2016 Level III Mock Exam: Afternoon Session

The afternoon session of the 2016 Level III Chartered Financial Analyst® Mock Examination has 60 questions. To best simulate the exam day experience, candidates are advised to allocate an average of 18 minutes per item set (vignette and 6 multiple choice questions) for a total of 180 minutes (3 hours) for this session of the exam.

Ethis - Ravinder

After working as an equity research analyst for five years at Staple Asset Advisers, Davika Ravinder, CFA, receives a promotion to a junior asset manager position. She is given 20 relatively small portfolios, all involving middle-income clients who, are saving for their children's university educations and their own retirements. With her new position, Ravinder is given a higher base salary. Previously, her bonus was based on annual performance. She is now eligible for a percentage of the quarterly performance fee earned by the firm for returns higher than the client-negotiated performance hurdles. For competitive reasons, Staple does not allow any employee to disclose their compensation packages, including how bonuses are derived.

Once she has reviewed the investment objectives and constraints of each of her new clients, Ravinder arranges introduction meetings with each client. During a one-hour meeting with a self-employed client, 60-year-old James Canon, Ravinder discovers that he is newly divorced and has been ordered by the court to make a large one-time settlement to his ex-wife. In addition, his son and only child has dropped out of university and wants the money his father allocated for the son's university education as seed capital to start his own business. The funds needed to make both of these payments are currently in the investment portfolio Ravinder manages for Canon. This portfolio is also to be used for Canon's retirement at age 65. Based on what she learned during her meeting with Canon, Ravinder suggests he take a more aggressive investment strategy to compensate for the anticipated large withdrawals from his investment portfolio.

Ravinder receives permission from her supervisor to draft marketing materials to send out to potential clients with her name and contact information. She asks her assistant, Jon Obi, to edit the marketing content and design a simple brochure, ensuring that it complies with all the local regulations and company policies regarding marketing material. Obi does as requested and upon completion takes the initiative to send the brochure to potential clients. A week after the marketing brochure was sent to potential clients, Ravinder notices one of the clauses in the brochure is in violation of company policies.

While revising the marketing brochure, Ravinder determines it might be worthwhile to add some performance statistics to prove that her firm's investment performance is attractive. She works with the portfolio administration team to create five-year weighted composites using similar type portfolios and removing client accounts when terminated. The portfolio administration team works with the compliance officer to ensure they include all the necessary disclosures but agree that they do not need to comply with Global Investment Performance Standards (GIPS). Included in the brochure is a disclosure the company has adopted the CFA Institute Standards of Professional Conduct.

A colleague in the research department, Koffe Mensah, CFA, approaches Ravinder seeking advice about

a research report he is writing on a listed company. The majority of Staple's clients hold this company's shares in their portfolios. Mensah explains that his supervisor is pressuring him to make a buy recommendation to substantiate some positive rumors that the lead dealer heard about the company. Mensah states that his thorough research leads him to believe the company is overvalued. Ravinder reminds Mensah that if the share price moves up, Mensah will likely receive a higher bonus.

Shortly after becoming an asset manager, Ravinder is approached by one of the directors of Naivasha Cement, a company she used to cover as an equity analyst. The Naivasha director asks her if she would be interested in joining the board of directors. He adds, "The Naivasha Cement directors always appreciated your understanding of the industry and of our company in particular, so we think you would add value to the company." After getting approval from her employer, Ravinder accepts the invitation to become a director.

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1. With regard to Ravinder's new compensation package, which of the following actions would be *most* appropriate to ensure she complies with the CFA Institute Standards of Professional Conduct? She should:

   A. renegotiate her compensation package.
   B. ask her clients to renegotiate their contracts with the firm.
   C. disclose her new compensation package to her clients.

   Answer = A

   Recommendations for Standard VI(A)-Disclosure of Conflicts advises that employee compensation packages based on short-term performance be disclosed to clients, which is currently not allowed by Ravinder's employer. Thus, she should renegotiate her compensation package to either remove the performance aspect of the structure so she can disassociate from the practice or seek to lengthen the performance period assessed to, at minimum, one year. If Ravinder disclosed the compensation package to her clients without her employer's permission, she would be in violation of Standard IV(A)-Loyalty. If she asked her clients to renegotiate their contracts, she may potentially violate Standard III(A)-Loyalty, Prudence and Care because the new contracts may not be as favorable as the current contracts, thus potentially harming her clients.

   CFA Level III
   "Guidance for Standards I-VII," CFA Institute
   Standard VI(A)

2. Under what circumstances would Ravinder's suggested investment strategy for Canon *most likely* meet the requirements of Standard III(C)–Suitability? If Canon:

   A. has numerous other investment portfolios.
   B. had a different employment status.
   C. delays funding his son for at least five years.

   Answer = A

   Taking a more aggressive investment approach for a middle-income person who aims to retire in five years and at a time when his portfolio is being drawn on to cover court-ordered liabilities, regardless of any delay in funding his son's seed capital, may only be appropriate if the portfolio in question represented a small portion of Canon's overall wealth. Typically, a person's risk tolerance decreases with age, regardless of their employment status.

   CFA Level III
   "Guidance for Standards I–VII," CFA Institute
   Standard III(C)

3. Did Ravinder *most likely* violate the CFA Standards of Professional Conduct regarding the error in the marketing brochures sent to prospective clients?

   A. Yes
   B. No, Ravinder gave proper instructions
   C. No, Obi made the error

   Answer = A

   By not giving proper instructions to Obi that required him to return the brochure to her for editing review prior to distribution, she violated Standard IV(C)–Responsibilities of Supervisors. Had Ravinder properly overseen the work done by Obi, the error may have been detected and corrected prior to the brochure being distributed.

   CFA Level III
   "Guidance for Standards I–VII," CFA Institute
   Standard IV(C)

4. Does Staple's approach to their performance statistics *most likely* reflect recommendations for complying with Standard III(D)–Performance Presentation?

   A. No, concerning the need for GIPS compliance
   B. Yes
   C. No, with regard to terminated accounts

   Answer = C

   Standard III (D)–Performance Presentation recommends terminated accounts remain in the historical records of a weighted composite. Standard III (D) requirements and recommendations can be met without complying with the GIPS standards.

   CFA Level III
   "Guidance for Standards I–VII," CFA Institute
   Standard III(D)

5. If Mensah gives in to his supervisor's pressure, what CFA Standard will he *most likely* violate?

   A. Conflicts of Interests
   B. Material Nonpublic Information
   C. Diligence and Reasonable Basis

   Answer = C

   Mensah would violate Standard V(A)–Diligence and Reasonable Basis because his research indicated that the company was overvalued. Mensah would not have violated Standard II (A)–Material Nonpublic Information because causing someone to trade on rumors does not necessarily involve trading on material nonpublic information. In addition, Mensah would not have violated Standard VI(A)–Disclosure of Conflicts because the bonus structure is not short-term focused and considers long-term value creation through correct investment recommendations. As a result, disclosure of this bonus structure is not required.

   CFA Level III
   "Guidance for Standards I–VII," CFA Institute
   Standards II(A), V(A), and VI(A)

6. After accepting Naivasha's invitation, which of the following actions is the *most* appropriate for Ravinder to implement to avoid violating CFA Standards of Professional Conduct? She should:

A. exclude purchases of Naivasha shares for client portfolios.
B. refuse to attend Staple strategy meetings related to Naivasha.
C. only share Naivasha's nonmaterial information.

Answer = B

Standard VI(A)–Disclosure of Conflicts requires a member or candidate who becomes a director of a publicly listed company to be isolated from those making investment decisions concerning the publicly listed company at which the employee is a director. One such way of doing this would be to not participate in investment strategy meetings when Naivasha is being discussed. But Ravinder would violate Standard I(D)–Misconduct if she shared nonmaterial information if the directors of Naivasha considered it to be confidential. She would also violate Standard III(A)–Loyalty, Prudence, and Care if she excluded Naivasha shares from her clients' portfolios because this approach may negatively affect their investment performance.

CFA Level III
"Guidance for Standards I–VII," CFA Institute
Standards I(D), III(A), and VI(A)

Equity Portfolio Management – Dodson

Gregory Dodson, CFA, is an investment consultant who advises individual and institutional clients on their equity portfolios. During a typical work week, he is called upon to evaluate a variety of situations and provide expert advice. This week, he is meeting with three clients.

Dodson's first client meeting is with the Magnolia Foundation, a small not-for-profit organization. Magnolia currently uses three long-only portfolio managers for its equity investments. Details of those investments, including expected performance relative to Magnolia's equity benchmark, the S&P 500 Index, are shown in Exhibit 1.

Exhibit 1

Magnolia Foundation Equity Portfolio Managers

	Investment Size ($ millions)	Expected Alpha	Expected Tracking Error
Manager A	140	0%	0%
Manager B	40	1.50%	2.50%
Manager C	20	2.00%	4.00%

Magnolia's goal for its total equity investment is expected alpha greater than 0.40% and expected tracking error less than 1.00%.

Dodson's second client meeting is with Sarah Tan, a wealthy individual who is actively involved in managing her investments. Tan wants to add a $100 million allocation to US midcap stocks, represented by the US S&P 400 Midcap Index, to her long-term asset allocation. No investment has been made to meet this new allocation.

Tan has not found any manager capable of generating positive alpha in US midcap stocks. She has, however, identified a long-only portfolio manager of Canadian equities whom she believes will produce positive alpha. This manager uses the S&P/TSX (Toronto Stock Exchange) Index as a benchmark. Tan wants to create a portable alpha strategy that will earn the alpha of the Canadian equity portfolio and meet the new benchmark allocation to US midcap stocks. She asks Dodson for advice to establish this strategy. Tan provides some information about the security selection methods used by the Canadian equity portfolio manager. The Canadian manager uses a proprietary discounted cash flow model to

analyze all stocks in the S&P/TSX Index and purchases those with market prices that are the most below the intrinsic value estimated by his model, regardless of their price-to-earnings ratios (P/Es).

Dodson's third client meeting is with the chief investment officer (CIO) of Susquehanna Industries' pension fund. The fund needs to establish a $50 million portfolio that replicates the Russell 2000 Index, an index of small-cap US equities. The CIO's goal is to minimize trading costs. He asks Dodson to suggest an investment approach that will meet this goal. The CIO also outlines his portfolio managers' sell discipline with respect to the pension fund's actively managed value and growth equity portfolios. Currently, the managers monitor the P/E of each stock held. A value stock is sold when its P/E rises to its 10-year historical average. A growth stock is sold when its P/E falls to its 10-year historical average.

