Please be advised this mock exam contains 10 item sets for the morning session and 10 items sets for the afternoon session.

The live exam morning session will consist of a variable number of essay questions for the morning session and the afternoon session will consist of 10 item sets.

The 10 additional item sets provided in the morning session of the mock exam are for supplementary preparation purposes only and does not represent the format candidates will experience on exam day.

Please note, you can view the last three years constructed response questions and guideline answers here;
http://www.cfainstitute.org/programs/cfaprogram/exams/Pages/level_III_exam_prep.aspx

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2016 Level III Mock Exam

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.

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Ethics - Jacaranda

Most financial services regulatory bodies in East Africa are moving toward risk-based supervision models. Miriam Bukenya, CFA, is the head of compliance at Jacaranda Asset Management, a manager of both retail and institutional portfolios. She is currently revising the company's compliance policies to address risk in all areas of Jacaranda's business and is checking different aspects of the firm to ensure that it will be able to meet new risk-based supervision regulations when they become effective in six months. The firm recently adopted the CFA Institute Code of Ethics and Standards of Professional Conduct as its own code and standards.

While reviewing Jacaranda's compliance manual, Bukenya realizes it needs a few changes to comply with the new risk-based regulations. To ensure that she follows best practice, she consults with Luc Remmy, CFA, the head of compliance at her former employer, Mercury Advisory Services. Remmy, who now runs an independent consulting firm, e-mails Bukenya the compliance manual he uses for his own firm. While reviewing the compliance manual, Bukenya notices that many sections look familiar. She finds a statement in the document indicating it is for the "sole use of Mercury Advisory Services." When questioned, Remmy states that he only used the table of contents of Mercury's document but none of the other content in the document to develop his compliance manual.

Bukenya looks at the marketing materials Jacaranda uses to communicate with existing and prospective clients to ensure that everything mentioned in the material is factual and complies with the CFA Standards of Professional Conduct. The following marketing statements are examined:
Statement 1: Jacaranda looks for investments offering intrinsic value through a top-down approach, including a review of forecasts of economic and industry performance. We evaluate historical and projected company financials, perform extensive financial ratio analysis, conduct management interviews, and determine target prices using a variety of valuation models.
Statement 2: Jacaranda may, at times, hire outside advisers to manage real estate holdings on behalf of clients. These advisers have the necessary expertise to manage property assets.
Statement 3: Jacaranda has four CFA charterholders among its senior management. Their participation in the CFA Program has enhanced their investment management skills. All of these managers passed the three exams in the shortest time possible.

The new risk-based regulations also require accurate and complete performance presentations, with all discretionary accounts included in at least one composite. Bukenya believes Jacaranda's performance presentation policy meets these new requirements as well as the CFA Institute Standards of Professional Conduct because Jacaranda's single composite includes all current and terminated client accounts and presentations include the following statement: "Detailed information regarding the performance presentation is available on request." Although Jacaranda does not currently comply with GIPS standards, Bukenya encourages the firm to do so within the next few years.

Bukenya then reviews Jacaranda's record-keeping policy. Currently, the policy requires retention of hard

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copies of all supporting documentation for investment recommendations and decisions made during the last five years. This policy meets the new risk-based regulations. Client meeting minutes and communication logs are kept electronically and backed up on a remote server. Fund managers and research analysts are responsible for maintaining their own personal notes and research models. This policy also applies to Jacaranda's independent research contractor, Mathew Ochieng, who (for security reasons) does not have access to the company's server. Ochieng, who only undertakes research for Jacaranda, sends his research reports to the head of research, who then archives these electronic copies.

While reviewing Jacaranda's counterparty risk policy, Bukenya discovers that trader Jackson Gatera recently convinced the back office to override controls designed to prevent overexposure to specific stockbrokers. This request was in violation of company rules. The rules state that if the trading allocation to a specific broker is breached, trading through that broker must be suspended until the exposure drops to within the exposure limits. The Counterparty Risk Committee predetermines these limits.

The new risk-based regulations also require companies to gather client information as part of know-your-client and anti-money-laundering processes. Bukenya creates a confidentiality policy restricting access to existing and prospective client information. The information is only available to personnel who are authorized by the existing or prospective client. The one exception is if the client or prospective client is thought to be conducting illegal activities. In this circumstance, the information can be released without authorization if the information is demanded through a court order or other legal requirement.

---

1. Which of the following CFA Institute Standards of Professional Conduct did Remmy *least likely* violate?

   A. Misrepresentation
   B. Responsibilities of Supervisors
   C. Loyalty

   Answer = B

   There is no indication that Remmy violated his responsibility as a supervisor under Standard IV(C): Responsibilities of Supervisors. He did, however, violate Standard I(C): Misrepresentation and Standard IV(A): Loyalty by plagiarizing his former employer's compliance manual. Work performed for an employer remains the asset of the employer and cannot be taken to another firm without permission.

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   "Guidance for Standards I–VII," CFA InstituteStandard IV(C): Responsibilities of Supervisors; Standard I(C): Misrepresentation; Standard IV(A): Loyalty

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2. Which marketing statement should Bukenya *most likely* revise to conform to the CFA Institute Standards of Professional Conduct?

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

Answer = B

Standard V(B): Communication with Clients and Prospective Clients requires the firm to inform the clients about the specialization or diversification expertise provided by external adviser(s) when outside advisers are used to manage various portions of the clients' assets under management. This information allows clients to understand the strategies being applied that affect their investment objectives. Stating "These advisers have the necessary expertise to manage property assets" is not likely to provide enough information for the clients to understand the investment methodologies or strategies implemented by the outside advisers.

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"Guidance for Standards I–VII," CFA Institute
Standard V(B): Communication with Clients and Prospective Clients

3. Does Jacaranda's performance presentation policy *most likely* meet recommended procedures for complying with CFA Institute Standards of Professional Conduct?

A. Yes
B. No, because of the structure of the composite
C. No, because it is not in compliance with GIPS standards

Answer = B

Standard III(D): Performance Presentation requires firms to provide credible performance information to clients and prospective clients as well as to avoid misstating or misleading clients and prospective clients about the investment performance of firms. A single composite that includes all client portfolios, regardless of investment objectives (which would likely be different for the retail and institutional clients) could be considered to be misleading. The standard does not require firms to be GIPS compliant. Firms not in compliance with the GIPS standards, however, should present the performance of a weighted composite of similar portfolios, rather than using a single representative account or all accounts with different non-similar portfolios.

