Market-based inputs other than quoted prices that are not observable for the investment
 - Item 4. When no quotes or other market inputs are available, estimates based on quantitative models and assumptions.
-

55. Is WCM *most likely* correct in claiming compliance based on the verification report?
- A. No, because of the level at which verification is claimed
 - B. No, because of the time frame for which verification is claimed
 - C. Yes

Answer = A

For GIPS compliance, a single verification report must be issued with respect to the whole firm. Verification cannot be carried out only on a composite and, accordingly, does not provide assurance about the investment performance of any specific composite. The Standards stress that firms must not state or imply that a particular composite has been "verified."

CFA Level III

"Global Investment Performance Standards," by Philip Lawton
Section 6

56. WCM's methodology for calculating performance, as disclosed in Note 1, is *least likely* consistent with GIPS standards for:
- A. frequency of return calculations.
 - B. external cash flows.
 - C. geometrically linked returns.

Answer = A

WCM's return calculation is not GIPS compliant. GIPS standards require that returns be calculated on a monthly basis for periods beginning on or after 1 January 2001.

CFA Level III

"Global Investment Performance Standards," by Philip Lawton
Section 3.2

57. Is WCM *most likely* compliant with GIPS standards required for composite construction as disclosed in Note 2?
- A. Yes
 - B. No, because of how the large-cap model portfolio is treated
 - C. No, because of how nondiscretionary portfolios are treated

Answer = A

The composite consists of all actual fee-paying portfolios that are managed on a discretionary basis. It is therefore in compliance with GIPS standards.

CFA Level III

"Global Investment Performance Standards," by Philip Lawton
Section 2.1

58. With respect to gross-of-fees returns, Note 4 is *least likely* compliant with GIPS required standards in its treatment of:
- A. month-end account value.
 - B. performance fees.
 - C. trading expenses.

Answer = C

Only direct trading expenses should be deducted in calculating gross-of-fees returns. Custodial fees cannot be considered a component of direct trading expenses.

CFA Level III

"Global Investment Performance Standards," by Philip Lawton
Section 3.5

59. With respect to the relative merits of internal dispersion measures, Walter is *least likely* correct about:
- A. high–low range.
 - B. standard deviation.
 - C. interquartile range.

Answer = C

Walter is correct about the high–low range, which is skewed by outliers. He is also correct that the standard deviation allows for comparability across investment firms. He is incorrect, however, about the interquartile range. Because this measure includes only the middle 50% of portfolio returns, thus excluding extreme observations, it is not affected by outliers.

CFA Level III

"Global Investment Performance Standards," by Philip Lawton
Section 3.12

60. Is Walter's response to McGourn's inquiry regarding WCM's valuation hierarchy *most likely* correct?
- A. No, the valuation hierarchy should be reordered as Item 2, Item 1, Item 3, and Item 4
 - B. Yes
 - C. No, Item 4 from the valuation hierarchy should be excluded

Answer = B

The valuation hierarchy presented by Walter is GIPS compliant.

CFA Level III

"Global Investment Performance Standards," by Philip Lawton
Section 4