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7. The Magnolia Foundation's approach to portfolio construction is *best* described as:

   A. using a completeness fund.
   B. a portable alpha strategy.
   C. a core–satellite structure.

   Answer = C

   A large portion of the portfolio is invested with a manager that is expected to match the portfolio's benchmark (zero alpha, zero tracking error), forming the core of the portfolio.

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

8. Do the Magnolia Foundation's current equity investments *most likely* meet its total equity investment return and risk goals?

   A. Yes
   B. No, the expected tracking error is too high
   C. No, the expected alpha is too low

   Answer = A

   The expected alpha of the portfolio is

   $$(\frac{\$140}{\$200}\times 0\%)+(\frac{\$40}{\$200}\times 1.5\%)+(\frac{\$20}{\$200}\times 2.0\%)=0.50\%$$

   , which is greater than 0.40%.

The portfolio's expected tracking error is

$$[(\frac{\$140}{\$200}\times 0\%)^2+(\frac{\$40}{\$200}\times 2.5\%)^2+(\frac{\$20}{\$200}\times 4.0\%)^2]^{1/2}=0.64\%$$

which is less than 1.00%.

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"Equity Portfolio Management," Gary L. Gastineau, Andrew R. Olma, and Robert G. Zielinski
Section 7

9. Which of the following combinations of futures positions would *most likely* be included in Dodson's advice to Tan regarding her intended portable alpha strategy?

A. Long position in S&P/TSX futures and short position in S&P 400 futures
B. Short position in S&P/TSX futures and long position in S&P 400 futures
C. Long position in S&P/TSX futures and long position in S&P 400 futures

Answer = B

The portfolio needs to shed exposure to the return of the S&P/TSX and gain exposure to the return of the S&P 400.

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"Equity Portfolio Management," Gary L. Gastineau, Andrew R. Olma, and Robert G. Zielinski
Section 7.3

10. The style of the Canadian equities portfolio manager is *most likely*:

A. market oriented.
B. growth.
C. value.

Answer = A

The portfolio manager is willing to buy both value and growth stocks (regardless of P/E). He focuses solely on whether the stock is trading below its intrinsic value. This approach is also known as a blend or core style with reference to equity investing, which is an intermediate grouping for investment disciplines that cannot be clearly categorized as value or growth.

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Section 5.1

11. Given the manager's goal, what approach should Dodson *most likely* recommend for the $50 million portfolio of the Susquehanna Industries' pension fund?

    A. Optimization
    B. Full replication
    C. Stratified sampling

    Answer = C

    The portfolio contains small-cap stocks, which indicates an approach other than full replication, and the desire to minimize transaction costs indicates stratified sampling rather than optimization.

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    Section 4.2

12. The Susquehanna Industries' pension fund value and growth portfolio managers follow a sell discipline that is *best* described as:

    A. substitution strategy.
    B. deteriorating fundamentals.
    C. rule driven.

    Answer = C

    Valuation-level sell disciplines are rule driven.

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    Section 5.4

Fixed Income Portfolio Management – Rioja

Andres Rioja is the treasurer of Empresas Crianza. His duties have recently been expanded to include oversight of the firm's pension fund. Given his limited experience in overseeing investments, he is relying on an outside consultant. Rioja prepares a number of questions for his first meeting with the consultant, Manolo Priorat of Consulta Jerez.

Priorat starts the meeting by summarizing for Rioja the status of the defined benefit pension plan and makes the following statement:

> The pension liability has a duration of 14 years and a present value of $4 billion. The liabilities are discounted using the spot rate on high-quality long-term corporate bonds. Presently, the asset portfolio covers 87.5% of these liabilities and is invested entirely in fixed-income assets. The plan assets have fallen short of the pension liabilities over the past five years because their durations are not properly matched. I am concerned that Crianza has selected the wrong benchmark for the pension plan. The current benchmark is a weighted average of the benchmarks for the various strategies used in the investment of pension assets. I believe the appropriate benchmark should be the liability itself.

Priorat and Rioja review the fixed-income funds in which the pension assets are currently invested. Portfolio managers have been given the mandate to meet or exceed their respective benchmarks based on their investment styles. Details of the various portfolios are provided in Exhibit 1.

Exhibit 1: Portfolio Information

Portfolio	Duration (years)	Asset Value ($ thousands)	Benchmark	Investment Style
Money market	0.25	175,000	3-Month US T-Bill	Active management
Mortgage-backed securities fund	3	700,000	Barclays Mortgage	Enhanced indexing
Emerging market bond fund	4.6	675,000	JP Morgan EMBI	Active management
Long corporate bond fund	14	1,575,000	Barclays Long Corporate	Active management
Treasury bond STRIPs	24	375,000	Barclays 20+Year STRIP	Pure bond indexing

Rioja updates Priorat on Crianza's current plans for the pension plan. Rioja states: "Crianza will make a $500 million contribution to fully fund the plan and invest the funds in Treasury STRIPs. In addition, we would like to completely reallocate pension investments away from the fund that presents the greatest contingent claim risk and into the long corporate bond fund."

Rioja then asks Priorat, "I would like to understand the risk profile of each index benchmark we have assigned to the portfolio managers. What measures are available to do this?" Priorat responds,

> There are several key measures that come to mind. Effective duration measures the sensitivity of the index's price to a relatively small parallel shift in interest rates. For large non-parallel changes in interest rates, a convexity adjustment is used to improve the accuracy of the index's estimated price change. Key rate duration measures the effect of shifts in key points along the yield curve. Key rate durations are particularly useful for determining the relative attractiveness of various portfolio strategies, such as bullet strategies versus barbell strategies. Spread duration describes how a non-Treasury security's price will change as a result of the widening or narrowing of the spread contribution.

Rioja then asks about the rationale for active managers to do secondary market trades. Priorat responds,

Secondary market trades should be evaluated in a total return framework. The exception is the yield or spread pickup trade, which should be evaluated in the context of additional yield. Credit-upside trades provide an opportunity for managers to capitalize on unexpected upgrades. Curve-adjustment trades are yet another example of investors expressing their interest rate views in the credit markets in anticipation of interest rate changes.

Finally, Priorat offers further explanation of how active managers can add value. He notes,

> Structural analysis of corporate bonds is an important part of active management. Credit bullets in conjunction with long-end Treasury structures are used in a barbell strategy. Callable bonds provide a spread premium that can be valuable to an investor during periods of high interest rate volatility. Put structures will provide investors with some protection in the event that interest rates rise sharply but not if the issuer has an unexpected credit event."

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13. Is Priorat's statement with regard to selecting a benchmark for the pension plan *most likely* correct?

    A. Yes
    B. No, because the current benchmark is appropriate to measure each strategy's performance
    C. No, because Crianza should select a high-quality long-term corporate bond index as the benchmark

    Answer = A

    The investor with liabilities will measure success by whether the portfolio generates the funds necessary to pay the cash outflows associated with the liabilities. In other words, meeting the liabilities is the investment objective; as such, it also becomes the benchmark for the pension plan. Although Crianza should use the pension liabilities as the benchmark, this does not preclude managers of the various asset portfolios from being assigned an appropriate asset benchmark to manage against.

    CFA Level III
    "Fixed-Income Portfolio Management—Part I," H. Gifford Fong and Larry D. Guin
    Section 2

14. For which portfolio in Exhibit 1 is a sampling approach *most likely* to be used in an attempt to match the primary index risk factors?

A. Mortgage-backed securities fund
B. Emerging market bond fund
C. Treasury STRIPs

Answer = A

The mortgage-backed securities fund strategy uses enhanced indexing. This management style uses a sampling approach in an attempt to match the primary index risk factors and achieve a higher return than under full replication.

CFA Level III
"Fixed-Income Portfolio Management—Part I," H. Gifford Fong and Larry D. Guin
Section 3.1

15. If Rioja rebalances the portfolio as he proposes in his statement to Priorat, the dollar duration of the assets relative to the dollar duration of the liabilities is *most likely* to:

A. be nearly matched.
B. be far exceeded.
C. fall well short.

Answer = A

The portfolio has to be rebalanced to match the dollar duration of the liabilities. The liabilities have dollar duration of $4,000,000 (thousands) × 14 = $56,000,000 (thousands). The mortgage-backed securities fund is the asset class that poses contingent claim risk, so it is being liquidated, and the $700,000 thousand is being invested in the long corporate bond fund. The new $500,000 thousand contribution is invested in Treasury STRIPs. The reallocated assets have dollar durations nearly identical to the liabilities as calculated in the following table:

Strategy	Old Market Value ($ thousands)	New Market Value ($ thousands)	Duration (years)	Dollar Duration ($ thousands)
Money market	175,000	175,000	0.25	43,750
Mortgage-backed securities fund	700,000	0	3	0
Emerging market bond fund	675,000	675,000	4.6	3,105,000
Long corporate bond fund	1,575,000	2,275,000	14	31,850,000
Treasury STRIPs	375,000	875,000	24	21,000,000
Total	3,500,000	4,000,000		55,998,750

CFA Level III
"Fixed-Income Portfolio Management—Part I," H. Gifford Fong and Larry D. Guin
Section 4.1

16. In Priorat's response to Rioja regarding the explanation of key measures of an index's profile, he is *most likely* correct regarding:

A. convexity adjustment and incorrect regarding key rate duration.
B. key rate duration and incorrect regarding convexity adjustment.
C. spread duration and incorrect regarding effective duration.

Answer = B

Priorat's explanation of key rate duration is accurate, whereas his explanation of convexity adjustment is incorrect. A convexity adjustment is used to improve the accuracy of the index's estimated price change for large parallel changes in interest rates. A convexity adjustment is an estimate of the change in price that is not explained by duration.

CFA Level III
"Fixed-Income Portfolio Management—Part I," H. Gifford Fong and Larry D. Guin
Section 3.2

17. With regard to evaluating secondary market trades, Priorat is *least likely* correct with respect to:

A. curve-adjustment trades.
B. credit-upside trades.
C. yield/spread pickup trades.

Answer = C

Yield/spread pickup trades should be evaluated in a total return framework. In a total return framework, both yield and spread, as well as price appreciation or depreciation, should be considered. A bond that offers higher yield may pose the potential for a capital loss if it is riskier than a lower-yielding security.