CFA Level III

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"Guidance for Standards I–VII," CFA Institute
Standard III(D): Performance Presentation

4. Jacaranda's record-keeping policy is *most likely* in violation of Standard V(C): Record Retention with regard to the:

   A. retention of personal notes and research models.
   B. retention time frame.
   C. keeping of hard and electronic copies.

   Answer = A

   Standard V(C): Record Retention requires the retention and maintenance of records to support the investment analyses, recommendations, actions, and other investment-related communications with clients and prospective clients. Because the independent research contractor provides research only for Jacaranda, he would not necessarily be considered a third-party research provider. Thus, he would be required to send his research reports to the firm along with his underlying supporting analysis and financial models. Therefore, Jacaranda does not meet the record retention requirements. The standard allows firms to keep hard copies and/or electronic copies of documents. In addition, although it recommends files be retained for a minimum of seven years, Jacaranda is still in compliance with the standard in that it meets local regulatory requirements.

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   "Guidance for Standards I–VII," CFA Institute
   Standard V(C): Record Retention

5. In response to Gatera's actions, Bukenya should *least likely* recommend which of the following actions to prevent violations of the CFA Institute Standards of Professional Conduct?

   A. Increase supervision of Gatera
   B. Investigate further
   C. Report Gatera to CFA Institute

   Answer = C

   As Gatera is not a covered person, it is not required for Bukenya to report him to CFA Institute. However, because Bukenya is a supervisor, she does have the responsibility under Standard IV(C) Responsibility of Supervisors to conduct a thorough investigation of the activities to determine the scope of the wrongdoing. In addition, the supervisor should respond promptly and increase (not maintain) supervision.

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"Guidance for Standards I–VII," CFA Institute
Standard IV (C) Responsibilities of Supervisors

6. Does Bukenya's confidentiality policy *most likely* violate Standard III(E): Preservation of Confidentiality?

A. Yes, with regard to client status
B. Yes, with regard to type of information
C. No

Answer = A

Standard III(E): Preservation of Confidentiality requires information about former clients, as well as existing and prospective clients, to be kept confidential unless the law requires the disclosure or permission has been given to disclose the information. Jacaranda's policies cover only existing and prospective clients.

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Standard III (E) Preservation of Confidentiality Guidance

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Capital Market Expectations – CME

The United States-based CME Foundation serves a wide variety of human interest causes in rural areas of the country. The fund's investment policy statement sets forth allocation ranges for major asset classes, including U.S. large, mid-, and small-cap stocks, international equities, and domestic and international bonds.

When revising its outlook for the capital markets, CME typically applies data from GloboStats Research on the global investable market (GIM) and major asset classes to produce long-term estimates for risk premiums, expected return, and risk measurements. Although they have worked with GloboStats for many years, CME is evaluating the services of RiteVal, a competing research firm, via a trial offer. Unlike the equilibrium modeling approach applied to GloboStats's data, RiteVal prefers to use a multifactor modeling approach. Both research firms also provide short- and long-term economic analysis.

CME has asked Pauline Cortez, chief investment officer, to analyze the benefit of adding U.S. real estate equities as a permanent asset class. To determine the appropriate risk premium and expected return for this new asset class, Cortez needs to determine the appropriate risk factor to apply to the international capital asset pricing model (ICAPM). Selected data from GloboStats is shown in Exhibit 1.

Exhibit 1

Selected Data from GloboStats

Asset Class	Standard Deviation	Covariance with GIM	Integration with GIM	Sharpe Ratio
U.S. real estate	14.0%	0.0075	0.60	n/a
Global investable market				0.36
Additional Information				
Risk-free rate: 3.1%	Expected return for the GIM: 7.2%			

Cortez's colleague Jason Grey notes that U.S. real estate is a partially segmented market. For this reason, Grey recommends using the Singer-Terhaar approach to the ICAPM and assumes a correlation of 0.39 between U.S. real estate and the GIM.

Cortez reviews RiteVal data (Exhibit 2) and preferred two-factor model with global equity and global bonds as the two common drivers of return for all other asset classes.

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Exhibit 2

Selected Data from RiteVal

	Factor Sensitivities		
Asset Class	Global Equity	Global Bonds	Residual Risk (%)
U.S. real estate equities	0.60	0.15	4.4
Global timber equities	0.45	0.20	3.9
Additional Information			
Variances	0.025	0.0014	
Correlation between global equities and global bonds: 0.33			

Grey makes the following observations about the two different approaches the research firms use to create their respective covariance matrices:

- GloboStats uses a historical sample to estimate covariances, whereas
- RiteVal uses a target covariance matrix by relating asset class returns to a particular set of return drivers.

Grey recommends choosing the GloboStats approach.

Cortez states: I disagree. We will use the results of both firms by calculating a weighted average for each covariance estimate.

Grey finds that RiteVal's economic commentary reveals a non-consensus view on inflation. Specifically, they believe that a near-term period of deflation will surprise many investors but that the current central bank policy will eventually result in a return to an equilibrium expected level of inflation.

Grey states: If RiteVal is correct, in the near-term our income producing assets, such as Treasury bonds and real estate, should do well because of the unexpected improvement in purchasing power. When inflation returns to the expected level, our equities are likely to perform well.

Cortez points out that RiteVal uses an econometrics approach to economic analysis, whereas GloboStats prefers a leading indicator-based approach. Cortez and Grey discuss these approaches at length.

Cortez comments: The big disadvantage to the leading indicator approach is that it has not historically worked because relationships between inputs are not static. One major advantage to the econometric approach is quantitative estimates of the effects on the economy of changes in exogenous variables."

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7. Using the data provided in Exhibit 1 and assuming perfect markets, the calculated beta for U.S. real estate is *closest to*:

A. 1.08.
B. 0.58.
C. 0.38.

Answer = B

β_i = Cov (R_i,R_M)/*Var*(R_M)

Note that covariance is given as 0.0075.