CFA Level III
"Relative-Value Methodologies for Global Credit Bond Portfolio Management," Jack Malvey
Section 6

18. Priorat is *most likely* correct with regard to which structural trade?

A. Bullets
B. Callables
C. Putables

Answer = A

Front-end bullets (i.e., bullet structures with one-year to five-year maturities) have great appeal for investors who pursue a barbell strategy in which both the short and long end of the barbell are US Treasury securities. There are "barbellers" who use credit securities at the front or short end of the curve and Treasuries at the long end of the yield curve.

CFA Level III
"Relative-Value Methodologies for Global Credit Bond Portfolio Management," Jack Malvey
Section 8

Alternative Investments - Wanja

Faith Wanja is an asset consultant to many large Kenyan pension funds. In response to numerous client inquiries about alternative investment products now being offered in the market to pension funds, she decides to hold a seminar for her clients. She believes it is important for her clients to understand the pros and cons of adding alternate investments to their existing portfolios, which are made up of public equity, fixed-income securities, and direct real estate investments.

To start off the seminar, Wanja discusses the general characteristics of real estate investment trusts (REITs), private equity, and hedge funds. She makes the following statements:

> **Statement 1** Hedge funds have tended to be more heavily regulated than other pooled investments because of their perceived higher risk profiles.
>
> **Statement 2** Successful private equity investments, unlike public equity investments, rely heavily on a portfolio manager's business skills rather than his or her portfolio management skills.
>
> **Statement 3** REITs act as cash flow conduits for underlying real estate assets.

Wanja discusses the possible benefits of adding REIT investments to her clients' portfolios that currently only hold equities and fixed-income securities. She indicates to the seminar participants that two existing private property investment companies (Batian and Lenana) are converting to a REIT structure and will soon be listed on the local securities exchange. In Exhibit 1, Wanja shows the audience the projected impact on her clients' portfolios, as reflected in a client composite, by adding one of the two REITs to a portfolio that had a 50/50 allocation to equities and fixed income.

Exhibit 1 Forecast Data for Portfolio Returns			
Measure	Client Composite with Traditional 50/50 Equity/Bond (%)	Client Composite with Batian REIT 45/45/10 Equity/Bond/REIT (%)	Client Composite with Lenana REIT 45/45/10 Equity/Bond/REIT (%)
Expected return	15.5	18.3	20.6
Standard deviation of returns	9.8	12.5	18.4

The next topic Wanja discusses is private equity investments. She lists the attributes of private equity and the possible benefits of adding private equity to a pension fund as follows:

1. Private equity has low correlations with public equity, so it can greatly contribute to a portfolio's ability to diversify risks.
2. The asset class's low liquidity generally implies a smaller allocation.
3. Small pension funds should invest in a fund-of-funds structure to help increase diversification without increasing expenses.

She tells the audience that private equity management fees are often based on a percentage of the value of the limited partners' committed funds and tend to stay the same throughout the life of the investment. In addition, managers typically receive carried interest of about 20%, which is paid before any limited partner distribution. But limited partners sometimes require a claw back provision that mandates if they do not achieve the preferred return over the full life of the investment, the manager is required to forfeit carried interest previously earned.

After Wanja finishes her presentation, she opens the floor to questions. An audience member tells Wanja she recently met an investment adviser for high-net-worth individuals who stated that she has a tougher job advising high-net-worth clients than someone managing funds for institutional investors. She asks, "Is this true? I would have thought the level of responsibility would be very similar for both types of clients."

Wanja responds, "Investment advisers have a fiduciary duty to both individual clients and institutional clients, so it is vital to discuss the issue of suitability with both types of client. But advisers working with high-net-worth clients must recognize that they are more prone to panicking and changing strategies when there are large losses than institutional investors."

Wanja ends the seminar by stating that pension fund managers should consider investing in distressed securities if approved by the pension regulator. She states, "Because government security yields remain low, pension funds will need to chase yield, and distressed securities can add value to a portfolio because Sharpe ratios of distressed securities tend to be understated." She further explains her recommendation by saying, "Credit risk assessments are also often similar across distressed companies because they have similar cash flow problems, so due diligence costs are not very high. I should also point out that market risk is not as important as liquidity risk for distressed securities."

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19. Which of Wanja's statements regarding the new asset classes available in the Kenyan market is *least likely* correct?

    A. Statement 3
    B. Statement 1
    C. Statement 2

    Answer = B

    Hedge funds have tended to be less regulated, not more regulated, than other types of pooled investments. Internationally, hedge funds have adopted structures that permit them to be loosely regulated and to avoid certain reporting and other requirements.

    CFA Level III
    "Alternative Investments Portfolio Management," Jot K. Yau, Thomas Schneeweis, Thomas R. Robinson, and Lisa R. Weiss
    Section 6

20. Based only on the information in Exhibit 1 and a risk-free rate of 8%, should Wanja *most likely* recommend a 10% REIT exposure to her clients' existing portfolios?

A. Yes, the Batian REIT
B. No
C. Yes, the Lenana REIT

Answer = A

On the basis of the data given, the Sharpe ratio for the portfolio that includes the Batian REITs is greater [(18.3 – 8.0)/12.5 = .82] than for the other two portfolios. Therefore, Wanja should recommend to her clients that they modify their current strategic asset allocation to include the Batian REIT.

CFA Level III
"Alternative Investments Portfolio Management," Jot K. Yau, Thomas Schneeweis, Thomas R. Robinson, and Lisa R. Weiss
Section 3.3.2 (Example 4)

21. When discussing the possible benefits of adding private equity to a pension fund, Wanja is *most likely* correct regarding the:

A. relationship between liquidity and size of the exposure.
B. use of a fund-of-funds structure.
C. ability to diversify portfolio risks.

Answer = A

Private equity investments, both direct and through private equity funds are highly illiquid. Capital is typically restricted from exiting the fund for 7–10 years. As a result, private equity allocations are typically 5% or less.

CFA Level III
"Alternative Investments Portfolio Management," Jot K. Yau, Thomas Schneeweis, Thomas R. Robinson, and Lisa R. Weiss
Section 4.3.2

22. Wanja's explanation of a private equity fund manager's fees is *least likely* correct with regards to:

A. claw-back provisions.

B. carried interest.
C. management fees.

Answer = C

Although management fees are typically based on the percentage of the value of limited partners' committed funds, management fees often scale down in the later years of a partnership to reflect a lower workload as the fund becomes fully invested. Consequently, the manager is not actively involved in identifying potential investment companies.

CFA Level III
"Alternative Investments Portfolio Management," Jot K. Yau, Thomas Schneeweis, Thomas R. Robinson, and Lisa R. Weiss
Section 4.1.1

23. Is Wanja *most likely* correct when she explains the differences between managing high-net-worth client funds and institutional funds?

A. Yes
B. No, in regard to communication with clients
C. No, in regard to decision risk

Answer = A

Wanja is correct in that advisers have a fiduciary duty to both types of clients, so advisers must determine and communicate issues of suitability with all types of clients. She is also correct in stating that high-net-worth individuals are more prone or sensitive to losses at any given point in their investment time horizon, reflecting a higher level of decision risk than institutional investors.

CFA Level III
"Alternative Investments Portfolio Management," Jot K. Yau, Thomas Schneeweis, Thomas R. Robinson, and Lisa R. Weiss
Section 2

24. Which of the distressed security characteristics described by Wanja is *most likely* correct?

A. Market risk
B. Sharpe ratio
C. Due diligence costs

Answer = A

Market risk is correct. For distressed securities, uncertainty regarding the economy, interest rates, and the state of equity markets are not as important as liquidity risks.

CFA Level III
"Alternative Investments Portfolio Management," Jot K. Yau, Thomas Schneeweis, Thomas R. Robinson, and Lisa R. Weiss
Section 8.3.2

Portfolio Management and Wealth Planning – Buylak

Geri Buylak, a financial adviser, is preparing for a meeting with Kasey McLoughlin, the recent widow of

Bryn McLoughlin, a resident of the country of Weshvia. From her files for the McLoughlin family, Buylak notes the following facts, which she thinks might be relevant in the meeting:

- Kasey was Bryn's second wife.
- Bryn had been the sole provider for his grandson Paulo for the past 20 years; Paulo was orphaned at the age of three and initially lived with Bryn and his first wife. Mainly as a result of the stress arising from the disabilities and medical problems that Paulo developed, Bryn's first marriage ended in divorce within one year. Two years later, it was determined that Paulo would be better off living in a private care facility in the sunny warm climate of Izlandia, where he continues to live today.
- To ensure that Paolo's future needs would be met, shortly after the child was orphaned, Bryn purchased a €3 million life insurance policy on his own life for a one-time premium of €500,000. At the same time, Bryn's father bought a similar, but smaller, policy on his own life. Ownership of both policies was transferred to a discretionary irrevocable trust with Paolo as the primary beneficiary and the University of Izlandia as the remainderman.
- Buylak was appointed as the investment adviser for the trust.
- Bryn and Kasey were married two years after Bryn's divorce from his first wife.

Buylak had been faxed a copy of Bryn's will and in combination with other information she had available made the following notes:

- Two years ago, Bryn disposed of his very successful construction company and invested the proceeds in two overseas distribution centers. The first property is located in the country of Landlochen, and at the time of his death it was jointly owned with Kasey with the right of survivorship. For the second of these properties, Bryn's will named Paolo as the beneficiary of the property. The property is located in Izlandia, where Paolo resides.
- Kasey was named the beneficiary of Bryn's taxable account and two tax-advantaged retirement accounts.
- Weshvia, Izlandia, and Landlochen all use the euro, and none of the three tax regimes impose any tax consequences on spousal transfers either before or after death.

As they begin their meeting, Kasey first asks Buylak if any of the provisions of the life insurance policy or dispositions of the investment properties might be challenged in the probate process.

Kasey mentions to Buylak that she is aware that a large part of her wealth now depends on the investment property in Landlochen. She asks Buylak what cash flow will be available to her annually after taxes from its lease income and what after-tax cash proceeds she might obtain if the property were to be sold when the current lease expires. Buylak had prepared for these questions, and her responses were based on the following:

- The investment real estate property in Landlochen had a cost basis of €2,900,000 and has a present market value of €3,000,000. It produces income of €450,000 (pre-tax) annually through a lease agreement that expires in five years.
- After reviewing several reports analyzing Landlochen real estate values, Buylak estimates that the property could be sold at the termination of the lease at 30% above its present market value.
- The tax structure in Landlochen differs from Kasey's home country Weshvia, as shown in Exhibit 1. Fortunately, there is a provision for some relief from double taxation. Weshvia allows use of the deduction method with regard to income taxes and the credit method toward capital gains.

Exhibit 1

Tax Rates on Investment Property Relevant to Kasey McLoughlin

	Country	
Type of Real Estate Property Tax	Landlochen	Weshvia
● Wealth tax	1.5% of cost basis, accumulated annually and paid at the time of sale	None
● Income tax	35% of annual income	25% of annual income
● Capital gains	20% at time of sale	25% at time of sale
Applies to location	Locally operating within borders	Owned by residents anywhere in the world

On the basis of her calculations for the cash flows from the Landlochen investment property, Buylak recommends that the three inherited investment accounts be held for the next 12 years with all earnings and gains reinvested. In anticipation of another after-tax cash flow question, she estimates the accrual equivalent after-tax rate of return on the portfolio of combined accounts over the next 12 year period using the information in Exhibit 2.

Exhibit 2

Panel A. Kasey McLoughlin's Inherited Investment Portfolio

	Taxable	Tax Deferred	Tax Exempt
Current asset value in euros	1,200,000	700,000	180,000
Expected rate of annual pre-tax return	12.00%	7.50%	11.00%

Panel B. Tax Treatment of Investment Income in Weshvia

Taxable accounts	Total returns are taxed at 28% annually
Tax-deferred accounts	Distributions are taxed at 40% with deferral allowed for a maximum of 12 years, at which time a full distribution is required

Bryn's father died about a year after Bryn, creating additional life insurance proceeds paid to Paolo's trust from Bryn's father's policy. Buylak considers investment changes she should now make to Paolo's trust portfolio. Because it consists entirely of domestic securities, Buylak wants to consider adding securities from other parts of the world as an additional asset class. She identifies three international managers who each use a balanced portfolio approach with solid long-term track records.

The existing portfolio has a Sharpe ratio of 0.54, and Buylak's goal is to improve the overall portfolio's risk-return trade-off. She assembles the data shown in Exhibit 3 and uses it exclusively in determining which manager to select.

Exhibit 3 Portfolio Statistics from Three Potential Portfolio Managers			
Manager	Risk Premium (%)	Standard Deviation (%)	Correlation with Present Portfolio (%)
Europe	4.1	8.9	0.76
Asia	5.2	10.6	0.78
Americas	3.9	7.1	0.91
Note: All risk premiums, standard deviations, and correlations have been calculated based on the euro.			

25. If Paolo had predeceased Bryn, the life insurance proceeds would *most likely* have been paid to:

A. Bryn.
B. Kasey.
C. the University of Izlandia.

Answer = C

The trust was irrevocable, so neither Bryn (while alive) nor his wife would have a claim on any of its assets, including the life insurance policy or its proceeds. Had Paolo predeceased Bryn, the proceeds of the life insurance policy would have been paid to the remainderman on Bryn's death: the University of Izlandia.

CFA Level III
"Estate Planning in a Global Context," Stephen M. Horan and Thomas R. Robinson
Section 5.1

"Managing Individual Investor Portfolio," James W. Bronson, Matthew H. Scanlan, and Jan R. Squires
Section 4.2.4

26. Buylak's *best* response to which of the items might be challenged in the probate process is the:

A. Izlandia distribution center.
B. Landlochen distribution center.
C. proceeds of the life insurance.

Answer = A

Probate is the legal process to confirm the validity of the will so that executors, heirs, and other interested parties can rely on its authenticity. Only the Izlandia distribution center changes ownership through a provision of the will. Joint ownership with the right of survivorship automatically transfers to the surviving joint owner (Kasey). Death benefit proceeds under a life insurance contract pass directly to policy beneficiaries outside the probate process.

CFA Level III
"Estate Planning in a Global Context," Stephen M. Horan and Thomas R. Robinson
Sections 2.1 and 5.3

27. Using Exhibit 1, the annual amount of after-tax cash flow that will be generated by the Landlochen property lease is *closest to*:

A. €219,375.
B. €230,625.
C. €175,875.

Answer = A

In each year, the tax rate under the deduction method will be:

$$T_{Residence} + T_{Source}(1 - T_{Residence})$$

In this case, the tax rate is calculated as follows:

$$(0.25) + 0.35(1 - 0.25) = 0.5125$$

This value is the combined tax rate net of tax relief via the deduction method.

Kasey's after-tax annual cash flow is €450,000 × (1-0.5125) = €219,375.

CFA Level III

"Estate Planning in a Global Context," Stephen M. Horan and Thomas R. Robinson
Section 6.3.1

28. If Buylak's expectations about the Landlochen investment property are realized, using Exhibit 1, the after-tax net cash proceeds that Kasey will receive at the end of the lease is *closest* to:

A. €3,432,500.
B. €3,232,500.
C. €3,457,500.

Answer = A

After applying 30% appreciation, the 1.5% per year wealth tax, and the two capital gains taxes (local source Landlochen and residential Weshvia using the credit method to calculate), the net proceeds are €3,432,500 calculated as follows:

Sale price	€3,000,000 x 1.30	€ 3,900,000
Minus total taxes (calculated below)		-467,500
Net Proceeds		€ 3,432,500
Calculation of total taxes		
Wealth tax	2,900,000 x 0.015 x 5 years	€ 217,500
Plus capital gains tax from Landlochen	(3,900,000 - 2,900,000) × 0.20	200,000
Plus capital gains tax from Weshvia of 0.25 minus 0.20 credit	(3,900,000 - 2,900,000) × 0.05	50,000
Total taxes		€ 467,500
The two-step calculation of capital gains tax under the credit method is equivalent to: $T_{Credit\ Method} = \text{Max}\,[T_{Source}, T_{Residence}]$ =Max[20%, 25%] = 25%, giving a capital gains tax of (3,900,000 - 2,900,000) × 0.25 =€250,000		

CFA Level III
"Estate Planning in a Global Context," Stephen M. Horan and Thomas R. Robinson
Sections 6.2 and 6.3

"Taxes and Private Wealth Management in a Global Context," Stephen M. Horan and Thomas R. Robinson
Section 3.1

29. Using Exhibit 2, the accrual equivalent after-tax annual return that Buylak calculates for Kasey's investment portfolio is *closest* to:

A. 7.35%.
B. 7.45%.
C. 7.58%.

Answer = A

Calculate the ending value after taxes at the end of 12 years.

Accrual equivalent annual return % = 100% x [(Ending value/Beginning value)$^{1/12}$ - 1]

	Beginning Value (BV)	Return	Formula	Ending Value (EV)
Taxable	€ 1,200,000			
	Returns taxed annually at 28%	0.12	BV[1 + 0.12(1 - 0.28)]^{12}	€ 3,243,832
Tax deferred	€ 700,000	0.075	BV(1 + 0.075)^{12} × (1 - 0.40)	
	Net of 40% distribution tax		= €1,667,245 ×(1 - 0.40)	€ 1,000,347
Tax exempt	€ 180,000	0.11	BV(1 + 0.11)^{12}	€ 629,721
	Combined ending value			€ 4,873,900
	Combined beginning value			€ 2,080,000
Accrual equivalent after-tax annual return =			$\left(\frac{4,873,900}{2,080,000}\right)^{1/12} - 1 = 0.0735 = 7.35\%$	

CFA Level III
"Taxes and Private Wealth Management in a Global Context," Stephen M. Horan and Thomas R. Robinson
Sections 3.3 and 4.0

30. According to Buylak's selection criteria, the manager that is *most likely* to achieve her goal for Paolo's trust portfolio is:

A. Asia.
B. Americas.
C. Europe.

Answer = A

Buylak's goal is to improve the risk-return trade-off. Asia would be her best choice because it provides the greatest additional return for each unit of additional risk taken. For an investor to gain by adding an asset class, that asset class's Sharpe ratio must exceed the product of the existing portfolio's Sharpe ratio and the correlation of the asset class's return with the current portfolio's return.

Column Reference	-1 Given	-2 Given	-3 Given	(4) = (1)/(2)	(5) = 0.54 × (3)	(6) = (4) - (5)
Manager	Risk Premium (%)	Standard Deviation (%)	Correlation with Present Portfolio	Calculated Sharpe (R_p/σ)	Present Portfolio Sharpe (0.54) x Correlation	Improvement in Risk- Adjusted Return
Europe	4.1	8.9	0.76	0.46	0.41	0.05
Asia	5.2	10.6	0.78	0.49	0.42	**0.07**
Americas	3.9	7.1	0.91	0.55	0.49	0.06
Asia provides the greatest incremental return for each unit of additional risk taken.						

CFA Level III
"Asset Allocation," William F. Sharpe, Peng Chen, Jerald E. Pinto, and Dennis W. McLeavey
Section 4.2

Portfolio Attribution – Andrews

Downing Funds (DF) provides investment opportunities for clients by creating funds that invest in a mix of other existing funds. Claire Andrews evaluates the managers of funds in which DF currently invests and the managers of funds that may create future investment opportunities for DF.

Currently, Andrews is considering the performance of the BITR3 fund with some limited information, shown in Exhibit 1.

Exhibit 1

One Month of Fund Performance for BITR3 Fund (in € millions)

Day	Fund Value	Contribution/(Withdrawal)	Fund Value with Contributions
0	9.5	0	9.5
10	9.8	-2.5	7.3
25	8	1.5	9.5
30	9.6	0	9.6
Rates of return	Time-weighted (TWR): 14.24%	Money-weighted (MWR): 13.57%	

Andrews also receives incomplete attribution information for another fund, EATR7, shown in Exhibit 2. Similar to the BITR3 fund, the EATR7 fund may have some future investment potential. She requests that her analyst, Ted Kukar, complete the analysis.

Exhibit 2

EATR7 Fund Attribution Information (in $ millions)

Investment Alterative	Fund Value	Incremental Return Contribution	Incremental Value Contribution
Beginning value	104.56		
Net contributions	105.77	0.00%	1.21
Risk-free asset	107.72		1.95
Asset category	115.7		7.98
Benchmarks	116.23		0.53
Investment managers	118.55		2.32
Allocation effects	120.33		1.78
Total fund	120.33		15.77

Kukar tells Andrews that he has heard that the EATR7 fund generates a portion of its return from investing in smaller companies within its sector that are about to be acquired.