Find *Var*(R_M) by using the Sharpe ratio = RP_M/σ_M and solve for σ_M

Expected return - Risk-free rate = RP_M
7.2% - 3.1% = 4.1% (or 0.041)

σ_M = 0.041/0.36 = 0.1139
Var(R_M) = $(0.1139)^2$ = 0.0130
β_i = 0.0075/0.0130 = **0.58**

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"Capital Market Expectations," by John P. Calverley, Alan M. Meder, Brian D. Singer, and Renato Staub
Section 3.1.4

8. Using the data provided in Exhibit 1 and Grey's recommended approach and assumed correlation, the expected return for U.S. real estate is *closest to*:

A. 6.3%.
B. 6.9%.
C. 4.3%.

Answer = A

Grey recommends the Singer–Terhaar approach and a correlation of 0.39 between real estate and the market. Use these steps to solve for the expected return:

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Step 1	Fully integrated risk premium	(14.0% × 0.39 × 0.36) =	1.97%
	Fully segmented risk premium	(14.0% × 0.36) =	5.04%
Step 2	Fully integrated and segmented risk premium, considering the degree of integration	(1.97% × 0.6) + (5.04% × 0.4) =	3.20%
Step 3	Expected return estimate: Fully integrated and segmented risk premium + Risk-free rate	3.20% + 3.1% =	**6.3%**

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Section 3.1.4

9. Using the multifactor model preferred by RiteVal and Exhibit 2, the standard deviation of U.S. real estate is *closest* to:

A. 23.1%.
B. 21.0%.
C. 24.5%.

Answer = A

F_1 = Factor 1, Global Equity
F_2 = Factor 2, Global Bonds

√Var (F_1) = $0.025^{0.5}$ = 0.1581
√Var (F_2) = $0.0014^{0.5}$ = 0.0374
$Cov(F_1,F_2)$ = $\sigma_1\sigma_2\rho_{1,2}$ = 0.1518 × 0.374 × 0.33 = 0.002

Real estate factor sensitivities are $b_{re,1}$ 0.6 for sensitivity to global equity and $b_{re,2}$ 0.15 for global bonds. Residual risk variance (given) is $Var\ (\varepsilon_{re})$ = 0.044.

Variance of real estate =

$$b^2_{\text{re, 1}} VAR\left(F_1\right) + b^2_{\text{re, 2}} VAR(F_2) + 2\, b_{\text{re, 1}}\, b_{\text{re, 2}}\, COV(F_1,\ F_2) + \text{Var}(\epsilon_{\text{re}})$$
$$= (0.6)^2 \times 0.025 + (0.15)^2 \times 0.0014 + 2 \times 0.6 \times 0.15 \times 0.002 + 0.044 = 0.053392$$

Square root of variance is the standard deviation = 0.231, or **23.1%.**

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10. Cortez's statement to use the work of both firms to determine a covariance estimate is *most likely* an example of:

A. nonstationarity.
B. a prudence trap.
C. a shrinkage estimate.

Answer = C

Cortez's statement to calculate a weighted average for the covariance estimate is an example of shrinkage estimation. Shrinkage estimation involves taking a weighted average of a historical estimate of a parameter and some other parameter estimate, in which the weights reflect the analyst's relative belief in the estimates. A shrinkage estimator of the covariance matrix is a weighted average of the historical covariance matrix and an alternative estimator of the covariance matrix.

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"Capital Market Expectations," by John P. Calverley, Alan M. Meder, Brian D. Singer, and Renato Staub
Sections 2.2.3, 2.2.8, 3.1.1.2

11. Grey's statement regarding the impact of RiteVal's inflation scenario is *most likely*:

A. correct.
B. incorrect because of his comment about real estate.
C. incorrect because of his comment about equities.

Answer = B

In deflation, real estate experiences downward pricing pressure (negative) and bonds benefit from improving purchasing power (positive). Therefore, Grey's comment about real estate is incorrect. In equilibrium, inflation at or below expectations is a positive for equities. The comment about equities is correct.

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Section 4.1.3

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12. Cortez's comment with regard to the two different approaches to economic analysis is *most likely*:

A. incorrect because of the statement regarding leading indicators.
B. incorrect because of the statement regarding econometrics.
C. correct.

Answer = C

Cortez's statement is entirely correct. A disadvantage of the leading indicators–based approach is that historically, it has not consistently worked because relationships between inputs are not static. An advantage to the econometric approach is that it provides quantitative estimates of the effects on the economy of changes in exogenous variables.

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Sections 4.5.4

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Equity Portfolio Management – McMorris

McMorris Asset Management (MCAM) is an investment adviser based in Atlanta, Georgia. Tom Morris manages the active equity portfolios. Dan McKeen manages the semiactive equity portfolios and the semiactive derivatives portfolios. They are preparing to meet with Maggie Smith, the chief investment officer of Philaburgh Capital, who is considering hiring MCAM to replace one of its current managers.

At the meeting, Morris and McKeen discuss MCAM's investment approaches with Smith and present her with the risk and return characteristics detailed in Exhibit 1.

Exhibit 1: Summary Information for MCAM's Investment Strategies

	Approaches		
	Active Equity	**Semiactive Equity**	**Semiactive Derivatives**
Tracking risk	4.90%	3.70%	3.30%
Information ratio	0.50%	0.60%	0.70%
Expected alpha	2.40%	2.20%	2.30%

Smith asks if MCAM's active equity strategy is long only. McKeen responds that MCAM uses market-neutral long–short strategies for several reasons. He indicates that long–short strategies:

Reason 1: enhance portfolio performance by increasing the beta
Reason 2: generate alpha by identifying undervalued or overvalued securities
Reason 3: benefit from events that give rise to price changes, which are more prevalent on the short side than on the long side.

Smith considers each approach listed in Exhibit 1 but is uncertain about what would be an optimal investment strategy. She makes the following comments about market efficiency:

Comment 1: A firm's stock price does not reflect all publicly available company information, and good research can uncover sound investment opportunities.

Comment 2: Philaburgh's mandate is for managers to limit volatility around the benchmark return while providing incremental returns that exceed management costs.

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Smith states, "In order to ensure investment discipline, Philaburgh uses two methods to evaluate an investment manager's style." She then reviews the current characteristics of MCAM's active equity approach using the first method, as presented in Exhibit 2.

Exhibit 2: Method 1—Portfolio Characteristics for MCAM Active Equity Strategy Based on Current-Period Data

	Active Equity	Benchmark
Number of stocks	50	1,000
Market value	$180 billion	$4,400 billion
Weighted average market capitalization	$4.0 billion	$4.1 billion
Dividend yield	3.00%	2.00%
Price/Earnings	8×	12×

Smith then selects three benchmarks—value, blend, and growth—in addition to the normal benchmark to assess the manager's style using the second method, as presented in Exhibit 3.