Kukar states that he cannot confirm whether the fund is following this "small company" strategy based on the existing data. He further states that with aggregate industry sector data supplied by the EATR7 fund, he could determine whether this strategy is being used.

After receiving the assignment and discussing it with Andrews, Kukar discusses some benchmarking issues with a fellow analyst, Rob Kinney. Kukar states: "I want to calculate a return based on a given manager's style of investing. I intend to find an appropriate benchmark portfolio that is not a market index and subtract the benchmark portfolio return from the manager's portfolio return."

Kinney replies: "I believe your calculation will capture the manager's active return and not a style return."

Kinney continues: "To capture the style return, you will need to subtract a market index return instead of a benchmark portfolio return from the manager's portfolio return."

Andrews assigns Kinney to perform a micro attribution analysis for a current fund manager within the DF family of funds. This manager invests in four specific sectors of the US economy and holds some cash, as shown in Exhibit 3.

Exhibit 3

Micro Attribution Data for DF Fund Manager

Sector:	Portfolio Weight (%)	Benchmark Portfolio Weight (%)	Portfolio Return (%)	Benchmark Portfolio Return (%)
1	20	30	-0.4	-0.7
2	40	30	3.8	4.2
3	10	20	2.4	2.6
4	25	20	5.4	2.92
Cash:	5	0	0.09	0

Note: DF fund manager has trading costs of 27 basis points.

Before Andrews leaves, Kukar states that he has calculated the Sharpe ratios for a fund and a benchmark that is based on the market portfolio when the risk free rate is zero, as indicated in Exhibit 4.

Exhibit 4 Sharpe Ratios for a Fund and its benchmark		
	Fund	**Benchmark**
Sharpe Ratio	0.35	0.4
Expected Return	7.20%	6.80%
Risk free rate: 0% Benchmark is based on the market portfolio		

.

- Kukar tells Kinney and Andrews that the information ratio should simply be the difference between the two Sharpe ratios.
- Kinney disagrees but says that at least M^2 for the fund could be calculated by multiplying the Sharpe ratios.
- Andrews disagrees with both analysts and states that M^2 for the fund can be calculated as the product of the fund's Sharpe ratio and the expected return of the benchmark, divided by the benchmark's Sharpe ratio.

---

31. The primary reason for the TWR differing from the MWR for the BITR3 fund is *most likely*:

    A. a withdrawal prior to the fund value rising.
    B. withdrawals being larger in magnitude than contributions.
    C. a contribution prior to the fund value rising.

    Answer = A

    The TWR is greater than the MWR because there is a large withdrawal of €2.5 million prior to significant fund growth of 9.6% (i.e., [8.0/7.3] - 1 = 9.6%). In this case, the €1.5 million contribution prior to modest growth is inconsequential and, in isolation, would actually move the MWR to be greater than the TWR.

Day	Fund Value	Contribution/(Withdrawal)	Fund Value with Contributions	Subperiod Return for TWR calculation:
0	9.5	0	9.5	
10	9.8	-2.5	7.3	3.2% = (9.8 ÷ 9.5) - 1
25	8	1.5	9.5	**9.6%** = (8.0 ÷ 7.3) - 1
30	9.6	0	9.6	1.1% = (9.6 ÷ 9.5) - 1

CFA Level III
"Evaluating Portfolio Performance," Jeffrey V. Bailey, Thomas M. Richards, and David E. Tierney
Section 4.5

32. The incremental return contribution of the total fund for the EATR7 fund is *closest* to:

A. 13.9%.
B. 14.9%.
C. 15.1%.

Answer = A

The incremental return contribution of the total fund is the total fund incremental value contribution ($120.33 – $104.56 = $15.77 million) minus the net contributions ($1.21 million) divided by the beginning value of the fund ($104.46 million).

$$(120.33 - 104.56 - 1.21) \div 104.56 = 14.56 \div 104.56 = 0.1393 = 13.9\%$$

CFA Level III
"Evaluating Portfolio Performance," Jeffrey V. Bailey, Thomas M. Richards, and David E. Tierney
Section 6.4

33. When Kukar discusses the data in Exhibit 2 with Andrews, his statement with regard to analyzing the "small company" strategy is *most likely*:

A. correct in regard to the existing data and the additional data requirements.
B. incorrect in regard to the existing data.
C. incorrect in regard to the additional data requirements.

Answer = C

The existing data is macro attribution data and cannot be used to analyze a "small company" strategy. Industry sector micro attribution data are necessary, but at the individual firm level and not at the aggregate level. Otherwise, there is no means to determine whether the investment is in a small or large firm (i.e., based on the "fundamental factor" of firm size).

CFA Level III
"Evaluating Portfolio Performance," Jeffrey V. Bailey, Thomas M. Richards, and David E. Tierney
Sections 6.4 and 6.7

34. In the conversation between Kukar and Kinney about benchmarking, which statement is *most* accurate?

A. Kinney's statement about the style of investing
B. Kukar's statement about the style of investing
C. Kinney's statement about active return

Answer = C

Kinney's statement concerning the active return is correct because the active return is assessed by subtracting the benchmark return from the manager's portfolio return.

The portfolio return can be defined as $P = M + S + A$,

Where;

M = Return on market index

S = Return from manager's investment style ($B - M$)

B = Return on selected benchmark

A = Return from manager's active decisions

$P = P \Rightarrow P = B + (P - B) \Rightarrow P = B + A$ (where A = Active return). Doing what Kukar suggests and what Kinney states will be the active return: $P - B = A$

CFA Level III
"Evaluating Portfolio Performance," Jeffrey V. Bailey, Thomas M. Richards, and David E. Tierney
Section 5.1

35. The total value added return by the DF fund manager is *closest* to:

A. 0.6%.
B. 2.8%.
C. 0.9%.

Answer = A

The total value added return is the weighted average of the manager's portfolio return minus the weighted average of the benchmark return minus the trading costs.

Weighted average of manager's portfolio return: (20% × –0.40%) + (40% × 3.80%) + (10% × 2.40%) + (25% × 5.40%) + (5% × 0.09%) = 3.03%

Weighted average of benchmark portfolio return: (30% × –0.70%) + (30% × 4.20%) + (20% × 2.60%) + (20% × 2.92%) = 2.15%

Total value added return, rv= 3.03% – 2.15% – 0.27% = **0.61%.**

CFA Level III
"Evaluating Portfolio Performance," Jeffrey V. Bailey, Thomas M. Richards, and David E. Tierney
Section 6.6

36. When discussing the Sharpe ratios in Exhibit 4, the person who makes the *most* accurate assessment regarding the information ratio or the M^2 measure is:

A. Andrews.
B. Kinney.
C. Kukar.

Answer = A

Assuming the risk-free rate is zero:

Sharpe ratio = Expected return ($\bar{R}$) ÷ Standard devation of return ($\hat{\sigma}$)
M^2 = Sharpe ratio × Standard deviation of the market portfolio return ($\hat{\sigma}_M$)
Information ratio = $[\bar{R}_A - \bar{R}_B] \div \hat{\sigma}_{A-B}$, where "A" indicates a fund and "B" indicates a benchmark. The "A - B" subscript indicates the difference between the return on A and the return on B. To be perfectly clear, $\hat{\sigma}_{A-B}$ does not equal $\hat{\sigma}_A$ less $\hat{\sigma}_B$.

Following Andrews' solution and using the foregoing notation demonstrates that the M^2 measure is produced:

$$\frac{\bar{R}_A}{\hat{\sigma}_A} \times \bar{R}_B \div \frac{\bar{R}_B}{\hat{\sigma}_B} = \frac{\bar{R}_A}{\hat{\sigma}_A} \times \bar{R}_B \times \frac{\hat{\sigma}_B}{\bar{R}_B} = \frac{\bar{R}_A}{\hat{\sigma}_A} \times \hat{\sigma}_B = M^2$$

To find the information ratio while knowing the Sharpe ratios, one would still need the individual standard deviations and the covariance between the fund and the benchmark to find the standard deviation of the difference in the returns [i.e.

$$\sqrt{\hat{\sigma}_A^2 + \hat{\sigma}_B^2 - 2 \times Covariance(A,B)}$$

CFA Level III
"Evaluating Portfolio Performance," Jeffrey V. Bailey, Thomas M. Richards, and David E. Tierney
Section 7.1

GIPS – Arcadia

Arcadia, LLP, is one of several independently operated investment management subsidiaries of Swiss Corp, a global bank. Arcadia is headquartered in Philadelphia, Pennsylvania, and specializes in the management of equity, fixed income, and real estate portfolios. Arcadia's CEO recently hired Joan Westley, CFA, as chief compliance officer to achieve compliance with the Global Investment Performance Standards (GIPS). Arcadia just opened a division in Phoenix, Arizona, incorporated as Arcadia West, LLP, to accommodate one of its portfolio managers and his staff who manage a hedge fund. The staff in Phoenix works exclusively on the hedge fund's strategy, using an investment process distinct from the one used in the Philadelphia office.

Westley makes the following statement at a meeting with the CEO: "I am establishing and implementing policies and procedures to ensure Arcadia is in compliance with the GIPS standards. Although the hedge fund won't be in compliance, it won't affect our ability to be compliant firm-wide because it is in an autonomous unit. We will be the first Swiss Corp subsidiary to be compliant. Keep in mind that even after implementation, we will not be able to claim compliance until our performance measurement policies, processes, and procedures are verified by an independent firm."

Westley begins her review of Arcadia's current policies. She first reviews three policies regarding input data:

> **Policy 1:** The accounting systems record the cost and book values of all assets. Portfolio valuations are based on market values, provided by a third-party pricing service.
>
> **Policy 2:** Transactions are reflected in the portfolio when the exchange of cash, securities, and paperwork involved in a transaction is completed.
>
> **Policy 3:** Accrual accounting is used for fixed-income securities and all other assets that accrue interest income; dividend-paying equities accrue dividends on the ex-dividend date.

Next, Westley reviews Arcadia's policies for return calculation methodologies:

> **Policy 4:** Arcadia uses the Modified Dietz method to compute portfolio time-weighted rates of return on a monthly basis. Returns for longer measurement periods are computed by geometrically linking the monthly returns.
>
> **Policy 5:** Arcadia revalues portfolios when capital equal to 10% or more of current market value is contributed or withdrawn. Returns are calculated after the deduction of trading expenses.