Exhibit 3: Method 2—Return Correlations between MCAM's Active Equity Approach and Benchmarks Based on 36 Months of Historical Data

	Value	Blend	Growth
Coefficient of determination	0.39	0.45	0.65

Smith indicates that Philaburgh's performance measurement is compliant with the Global Investment Performance Standards. In considering investment performance, Morris identifies three risks that may prevent MCAM's active equity approach from generating incremental returns:

Risk 1: Overestimating a stock's earnings per share growth.
Risk 2: Deciding incorrectly that a stock's earnings multiple would not contract.
Risk 3: Misjudging whether a stock's undervaluation will correct within the investor's investment horizon.

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Smith concludes by telling Morris that she is impressed by MCAM's track record in adding alpha in the US stock market. However, she believes that the European equity markets are likely to outperform the US equity markets over the next five years. She asks whether MCAM can structure a portfolio to capture both opportunities. Morris offers to combine his long–short active equity strategy with a EURO STOXX 50 Index strategy.

---

13. Based on Exhibit 1, the approach that is *least likely* efficient with respect to delivering active returns for a given level of tracking risk is:

    A. semiactive derivatives.
    B. active equity.
    C. semiactive equity.

    Answer = B

    The active equity strategy has the lowest information ratio and is thus least efficient in delivering active returns. Information ratio = Active return (Portfolio – Benchmark)/Tracking risk. The information ratio is 0.5%, which is the lowest of the three.

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    "Equity Portfolio Management," Gary L. Gastineau, Andrew R. Olma, and Robert G. Zielinski
    Section 3

14. McKeen's response to Smith's question about MCAM's active equity style is *least likely* correct with respect to:

    A. Reason 3.
    B. Reason 2.
    C. Reason 1.

    Answer = C

    A market-neutral strategy is constructed to have an overall zero beta and thus show a pattern of returns expected to be uncorrelated with equity market returns.

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    Section 5.3.1

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15. Smith's Comment 1 and Comment 2, respectively, are *most likely* consistent with an investment style that is:

A. Comment 1 semiactive; Comment 2 active
B. Comment 1 active; Comment 2 semiactive
C. Comment 1 active; Comment 2 active

Answer = B

Comment 1 describes the characteristics of an active approach, whereas Comment 2 describes the characteristics of a semiactive approach.

CFA Level III
"Equity Portfolio Management," Gary L. Gastineau, Andrew R. Olma, and Robert G. Zielinski
Section 3

16. Based on Exhibits 2 and 3, what can Smith *most likely* determine about MCAM's investment style over time? MCAM's style has:

A. not drifted.
B. drifted from value to growth.
C. drifted from growth to value.

Answer = C

The active equity strategy was not value oriented because the returns-based style analysis indicates a growth orientation given a 0.65 coefficient of determination with respect to growth returns. The current holdings, however, depict a value orientation when compared with the manager's normal benchmark given the differences in dividend yield and P/E. MCAM's style has drifted over time from growth to value.

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

17. Which of the risks Morris identifies with respect to MCAM's active equity strategy is *least likely* applicable to a growth-oriented investor?

A. Risk 2
B. Risk 3
C. Risk 1

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Answer = B

The main risk for a value-oriented investor rather than a growth-oriented investor is misinterpreting a stock's cheapness within the investor's time horizon.

CFA Level III
"Equity Portfolio Management," Gary L. Gastineau, Andrew R. Olma, and Robert G. Zielinski
Sections 5.1.1, 5.1.2

18. The type of portfolio that Morris recommends to Smith to take advantage of both US and European equity market opportunities is *most likely* a(n):

A. core satellite.
B. completeness fund.
C. alpha and beta separation.

Answer = C

Alpha and beta separation involve combining an index strategy with a market-neutral active strategy in order to earn a desired beta + alpha outcome. Smith's objective is to realize returns from the European market (beta) + MCAM's active return (alpha). In this case, by using the EURO STOXX 50 index strategy, MCAM is able to offer both strategies combined into an alpha and beta separation strategy for Smith.

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

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Fixed Income Portfolio Management – Chesapeake

Virginia Norfolk, CFA, is head of the client strategy committee at Chesapeake Partners, LLC, an investment consulting firm. Chesapeake advises a diverse client base on a variety of investment matters including asset allocation and manager selection. Each month the committee meets to discuss client inquiries and assignments the consultants are working on. Norfolk convenes the committee to discuss pressing issues for several clients.

Norfolk asks William Burg, a field consultant, to present on a new client, a small college that Chesapeake advises with regard to their pension fund and endowment. Burg needs to recommend to the client an appropriate benchmark for each fund. Burg tells the committee, "I recommend that the pension fund benchmark be changed from the pension's liabilities as the benchmark to a bond market index. The pension is closed to new participants and thus the amount and timing of future cash flows are known. The endowment is invested across many asset classes and generate an adequate return to meet its obligations, which consists of a 5% annual contribution to the college's operating fund. The endowment's benchmark for fixed-income managers should continue to be a bond market index, such as Barclays Aggregate Bond Index."

Alex Manassas, a committee member, asks Burg, "What factors do you consider in selecting a benchmark bond index?" Burg responds, "I look at three key factors when selecting a benchmark. Market value risk should be similar for the portfolio and the benchmark. The longer the duration, the greater the total return potential because rates are low now and the yield curve is so steep. Income risk is important for comparable assured income streams, which can be more stable and dependable in a portfolio with long maturities. The average credit risk in the benchmark should be measured against the investor's overall portfolio and satisfy credit quality constraints in the policy statement."

Boris Markov, CFA, is the firm's actuary and expert on asset liability management. His client is a life insurance company that sells guaranteed investment contracts (GICs). The company hired Chesapeake because it has not met the target yield of 4% on the GICs it sold. Markov proposes a new approach to satisfy the obligation: "First, the new single-period immunization strategy should require as a minimum condition that the duration of the bond portfolio equal the investment horizon. In addition, if the bond portfolio has a yield to maturity equal to the target yield and a maturity equal to the investment horizon, then the target value will be achieved".

Markov then discusses another client that will require a rebalancing of its portfolio after a shift in interest rates over the last year to maintain the initial dollar duration. He uses the data in the table below to explain to the committee his rebalancing methodology.

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Exhibit 1

Data for Initial Portfolio and after Interest Rate Shift

	Initial Portfolio			Portfolio after Rate Shift over One Year		
	Price	Market Value	Duration	Price	Market Value	Duration
Bond #1	$104.35	$10,435,000	5.5	$99.75	$9,975,000	4.7
Bond #2	89.55	8,955,000	2.2	95.00	9,500,000	1.3
Bond #3	107.15	10,715,000	5.4	102.40	10,240,000	4.6

Juan Ramirez, CFA, Chesapeake's chief investment officer, brings forward to the committee two investment issues that he would like to discuss. Ramirez tells the committee, "Some of our client's portfolios are for the purpose of funding liabilities, and I am concerned that these liabilities will not be met, given certain risks. In particular, I have noticed that client portfolios have a substantial position in mortgaged-backed securities. We should reallocate these securities to invest in corporate bonds so the portfolio's convexity matches that of the liabilities."

Ramirez then presents the committee with the second investment issue. He is focused on a presentation that Alpha Managers, an investment firm that hopes to make it onto Chesapeake's "buy list," made recently. He tells the committee, "I am perplexed by the bottom-up capability that Alpha claims to have in adding value to portfolios. They claim to have a bias to yield maximization across securities without regard to rating differentials."

---

19. Is Burg correct with regard to his recommendations to the committee regarding benchmarks for the pension and endowment respectively?

A. Pension: Correct, Endowment: Incorrect
B. Pension: Incorrect, Endowment: Correct
C. Pension: Correct, Endowment: Correct

Answer = B

The investor with liabilities will measure success by whether the portfolio generates the funds necessary to pay out the cash outflows associated with the liabilities-in this case, a defined benefit pension plan. Meeting the liability is the investment objective; as such, it also becomes the benchmark for the portfolio. The endowment is focused on measuring the success of its fixed-income managers and does not have a specific liability to meet, therefore a bond market index is an appropriate benchmark.

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

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Section 2

20. Burg's statement regarding the factors he uses in selecting a benchmark bond index is *most likely*:

A. incorrect regarding credit risk and incorrect regarding market risk.
B. correct regarding market risk and incorrect regarding income risk.
C. incorrect regarding market risk and correct regarding income risk.

Answer = C

Burg is incorrect regarding market risk. Although market risk should be comparable for the portfolio and benchmark index, given a normal upward-sloping yield curve, a bond portfolio's yield to maturity increases as the maturity of the portfolio increases. Because a long duration portfolio is more sensitive to changes in interest rates, a long portfolio will likely fall more in price than a short one. Burg's statement on income risk is correct.

CFA Level III
"Fixed-Income Portfolio Management - Part I," by H. Gifford Fong and Larry D. Guin
Section 3.2.1

21. Is Markov correct regarding the necessary conditions to immunize the GIC portfolio for his client?

A. No, he is incorrect regarding duration
B. Yes
C. No, he is incorrect regarding the bond portfolio characteristics

Answer = C

To immunize a portfolio's target value or target yield against a change in the market yield, a manager must invest in a bond or a bond portfolio whose (1) duration is equal to the investment horizon and (2) initial present value of all cash flows equals the present value of the future liability. Thus, investing in a bond portfolio with a yield to maturity equal to the target yield and a maturity equal to the investment horizon does not assure that the target value will be achieved because of reinvestment risk.

CFA Level III
"Fixed-Income Portfolio Management - Part I," by H. Gifford Fong and Larry D. Guin
Section 4.1.1

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22. Using dollar duration and the data in Exhibit 1, how much cash does Markov's client need to rebalance the portfolio, assuming new investments are in equal proportions of one-third of each bond?

A. $7,993,335.
B. $28,618,000.
C. $8,098,245.

Answer = A

First calculate the dollar duration initially and after the shift in interest rates, as shown in the table below:

Market Value	Duration	Dollar Duration	Market Value	Duration	Dollar Duration
$10,435,000	5.5	$573,925	$9,975,000	4.7	$468,825
8,955,000	2.2	197,010	9,500,000	1.3	123,500
10,715,000	5.4	578,610	10,240,000	4.6	471,040
	Sum	1,349,500			1,063,365

Then calculate a rebalancing ratio: $1,349,500/$1,063,365 = 1.269. Rebalancing requires each position to be increased by 26.9%. The cash required for the rebalancing is calculated as: Cash required = 0.269 × (9,975,000 + 9,500,000 + 10,240,000) = **$7,993,335.**

CFA Level III
"Fixed-Income Portfolio Management - Part I," by H. Gifford Fong and Larry D. Guin
Section 4.1.1.5

23. The risk that Ramirez notes is prevalent in client portfolios is *most likely:*

A. interest rate risk.
B. contingent claim risk.
C. cap risk.

Answer = B

When such assets as mortgage-backed securities have a contingent claim provision, explicit or implicit, there is an associated risk. As rates fall, the security might have coupons halted and principal repaid. This results in reinvestment risk and also limits any potential upside as would be seen with a noncallable security. Mortgaged-backed securities exhibit negative convexity. But corporate bonds, if noncallable, are positively convex.

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CFA Level III
"Fixed-Income Portfolio Management-Part I," by H. Gifford Fong and Larry D. Guin
Section 4

24. Ramirez most likely criticizes the relative-value methodology that Alpha uses to add value because:

A. it better reflects a structure trade.
B. it better reflects a top-down approach to portfolio management.
C. a total return approach is a far superior framework.

Answer = C

Yield measures have limitations as an indicator of potential performance. The total return framework is a superior framework for assessing potential performance for a trade.

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

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Fixed Income Portfolio Management – Laredo

Tyler Austin is a fixed-income portfolio manager at Laredo Advisers. He manages a $1 billion fund that opportunistically seeks the best ideas across fixed-income markets. He meets daily with Odessa Houston, the fund's senior analyst to discuss trade ideas that might be implemented that day. Austin has identified six ideas that he would like Houston to evaluate in more detail for potential inclusion in the fund.

Austin notes that the current low level of interest rates is limiting the potential absolute return the fund generates. He asks Houston to evaluate the use of leverage to enhance returns. He can borrow 25% of the fund's value at an annual interest rate of 1.50% and earn a rate of return of 5% per year on the invested funds.