Policy 6: Cash and cash equivalents are excluded in total return calculations. Custody fees are not considered direct transaction costs.

Westley also looks at the investment policy statements (IPS) for the three sample portfolios that are included in Arcadia's large-capitalization equity composite:

Portfolio A: A portfolio managed for a local church in which all fees are waived. The IPS prohibits holdings of companies involved in firearms, alcohol, or tobacco. These securities represent 5% of the benchmark, but the portfolio manager believes he can still implement his strategy with these restrictions.

Portfolio B: The equity carve-out portfolio of a balanced account. The client provides Arcadia discretion in the tactical asset allocation decision. Asset allocation among subportfolios is performed quarterly, and each subportfolio holds tactical or frictional cash.

Portfolio C: A large-cap equity mutual fund managed for a corporate retirement plan. Employees can make contributions and withdrawals daily. The client requires the portfolio manager to maintain at least 15% of assets in cash balances to meet potential withdrawals.

Finally, Westley examines a recent presentation to a prospective client regarding Arcadia's small-cap composite. Details of this presentation are presented in Exhibit 1 and its notes.

Exhibit 1: Small-Capitalization Equity Composite
Benchmark: Russell 2000

Year	Gross of Fees Return (%)	Net of Fees Return (%)	Benchmark Return (%)	Number of Portfolios	Internal Dispersion (%)	Total Assets ($ millions)	
						Composite	Firm
2009	4.2	3.2	3.7	4	3.3	100	1,000
2010	3.7	2.7	7.0	9	4.6	225	1,250
2011	–1.0	–2.0	–4.5	7	1.7	350	900
2012	9.3	8.3	12.0	12	2.8	425	1,050
1Q13	5.2	4.9	–7.0	14	3.6	620	1,125

Notes:

1. Arcadia is an investment firm affiliated with a major global bank and founded in April 2001. The firm manages portfolios in various equity, fixed-income, and real estate strategies.

2. Arcadia has a number of affiliates owned by the parent company; a schedule is provided separately.

3. The composite has an inception date of 31 December 2007. A complete list and description of firm composites is available on request.

4. The composite includes all fee-paying, discretionary, nontaxable portfolios that follow a small-cap strategy. The composite does not include any non-fee-paying portfolios.

5. 1Q13 data are not annualized.

6. Valuations are computed and performance reported in U.S. dollars.

7. Internal dispersion is calculated by using the equal-weighted standard deviation of all portfolios that are included in the composite for the entire year.

8. Gross-of-fees performance returns are presented before management and custodial fees but after all trading expenses. The management fee schedule is as follows: 1.00% on first US$25 million; 0.60% thereafter. Net-of-fees performance returns are calculated by deducting the management fee of 0.25% from the quarterly gross composite return.

---

37. In her statement to the CEO, Westley is *least likely* correct with respect to:

A. exclusion of the Phoenix division.
B. the status of Swiss Corp's other subsidiaries.
C. verification.

Answer = C

Although the GIPS standards recommend that firms undertake verification, it is not required to claim compliance. The Phoenix office holds itself separate geographically, as well as with respect to personnel and its investment process. Philadelphia will be able to be GIPS compliant even if its Phoenix office is not. Finally, because Arcadia markets itself as separate and distinct from the other affiliates, it can claim compliance even if the others units are not compliant.

CFA Level III
"Overview of the Global Investment Performance Standards," by Phillip Lawton
Section 6

38. Which policy regarding input data is *least likely* compliant with the GIPS standards?

A. Policy 1
B. Policy 2
C. Policy 3

Answer = B

The GIPS standards require all transactions to be recognized on the trade date and not the settlement date. Trade date is when the transaction takes place, whereas settlement date is when the exchange of cash, securities, and paperwork involved in a transaction is completed.

CFA Level III
"Overview of the Global Investment Performance Standards," by Phillip Lawton
Section 3.2

39. Which policy regarding return calculation methodologies *most likely* requires revision?

A. Policy 4
B. Policy 5
C. Policy 6

Answer = C

The GIPS standards require cash and cash equivalents to be included in total return calculations for all asset classes.

CFA Level III
"Overview of the Global Investment Performance Standards," by Phillip Lawton
Sections 3.3–3.5

40. Inclusion of which portfolio reviewed by Westley in the large-capitalization equity composite would *least likely* be compliant with the GIPS standard?

A. Portfolio C
B. Portfolio A
C. Portfolio B

Answer = A

Portfolio C is required to hold cash at 15%, which is too much for the portfolio manager to execute his strategy effectively. The unanticipated nature of the contributions and withdrawals that can occur daily makes it difficult to invest the funds in equities. This large cash balance implies the portfolio is nondiscretionary.

CFA Level III
"Overview of the Global Investment Performance Standards," Phillip Lawton
Section 3.7

41. Based on Exhibit 1 and the notes following the exhibit, Arcadia is *least likely* in compliance with the GIPS standards with regard to the:

A. performance record.
B. measure of internal dispersion.
C. performance presentation.

Answer = A

Arcadia is required by the GIPS standards to present five years of performance because the composite has been in existence for that period. The small-cap composite was started on 31 December 2007. For each composite presented to be GIPS compliant, the Standards require that firms show at least 5 years of annual performance (less if the firm or composite has been in existence for a shorter period) and then the performance record must be extended each year until 10 years of results have been presented.

CFA Level III
"Overview of the Global Investment Performance Standards," Phillip Lawton
Sections 3.11, 3.12

42. Regarding the notes to Exhibit 1, the GIPS standards would *most likely* imply that:

A. Notes 3 and 8 are required and Note 6 is recommended.
B. Notes 1 and 2 are required and Note 7 is recommended.
C. Notes 1 and 7 are required and Note 2 is recommended.

Answer = C

Note 1 is required. It describes the definition of the firm used to determine the total firm assets. Note 2 is recommended because the firm is encouraged but not required to provide a list of the

firms contained within the parent company. Note 7 is required because firms must disclose which dispersion measure is presented.

CFA Level III
"Overview of the Global Investment Performance Standards," Phillip Lawton
Section 3.11

Trading, Monitoring, Rebalancing - Truck

Asset manager Charles Truck has long-standing clients Sam and Winona Harding. Truck is preparing for their upcoming annual client review. Prior to that meeting, he is meeting with the Harding's daughter Heidi. Heidi has recently graduated from college and started a new, lucrative career. In addition, Heidi has followed her parents' recommendation and sought out Truck's assistance because a $1 million inheritance from her grandmother has just passed to her.

Truck constructs an investment policy statement (IPS) for Heidi, which he will review with her at the upcoming meeting. He plans for the portfolio to incur significant initial trading to bring it in line with a more appropriate mix. He notes that her investments are held in a taxable account. In a previous conversation, Heidi stated a preference for a buy-and-hold strategy because she "does not like risky strategies." He makes notes to review with her why a rebalancing strategy may be more consistent with her conservative risk profile, but he decides to recommend a strategy of rebalancing only so far as the portfolio's allowed range.

Truck next pulls together information about the Hardings' circumstances and their portfolio, shown in Exhibit 1.

Exhibit 1

Selected Investment Policy Statement Information on Sam and Winona Harding

Principals	Current Age	Expected Retirement	Life Expectancy
Sam Harding	50	55	85
Winona Harding	50	55	85

Dependent(s)	Relationship	Current Age	Comments
Heidi Harding	Daughter	22	Heidi is no longer considered a dependent.

Portfolio details	Historical Risk/Return Rankings	Strategic Asset Allocation	Portfolio Value (millions)	
			End of Last Year	End of Current Year
Domestic stocks	Higher	40% +/- 3%	$2.0	$1.5
International stocks	Highest	20% +/- 2%	$1.0	$0.7
Fixed income	Lower	30% +/- 5%	$1.5	$1.6
Cash reserves	Lowest	10% +/- 2%	$0.5	$0.2

Current portfolio rebalancing strategy
Percentage-of-portfolio rebalancing back to the strategic asset allocation with weekly monitoring

Truck carefully reviews equity market conditions, market return expectations, and current holdings in order to consider the implications for both Heidi's and her parents' portfolios. He notes that equity market volatility, both domestic and international, has been lower recently than historical levels. On the basis of recent research, Truck expects this trending low-volatility environment to persist and anticipates strong positive equity performance for the next few years.

Truck will recommend moving the Hardings' international equity holdings to a more cost-effective passive fund. This move can be done without a tax consequence because the bulk of their assets are held in a tax-deferred retirement account. Although the new fund has a similar risk level and country exposure to the old, it offers significantly lower trading costs, especially for holding periods of greater than 90 trading days. Truck makes a note to discuss the option of converting their portfolio to a semiannual rebalancing strategy.

The Hardings have recently paid off their home mortgage in preparation for their early retirement in five years, which reduced their cash reserves by $300,000. As a result of Heidi's inheritance, however, Truck notes that the Hardings may see less of a need to keep cash on hand to meet unexpected, short-term needs that their daughter might experience while becoming established in her new career. Truck notes that he should plan to discuss the return target in the Hardings' IPS during their annual review.

Truck also reviews the Hardings' strategic asset allocation and the corridors that he uses when rebalancing to their target mix. He lists a number of market and portfolio characteristics that could weigh for and against a recommendation to widen this rebalancing corridor. Truck also considers that the Hardings may have a lower risk tolerance in the future because of a decline in portfolio value caused both by their reduced cash reserves and by losses elsewhere in their portfolio, and he makes a note to discuss this issue in the annual review as well.

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43. Which of the following items have characteristics that are *most* in line with Heidi's preferred investment strategy?

    A. The client's unwillingness to accept risk
    B. Truck's market expectations
    C. Rebalancing to the portfolio's allowed range

    Answer = B

    Truck anticipates strongly positive equity performance for the next few years. Perold-Sharpe analysis clearly illustrates that a buy-and-hold strategy can be expected to outperform a rebalancing discipline in an upward trending market.

    CFA Level III
    "Monitoring and Rebalancing," Robert D. Arnott, Terence E. Burns, Lisa Plaxco, and Philip Moore
    Section 3.3

44. Truck's suggestion for a different portfolio rebalancing strategy for Heidi than for her parents is *most likely* based on differences in:

    A. tax consequences.
    B. wealth levels.
    C. risk preferences.

    Answer = A

Heidi's investments are held in a taxable account, and tax costs are one of the costs that arise when rebalancing to a strategic asset allocation. Truck recommends rebalancing only to the allowed range for Heidi rather than fully back to target weights as he does for the elder Hardings. Rebalancing to the allowed range typically results in lower after-tax rebalancing costs than rebalancing to target weights.