Houston suggests that another way to use leverage in the portfolio is through the use of repurchase agreements (repos). She makes three statements to Austin regarding the use of repos:

> **Statement 1:** Repos often have maturity dates as short as overnight but can provide more permanent leverage by "rolling over" the position.
>
> **Statement 2:** There are a variety of mechanisms for transferring the securities to the buyer. For example, a custodial bank can take possession of the securities and ensure that both parties' interests are served. This transaction tends to have a lower cost than other transfer arrangements.
>
> **Statement 3:** The repo rate will be lower the higher the quality of the collateral, the shorter the maturity, and the higher the availability of the security being lent.

Austin tells Houston that he is concerned about the potential for rates to rise and wants to explore how the fund's duration can be changed using the futures market. The fund currently has a duration of 5, and he would like to eliminate all interest rate risk. Houston uses the data in Exhibit 1 for her analysis.

Exhibit 1

Futures Market Data

Futures contract price	$100,000
Conversion factor	1.17
Duration of cheapest-to-deliver (CTD) bond	4.9
Market price of cheapest-to-deliver bond	$96,500

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Austin is intrigued by the incremental yield he could earn by buying an Italian sovereign bond. A dealer provides a quote at a spread of 350 bps over US Treasuries for a 5% coupon, 10-year maturity Italian Buoni del Tesoro Poliennale (BTP) bond with a duration of 6.75. He asks Houston to assess how much this bond spread could widen over the six-month period he intends to hold the bond before the yield advantage relative to Treasuries would be eliminated.

Austin also asks Houston whether the euro-denominated bonds they buy should be hedged back to the US dollar, the fund's domestic currency. Houston responds that they should hedge back to the US dollar because short-term interest rates are 2.50% in the eurozone and 0.25% in the United States, and her forecast shows that she expects the euro to depreciate by 1.75% relative to the US dollar.

There are US-denominated and euro-denominated bonds in the fund; therefore, Austin wonders whether the fund's duration is still simply an average of the durations of each bond. Houston comments, "International interest rates are not perfectly correlated. Currently, the fund has 80% of the portfolio in US issuers with an average duration of 5.5 and the remainder in German issuers with an average duration of 3.5. Historically, the country beta of Germany (i.e., for German rates relative to US rates) is estimated to be 0.62."

---

25. If Austin uses leverage as he proposes, the rate of return on the portfolio's equity will be *closest* to:

A. 6.25%.
B. 4.70%.
C. 5.88%.

Answer = C

The profit on the borrowed funds accrues to the equity; therefore, the rate of return increases from 5% in the all-equity case to 5.88% when leverage is used:

$$\frac{50,000,000 + 12,500,000 - 3,750,000}{1,000,000,000} = 5.875\ \%$$

The following table provides the calculations:

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		Borrowed Funds	Equity Funds
Amount		$250,000,000	$1,000,000,000
Return rate	5.0%	$12,500,000	$50,000,000
Interest expense	1.5%	$3,750,000	$0
Net profit		$8,750,000	$50,000,000
Component return		3.50%	5.00%
Overall return		5.88%	

CFA Level III
"Fixed-Income Portfolio Management—Part II," H. Gifford Fong and Larry D. Guin
Section 5.2.1

26. Which of Houston's statements regarding repurchase agreements is *least likely* correct:

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

Answer = A

Statement 3 is incorrect. The more difficult it is to obtain the securities, the lower the repo rate. Some securities may be in short supply and difficult to obtain. To acquire these securities, the buyer of the securities (i.e., the lender of funds) may be willing to accept a lower rate.

CFA Level III

"Fixed-Income Portfolio Management—Part II," H. Gifford Fong and Larry D. Guin
Section 5.2.2

27. Based on Exhibit 1, the number of futures contracts Austin needs to sell to eliminate all interest rate risk in the portfolio is closest to:

A. 9,038.
B. 12,372.
C. 10,574.

Answer = B

To hedge against rising rates and eliminate all interest rate risk, the fund Austin manages needs to target a duration of 0 by selling the following number of Treasury futures contracts:

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

where D = duration, T = target, I = initial.

$$\left(\frac{(0-5.00)\times 1{,}000{,}000{,}000}{4.9\times 96{,}500}\right)\times 1.17 = \frac{-5{,}000{,}000{,}000}{472{,}850}\times 1.17 = -12{,}371.78 = -12{,}372$$

CFA Level III
"Fixed-Income Portfolio Management—Part II," H. Gifford Fong and Larry D. Guin
Section 5.3.4

28. Given Austin's time horizon, the amount by which spreads for BTP bonds could widen before their yield advantage relative to Treasuries would be eliminated is *closest* to:

A. 37 bps.
B. 52 bps.
C. 26 bps.

Answer = C

The yield advantage is 350 bps annually, or 175 bps over Austin's six-month horizon. The BTP bond has a duration of 6.75; therefore, 1.75% = 6.75 × W. This can be reduced to 175/6.75 = 26, so W = **26 bps**.

CFA Level III
"Fixed-Income Portfolio Management—Part II," H. Gifford Fong and Larry D. Guin
Section 6.3

29. Based on Houston's forecast for the euro relative to the US dollar, and assuming interest rate parity holds, should Austin *most likely* hedge the portfolio's euro exposure using forward contracts?

A. No, because the euro is expected to depreciate by more than implied by the forward contracts
B. No, because the euro is expected to depreciate by less than implied by the forward contracts
C. Yes

Answer = B

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Using interest rate parity, the euro is expected to depreciate by 0.25% – 2.50% = –2.25%. Houston believes that the euro will depreciate by only 1.75%. Based on expected returns alone, Austin should not hedge the currency risk using a forward contract because he would lock in a 2.25% loss in the euro.

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

30. Based on Houston's comment regarding international interest rates, the contribution to the portfolio's overall duration from German bonds *is closest* to:

A. 0.68.
B. 2.17.
C. 0.43.

Answer = C

The duration of the German bonds is 3.5, and the country beta is estimated to be 0.62 relative to the United States. The duration contribution to a US domestic portfolio is 3.50 × 0.62 = 2.17. Because a portfolio's duration is a weighted average of the duration of the bonds in the portfolio, the contribution to the portfolio's duration is equal to the adjusted German bond duration of 2.17 multiplied by its weight in the portfolio: 2.17 × 0.20 = 0.43.

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Section 6.1

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Application of Derivatives – Watanabe

Kamiko Watanabe, CFA, is a portfolio adviser at Wakasa Bay Securities. She specializes in the use of derivatives to alter and manage the exposures of Japanese equity and fixed-income portfolios. She has meetings today with two clients, Isao Sato and Reiko Kondo.

Sato is the manager of the Tsushima Manufacturing pension fund, which has a target asset allocation of 60% equity and 40% bonds. The fund has separate equity and fixed-income portfolios, whose characteristics are provided in Exhibits 1 and 2. Sato expects equity values to increase in the coming two years and, in order to avoid substantial transaction costs now and in two years, would like to use derivatives to temporarily rebalance the portfolio. He wants to maintain the current beta of the equity portfolio and the current duration of the bond portfolio.

Exhibit 1: Tsushima Pension Fund Equity Portfolio Characteristics	
Current market value	¥27.5 billion
Benchmark	Nikkei 225 Index
Current beta	1.15

Exhibit 2: Tsushima Pension Fund Bond Portfolio Characteristics	
Current market value	¥27.5 billion
Benchmark	Nikko Bond Performance Index composite
Current duration	4.75

In order to rebalance the pension fund to its target allocations to equity and bonds, Watanabe recommends using Nikkei 225 Index futures contracts, which have a beta of 1.05 and a current contract price of ¥1,525,000, and Nikko Bond Performance Index futures, which have a duration of 6.90 and a current contract price of ¥4,830,000. She assumes the cash position has a duration of 0.25.

Sato wants to know if other derivatives could be used to rebalance the portfolio. In response, Watanabe describes the characteristics of a pair of swaps that, together, would accomplish the same rebalancing as the proposed futures contracts strategy.

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Kondo manages a fixed-income portfolio for the Akito Trust. The portfolio's market value is ¥640 million, and its duration is 6.40. Kondo believes interest rates will rise and asks Watanabe to explain how to use a swap to decrease the portfolio's duration to 3.50. Watanabe proposes a strategy that uses a pay-fixed position in a three-year interest rate swap with semi-annual payments. Kondo decides he wants to use a four-year swap to manage the portfolio's duration. After some calculations, Watanabe tells him a pay-fixed position in a four-year interest rate swap with a duration of –2.875 would require a notional principal of ¥683 million (rounded to the nearest million yen) to achieve his goals.

Kondo asks Watanabe whether it would be possible to cancel the swap prior to its maturity. Watanabe responds with three statements:

> **Statement 1:** If you purchase a swaption from the same counterparty as the original swap, it is common to require the payments of the two swaps be netted or cash settled if the swaption is exercised.
>
> **Statement 2:** You could purchase a payer swaption with the same terms as the original swap. This approach would protect you from falling fixed swap rates but at the cost of the premium you would pay to the swaption counterparty.
>
> **Statement 3:** During the life of the swap, you could enter into a new pay-floating swap with the same terms as the original swap, except it would have a maturity equal to the remaining maturity of the original swap. However, the fixed rate you receive might be lower than the fixed rate you are paying on the original swap.

---

31. The number of Nikko Bond Performance Index futures Sato must sell to rebalance the Tsushima pension fund to its target allocation is *closest to*:

A. 149.
B. 1,594.
C. 743.

Answer = C

The total value of the portfolio is ¥55.0 billion, and the 40% target allocation to bonds would be ¥22.0 billion, but the current allocation is ¥27.5, or ¥5.5 billion more. In order to correct this discrepancy, the equivalent of ¥5.5 billion in bonds with a duration of 4.75 must be sold using bond futures and then converted to equity exposure with a 1.15 beta using stock futures. The number of bond futures contracts to be sold (shorted) is

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$$N_{bf} = \frac{(MDUR_T - MDUR_B)}{MDUR_f} \times \left(\frac{B}{f_B}\right),$$

where $MDUR_T$ is the target modified duration (0.25 for cash), $MDUR_B$ is the current bond portfolio duration (4.75), $MDUR_f$ is the modified duration of the futures contract (6.90), B is the value of the bonds being converted to cash (¥5.5 billion), and f_B is the price of one bond futures contract (¥4,830,000). Therefore, the number of contacts is;

$$N_{bf} = \frac{(0.25 - 4.75)}{6.90} \times \left(\frac{5,\,500,\,000,\,000}{4,\,830,\,000}\right) = -742.64$$

or sell **743** bond contacts.

CFA Level III
"Risk Management Applications of Forward and Futures Strategies," Don M. Chance
Section 4.1

32. The number of Nikkei 225 Index futures Sato must buy to rebalance the Tsushima pension fund to its target allocation is *closest to*:

A. 3,950.
B. 3,293.
C. 4,148.

Answer = A

The total value of the portfolio is ¥55.0 billion and the 60% target allocation to equity would be ¥33.0 billion, but the current allocation is ¥27.5 or ¥5.5 billion less. In order to correct this discrepancy, the equivalent of ¥5.5 billion in bonds with a duration of 4.75 must be sold using bond futures (converted to synthetic cash) and then converted to equity exposure with a 1.15 beta using stock futures. The number of equity futures contracts to be bought is;

$$N_{sf} = \frac{(\beta_T - \beta_S)}{\beta_f} \times \left(\frac{S}{f_S}\right),$$

where β_T is the target beta (1.15), β_S is the beta of the synthetic cash position (0), β_f is the beta of the futures contract (1.05), S is the value of the stock being created from the synthetic cash position (¥5.5 billion), and f_S is the price of one equity futures contract (¥1,525,000). Therefore, the number of contracts is;

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$$N_{sf} = \frac{(1.15 - 0.00)}{1.05} \times \left(\frac{5,\,500,\,000,\,000}{1,\,525,\,000} \right) = -3,\,950.04$$

CFA Level III
"Risk Management Applications of Forward and Futures Strategies," Don M. Chance
Section 4.1

33. Which of these is *most likely* to be a characteristic of one of the two swaps Watanabe describes to Sato?

A. Receive return on Nikko Bond Performance Index
B. Receive Libor
C. Pay return on Nikkei 225 Index

Answer = B

One of the swaps would be pay Nikko Bond Performance Index return and receive Libor.

CFA Level III
"Risk Management Applications of Swap Strategies," Don M. Chance
Section 4.3

34. The duration of the swap in Watanabe's first proposal to Kondo is closest to:

A. –2.00.
B. –2.75.
C. –1.75.

Answer = A

A pay-fixed (receive-floating) position in an interest rate swap is similar to issuing a fixed-rate bond and buying a floating-rate bond with the proceeds. The duration of the fixed-rate bond is approximately 75% of the maturity, and the swap is short this duration. The duration of the floating-rate bond is approximately half its repricing frequency, and the swap is long this duration. Therefore, the duration of the three-year swap with semi-annual payments is (0.5 × 0.5) – (0.75 × 3) = **–2.00**.