CFA Level III
"Monitoring and Rebalancing," Robert D. Arnott, Terence E. Burns, Lisa Plaxco, and Philip Moore
Section 3.2

45. As a result of the recommendation for the Hardings' international equity holdings, Truck's motivation for a revised rebalancing strategy is *most likely* based on changes in:

A. transaction costs.
B. risk tolerance.
C. market volatility.

Answer = A

Rebalancing trades can occur on any calendar date for percentage-of-portfolio rebalancing, in contrast to calendar rebalancing. To take advantage of the low transaction costs for longer holding periods in the new international equity fund, semiannual rebalancing may be beneficial.

CFA Level III
"Monitoring and Rebalancing," Robert D. Arnott, Terence E. Burns, Lisa Plaxco, and Philip Moore
Section 3.2

46. The *most* appropriate reason in favor of amending the Hardings' IPS to allow for a higher return objective is their reduced:

A. liquidity requirements.
B. portfolio value.
C. time horizon.

Answer = A

Because of Heidi's inheritance, the Hardings no longer have to keep as much cash on hand to meet any needs that might arise in establishing her career. Cash is the asset class offering the lowest risk and return (Exhibit 1), which is offset by the benefits of high liquidity. With the need for higher liquidity removed, the IPS can target a higher return that is consistent with reduced cash reserves in the strategic asset allocation.

CFA Level III
"Monitoring and Rebalancing," Robert D. Arnott, Terence E. Burns, Lisa Plaxco, and Philip Moore
Section 2.1

47. The expected benefits of immediately rebalancing the Hardings' portfolio are *best* described as being related to the fact that the portfolio currently:

A. is at risk of not meeting their return objectives.
B. has a low tracking error compared with the strategic asset allocation.
C. may have a higher volatility than optimal.

Answer = A

If we assume that an investor's strategic asset allocation is optimal, then any divergence in the investor's portfolio from this strategic asset allocation is undesirable and represents an expected utility loss to the investor. The Hardings' domestic and international stock holdings are below their strategic asset allocation targets, both in value and on a percentage-of-portfolio basis (Exhibit 1). This decline represents an inadequate allocation toward assets with a higher risk premium and would increase the Hardings' risk of not achieving their return objectives if rebalancing does not occur.

End of Current Year Selected Data	Historical Risk/Return Rankings	Strategic Asset Allocation	Dollar Allocation	Percentage Allocation
Domestic stocks	Higher	40% +/- 3%	$1.5 million	37.5%
International stocks	Highest	20% +/- 2%	$0.7 million	17.5%
Fixed income	Lower	30% +/- 5%	$1.6 million	40%
Cash reserves	Lowest	10% +/- 2%	$0.2 million	5%

CFA Level III
"Monitoring and Rebalancing," Robert D. Arnott, Terence E. Burns, Lisa Plaxco, and Philip Moore
Section 3.1

48. Which of the following characteristics is Truck *most likely* to weigh in favor of widening the Harding's rebalancing corridor?

A. Costs associated with rebalancing
B. The expected volatility environment
C. The Hardings' ability to tolerate risk

Answer = B

A lower volatility should lead to a wider corridor, all else being equal. When the asset class volatility is lower than the historical average, this segment of the portfolio can drift farther from the optimal mix with less of an impact on overall risk at the portfolio level.

Equity market volatility that has been lower recently than historical levels, and Truck's research supports the idea that it will persist, argues in favor of wider corridors if his expectations are realized. In contrast, the Hardings' decrease in wealth may lead to a decreased risk tolerance, which would suggest a narrower optimal corridor. Similarly, the lower costs associated with their new international stock fund are consistent with a narrower corridor because rebalancing costs are reduced.

CFA Level III
"Monitoring and Rebalancing," Robert D. Arnott, Terence E. Burns, Lisa Plaxco, and Philip Moore
Section 3.2.2

Asset Allocation - Campos

Marina Campos is a senior portfolio manager for Sabanai Investimentos in Sao Paulo, Brazil. Sabanai provides investment management and advisory services for high-net-worth and institutional clients. She is assisted by two portfolio analysts, Fabiana Traldi and Pedro Peixaria. Campos is meeting with Traldi and Peixaria to discuss the portfolios of three clients.

The first client is Gilvan Araujo Dias, a high-net-worth client who has given Sabanai responsibility for managing his foreign investments, which consist of equity investments in the United Kingdom and Germany. His other assets consist of equity and corporate bond investments in Brazil. Exhibit 1 summarizes information on Dias's foreign portfolio holdings and exchange rates.

Exhibit 1

Gilvan Araujo Dias

Information on Foreign Asset Holdings and Exchange Rates

	UK Assets	German Assets	Spot Exchange Rates	
Date	Value in GBP	Value in EUR	BRL/GBP	BRL/EUR
1/1/2013	83,400,000	55,000,000	3.8729	3.0359
1/1/2014	86,000,000	51,000,000	4.1025	3.5142

Dias has asked whether it would be appropriate for him to hedge his foreign currency exposure. Campos raises the issue with Traldi and Peixaria. Traldi responds, "In the short run, if the correlation between foreign asset returns and foreign currency returns is negative, then there may be a need to hedge all foreign currency exposure. Alternatively, one could implement a currency overlay program in which the currency exposure is fully hedged and currency alpha is generated separately. This currency overlay strategy will only be successful in adding value to the portfolio if the currency alpha has a high correlation with Brazilian equities and corporate bonds."

The second client, BC Fundos de Pensao (BC), manages pension funds for numerous local companies and has currency exposure to the USD, the EUR, and the GBP. BC wants Sabanai to provide guidance on using active currency management strategies for the portfolios they manage. Peixaria has been assigned this task and has collected information on one-year yield levels in the United States, United Kingdom,

and Eurozone, as well as one-year implied volatility for various currency pairs extracted from option pricing models. This information is provided in Exhibit 2.

Exhibit 2

One-Year Yield Levels and Implied Volatilities

Panel A	
Country	**One-Year Yield**
United States	0.05%
United Kingdom	0.40%
Eurozone	0.11%
Panel B	
Currency Pair	**One-Year Implied Volatility**
USD/GBP	5.50%
GBP/EUR	7.50%
USD/EUR	9.50%

Peixaria indicates that his research suggests that the USD/EUR currency pair will become more volatile over the near term. He recommends that BC implement an options-based strategy using USD/EUR options to profit from the expected increase in volatility.

The third client is Fundo do Brasil (FB), a Brazilian sovereign wealth fund. FB has long equity positions in Australian and Swiss equities. Spot and forward market currency information for AUD and CHF is provided in Exhibit 3. FB managers have asked Campos for advice on whether it would be appropriate to hedge the currency exposure with forward contracts in AUD and CHF. Campos indicates she will examine the use of forward contracts to hedge currency exposure.

Exhibit 3

Spot and Forward Rates for AUD and CHF

Currency Pair	Current Spot Rate	Six-Month Forward Rate	Six-Month Forecast Spot Rate
BRL/AUD	2.1046	2.1523	2.0355
BRL/CHF	2.5309	2.4641	2.5642

Traldi suggests that the use of put options might be a better way to hedge currency exposure. Campos responds that there are better options-based strategies that can exploit market views and reduce hedging costs. She suggests the following strategies:

- **Strategy 1.** For AUD exposure, the appropriate strategy is to be long put options at a strike price of 2.1046, short put options with a strike price 2.1356, and short call options with a strike price of 2.1456.
- **Strategy 2.** For CHF exposure, the appropriate strategy is to be long put options at a strike price of 2.5309, short put options with a strike price 2.5049, and short call options with a strike price of 2.5669.

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49. Based on the information provided in Exhibit 1, the domestic currency value of Dias's foreign investments *most likely*:

A. decreased because of changes in the domestic currency value of foreign asset holdings.
B. increased because of changes in the domestic currency value of UK assets but decreased because of changes in the domestic currency value of German assets.
C. increased because of changes in the domestic currency value of foreign asset holdings.

Answer = C

The domestic currency value of Dias's portfolio of foreign assets most likely increased because of changes in the domestic currency value of foreign asset holdings. The domestic currency return of the portfolio of foreign assets is:

$$R_{DC} = w_1(1 + R_{FC,\text{GBP}})(1 + R_{FX,\text{GBP}}) + w_2(1 + R_{FC,\text{EUR}})(1 + R_{FX,\text{EUR}}) - 1$$

$$= 0.659\left(\frac{86{,}000{,}000}{83{,}400{,}000}\right)\left(\frac{4.1025}{3.8729}\right) + 0.341\left(\frac{51{,}000{,}000}{55{,}000{,}000}\right)\left(\frac{3.5142}{3.0359}\right)$$

$= 0.659(1.0312)(1.0592) + 0.341(0.9273)(1.1575)$

$= 0.659(1.0923) + 0.341(1.0734)$

= **0.0858**

The calculations show that the domestic currency value of the portfolio of foreign assets increased because of changes (i.e., increases) in the domestic currency value of UK and German equity investments. Note

w_1 = 322,999,860/489,974,360 = 0.659

and

w_2 = 166,974,500/489,974,360 = 0.341

CFA Level III
"Currency Management: An Introduction," William A. Barker
Section 3.1

50. In her response regarding hedging foreign currency exposure in Dias's portfolio, Traldi is *most likely*:

A. correct about the correlations and the currency overlay program.
B. incorrect about the correlations, but correct about the currency overlay program.
C. incorrect about the correlations and the currency overlay program.

Answer = C

Traldi is incorrect about the correlations and the currency overlay program. In the short run, if the correlation between foreign currency asset returns and foreign currency returns is negative, then there may be no need to hedge all foreign currency exposure because some currency exposure is desirable from a portfolio diversification perspective. Regarding the currency overlay program, it will add value to the portfolio only if the currency alpha has a low correlation with other asset classes in the portfolio (i.e., Brazilian equities and corporate bonds).

CFA Level III
"Currency Management: An Introduction," William A. Barker
Sections 4.3.1 and 4.4.4

51. Based on the information in Exhibit 2, it would be *best* for Sabanai to implement a carry trade for BC by borrowing in:

A. GBP and investing in USD.
B. USD and investing in GBP.
C. EUR and investing in GBP.

Answer = B

An appropriate active currency management strategy that may add value to BC's portfolios would be to borrow in USD and invest in GBP. The spread in yields is widest between the United Kingdom and the United States, and the USD/GBP currency pair has the lowest implied volatility, which is better for a carry trade.

CFA Level III
"Currency Management: An Introduction," William A. Barker
Section 5.3 and Example 3

52. In regard to using USD/EUR options, Peixaria is *least likely* to recommend a strategy to go:

A. short an equal number of 15-delta puts and calls.
B. long an equal number of 25-delta puts and calls.
C. long an equal number of 50-delta puts and calls.

Answer = A

A short strangle (short an equal number of 15-delta calls and puts) would only be appropriate if volatility is expected to be low. The expectation is for increased volatility, so the long strangles would be more appropriate. A strategy of taking long positions on an equal number of 50-delta calls and 50-delta puts (i.e., a 50-delta straddle) is an appropriate way to take advantage of expected increased volatility in the USD/EUR currency pair. However, 50-delta calls and puts are at-the-money options and are more expensive than out-of-the-money options, such as 25-delta calls and puts (a 25-delta strangle).

CFA Level III
"Currency Management: An Introduction," William A. Barker
Section 5.4

53. Based on the information provided in Exhibit 3, the *most* appropriate risk neutral strategy is for FB to:

A. under-hedge AUD and over-hedge CHF.
B. over-hedge AUD and not hedge CHF.
C. under-hedge CHF and not hedge AUD.

Answer = B

Because of equity investments in Australia and Switzerland, FB has long currency exposure to AUD and CHF. The appropriate risk-neutral strategy is to over-hedge (hedge ratio > 1) AUD and not hedge CHF. The AUD is selling at a forward premium of 2.27%, which means that the expected roll yield for a short hedge in AUD is 2.27%. Furthermore, the AUD is expected to depreciate by 3.28%, which means the short position in the AUD gains 3.28%. Thus, a short hedge of the AUD is appropriate. The CHF is at a forward discount of 2.64%, which means that the expected roll yield for a short hedge of CHF is –2.64%. The CHF is expected to appreciate 1.32%, which means that a short position in CHF would lose 1.32%. Thus, in this instance it would not be appropriate to hedge the CHF.

Currency Pair	Current Spot Rate	Six-Month Forward rate	Six-Month Forecast Spot Rate	Forward prem/disc	spot app/depr
BRL/AUD	2.1046	2.1523	2.0355	2.27%	-3.28%
BRL/CHF	2.5309	2.4641	2.5642	-2.64%	1.32%

CFA Level III
"Currency Management: An Introduction," William A. Barker
Sections 6.1.1and 6.3.1

54. Is Campos *most likely* correct that Strategy 1 and Strategy 2 will accomplish the goals of exploiting market views and reducing hedging costs?

A. No, she is incorrect about reducing hedging costs
B. Yes
C. No, she is incorrect about exploiting market views

Answer = C

Campos suggests that both strategies help reduce hedging costs and allow the manager to exploit a market view. While it is true that both strategies help reduce hedging costs through premiums collected on short calls and puts, they both do not accommodate the market view on

the currencies. Specifically, Exhibit 3 indicates that the expectation is for the AUD to depreciate to BRL/AUD 2.0355 and for the CHF to appreciate to BRL/CHF 2.5642. Strategy 1, the short seagull on the AUD only provides downside protection to BRL/AUD 2.1356 (when the short put kicks in and neutralized the hedge), not BRL/AUD 2.0355. Strategy 2 does allow for participation in upside gain to BRL/CHF 2.5669 at which point the short call kicks in. The expectation is for an appreciation to BRL/CHF 2.5642.

CFA Level III
"Currency Management: An Introduction," William A. Barker
Sections 6.3 and 6.3.5

Portfolio Management and Wealth Planning - Kirsch

Penproact Corp. is a 50-year-old industrial manufacturer that sponsors a defined benefit pension plan for its employees. Jason Kirsch, CEO, is meeting with Doug Erickson, an investment consultant for Favre Capital Management. Favre has been the plan's consultant for the past 15 years and specializes in asset allocation for clients with long-term liabilities.

Kirsch prepares for the meeting by reviewing the pension plan's investment policy, focusing on the plan's investment framework and economic liability. He asks Erickson whether the plan's risk objective addresses the plan's exposure to economic and capital market factors. Erickson replies that the investment policy addresses the plan's risk by defining low-risk investments as assets that have low correlations in the context of an investment portfolio.

The plan's investment returns are measured against an investment benchmark composed of equity, fixed-income, and cash instruments. Erickson states that the plan's funded status is protected from an economic-liability perspective because of the inclusion of fixed-income and cash instruments in the benchmark and because the plan's low-risk investment assets have a high correlation with the liabilities. The characteristics of the plan assets and the plan liabilities are provided in Exhibit 1.

Exhibit 1

Penproact's Defined Benefit Pension Plan

Liabilities ($ million)	100	
Assets ($ million)	90	
Participants	1,000	Active employees
Inactive participants	250	Retired and terminated employees
Frozen	No	
Closed	Yes	
Indexed to inflation	Yes	Active employees only
Wage inflation	2%	Year over year long term assumption
GDP growth	2%	Year over year long term assumption
Real wage growth	2%	Year over year long term assumption

Kirsch questions whether the plan's investment policy is adequate. He shares his belief that the risk orientation of the plan should focus on market-related exposures for both the plan assets and the plan liabilities. Erickson suggests that they work together to develop a custom benchmark that mimics the pension liabilities. This benchmark would be used to measure the investment portfolio's performance.

The plan's current asset allocation is 60% equities, 25% nominal bonds, and 15% real rate bonds. Erickson states that one important objective is to maintain or improve the plan's funded status. Because of operating cash flow constraints, Penproact also wants to avoid being required to contribute additional funds to the plan. Regarding the future asset allocation, Erickson offers the following strategies for discussion:

- **Strategy 1:** Modify the current asset allocation to include 90% equities and 10% bonds to offset future service costs and to improve the plan's funded status.
- **Strategy 2:** Invest in a portfolio of 100% bonds that is expected to outperform the benchmark.

- **Strategy 3:** Use a combination of interest rate derivatives and bonds to hedge the term structure exposure of the liability and invest in equities to generate excess returns.

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55. The current investment framework for Penproact's pension plan as it relates to the plan's risk *most likely* focuses on only the:

    A. funded status.
    B. economic liability.
    C. assets.

    Answer = C

    The plan's current investment policy is from an asset-only perspective given that the investment policy defines low-risk investments as assets that have low correlations with each other. An asset-only approach focuses on only the return and risk of the investment portfolio. The liability-relative perspective characterizes low-risk investments as those having a high correlation with liabilities.

    CFA Level III
    "Linking Pension Liabilities to Assets," Aaron Meder and Renato Staub
    Section 1

56. Is Erickson's comment regarding funded status *most likely* correct with respect to the plan having a liability-relative perspective?

    A. No, because of the investment asset's correlation with the pension liabilities
    B. No, because of the investment benchmark
    C. Yes

    Answer = B

    The plan does not have a liability-relative perspective because the benchmark for a defined benefit plan with a liability-relative perspective is an asset portfolio that mimics the plan liabilities, not a benchmark composed of equity, fixed-income, and cash instruments.

    CFA Level III
    "Linking Pension Liabilities to Assets," Aaron Meder and Renato Staub
    Section 1

57. Based on Exhibit 1, the plan assets that are expected to mimic the plan liabilities pertaining to inactive participants are *most likely:*

A. nominal bonds.
B. equities.
C. real rate bonds.

Answer = A

For the inactive participants, the benefit payments are fixed because they are not indexed to inflation. Accordingly, these payments are bond like and their only market related exposure is the term structure of interest rates. The portfolio of assets that best mimics such a liability is a bond portfolio whose cash flows match the estimated benefit payments.

CFA Level III
"Linking Pension Liabilities to Assets," Aaron Meder and Renato Staub
Section 3

58. Based on Exhibit 1, the amount of wage growth the selected benchmark is expected to cover is *closest* to:

A. 4%.
B. 6%.
C. 2%.

Answer = A

The portion of the benchmark return for the future wage liabilities is 4% because wage increases are attributable to two economic forces: wage inflation (2%) and real wage growth (2%).

CFA Level III
"Linking Pension Liabilities to Assets," Aaron Meder and Renato Staub
Section 3

59. The combination of assets expected to mimic plan liabilities pertaining to active participants is *most likely*:

A. nominal bonds and equities.
B. equities, real rate bonds, nominal bonds.
C. real rate bonds and nominal bonds.

Answer = B

Because the plan is not frozen but is closed and is indexed to inflation for the active employees, the relevant investment benchmark will mimic the (1) accrued benefit liability plus (2) future wage liability. For the accrued benefit liability, the market-related exposure is the term structure of interest rates and, accordingly, the appropriate liability-mimicking assets are nominal bonds. For the future benefit liability, the market-related exposures are inflation, economic growth, and term structure of interest rates. Consequently, the appropriate liability-mimicking assets are real rate bonds, equities, and nominal bonds.

CFA Level III
"Linking Pension Liabilities to Assets," Aaron Meder and Renato Staub
Section 3

60. Based on Kirsch and Erickson's objectives for the plan, which asset allocation strategy is *most likely* appropriate?

A. Strategy 1
B. Strategy 3
C. Strategy 2

Answer = B

Strategy 3 reflects the liability-relative approach, which entails (1) hedging the economic exposure of the accrued benefits and (2) investing in higher return instruments in order to earn a return that is sufficient to fund the future wage benefits. Interest rate derivatives are an efficient way to hedge the accrued benefits because the primary market-related exposure of the accrued benefits is the term structure of interest rates. Because derivatives are a capital-efficient (derivatives require less cash to create a position in comparison with a direct investment) method to hedge the primary market-related exposures, the balance of the investment portfolio may be used for higher return investments that are not benchmarked for risk purposes but that do provide returns that are designed to offset the need for the plan sponsor to make future cash contributions. The equity returns are not benchmarked for risk purposes because the interest rate derivatives are designed to hedge the plan's economic liabilities.

CFA Level III
"Linking Pension Liabilities to Assets," Aaron Meder and Renato Staub
Section 4