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

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35. Is the notional principal of the swap Watanabe recommends to Kondo *most likely* correct?

A. Yes
B. No, it is too low
C. No, it is too high

Answer = C

The notional principal needed is;

$$NP = B \times \left(\frac{MDUR_T - MDUR_B}{MDUR_S}\right)$$

where *B* is the value of the fixed-income portfolio, and *MDUR* is the duration of *T* = target, *B* = current portfolio, *and S* = swap. Therefore, the correct notional principal is;

$$\text{NP} = 640 \times \left(\frac{3.50 - 6.40}{-2.875}\right) = 645.57$$

or ¥646 million rounded to the nearest million yen. Watanabe recommends a notional principal of ¥683, which is too high.

CFA Level III
"Risk Management Applications of Swap Strategies," Don M. Chance
Section 2.2

36. Which of Watanbe's three statements to Kondo is *least likely* correct?

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

Answer = C

The original swap is pay-fixed, implying that the offsetting swap would be pay-floating. A receiver swaption provides its owner with the right to enter a pay-floating (receive-fixed) in a swap at the exercise fixed rate, whereas a payer swaption provides the right to enter the swap in a pay-fixed position.

CFA Level III
"Risk Management Applications of Swap Strategies," Don M. Chance
Section 5

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Portfolio Management and Wealth Planning – Reyder

Cooper Reyder was asked by her employer, Astounding Wealth Advisors, to attend a symposium on managing assets for high-net-worth individuals. Sessions were available covering a wide range of topics, including managing individual investor portfolios, lifetime financial advice, setting asset allocation policies, and applying risk tolerance concepts to asset allocation. The Jones Family Case Study, shown in Exhibit 1, provided a helpful framework to present and discuss many of the concepts. The moderator, Vince Dunne, conducted the sessions using panel discussions and lectures, each followed by question and answer (Q&A) periods.

The initial session on lifetime financial advice evolved into a discussion of the concept of human capital. The speaker briefly described how the present value of an individual's lifetime of income can be considered as an asset class that should be viewed in relation to financial assets. During the lengthy Q&A period, Reyder made the following additional notes:

- Term life insurance is superior to lifetime payout annuities when attempting to hedge against the risks of the loss of human capital.
- Risk tolerance of the combined portfolio of financial assets and human capital increases proportionally with greater human capital regardless of wage earnings risk.
- The magnitude of loss of human capital at younger ages is less important than the higher probability of death at older ages.

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Exhibit 1 The Jones Family			
Family Member	**Peter** married to Gladys for 33 years	**Gladys** married to Peter for 33 years	**Mark** son and sole heir of Gladys and Peter
Age	56	55	30
Occupation	Owns architecture firm	College library director	Stock broker
Annual Compensation	$70,000 salary, plus $25,000 bonus when business is good	$55,000, cost of living raises averaging 2% each of last 10 years	$40,000 salary plus commissions which were equal to his salary last year in a bull stock market
Psychological Risk Profile Types	Individualist	Methodical	Spontaneous
Stated Client Goals	Retire within ten years. Sell company for at least $2 million	Not to outlive our assets	To benefit from a $1 million irrevocable trust that Dad has promised to establish for me when he sells the company
Investment Portfolio	Jointly owned portfolio valued at $600,000		$120,000 stock portfolio

During the next session about the influence of the psychological risk profile types on various decisions to be ultimately made by the Jones family, Reyder made the following comments:

"Like his mother, Mark is likely to base his decisions on feelings rather than logical thinking. Among the three of them, Gladys is likely to be the most self-assured and independent when choosing a course of action. Peter's type indicates he is more likely to seek a greater allocation to equities in retirement than his wife."

Beyond the material in Exhibit 1, a panel discussion on retirement planning began with an initial set of

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assumptions for Gladys and Peter's retirement period:

- Both retire in the year Peter turns 65, and each has a life expectancy of 85 years.
- Asset allocation for the investment portfolio, as determined by a real return mean-variance model, will be 50% equities and 50% bonds.
- The portfolio will have a constant real rate of return of 3.5%.
- Systematic withdrawals will occur that increase with inflation.
- At retirement, purchase a $300,000 20-year term life insurance policy on Peter.

Moderator Dunne asked, "Are there any problems with the way the family's risks are being addressed in retirement?"

In the Q&A session, Reyder asked, "When is it appropriate to use a validated questionnaire to assess risk? I've heard the following conflicting views from different financial advisers: Some say it is appropriate

- in order to help an adviser better understand behavioral drivers that lead to individual's risk-taking decisions.
- only in the case when one can assume that investors facing choices with equivalent returns will choose the investment with the lowest risk.
- when clarifying the source of wealth, measure of wealth, and stage of life contribute to identifying risk tolerance."

During a discussion of ways Gladys could achieve her stated goal, the following statements were made:

- A jointly owned fixed annuity lifetime payout would achieve her goal as well as providing purchasing power protection.
- A jointly owned variable payout lifetime annuity product would also meet her goal but would provide less certainty in terms of cash flow.
- Although annuity products would help, it is more important to change the asset allocation of the joint portfolio toward less risk.

Mark's stated goal prompted a review of the use of trusts to implement investment and estate planning strategies. Reyder was unfamiliar with trusts. After listening to Dunne's lecture on the topic, Reyder summed up the possibilities to see if she had heard him correctly.

"In establishing an irrevocable trust, Peter would be the grantor and Mark would be the beneficiary. A motivation for using this structure could be for Peter to make resources available to Mark without yielding control of those resources to him. A discretionary irrevocable trust could enable the trustee to determine how much to distribute to Mark from time to time based on Mark's general welfare, but the assets cannot be protected from claims made by Mark's creditors."

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37. Which of Reyder's additional notes from the discussion on human capital is *most* accurate? Her note about:

A. the magnitude of loss of human capital
B. the risk tolerance of the combined portfolio
C. term life insurance versus annuities

Answer = C

The statement regarding term life insurance is most accurate. Life insurance is a perfect hedge against the loss of human capital in the event of death, whereas annuities address longevity risk. Although overall risk tolerance increases with human capital, overall risk tolerance decreases with greater wage risk. The magnitude of loss of human capital at younger ages is much more important than the higher probability of death at older ages.

CFA Level III
"Lifetime Financial Advice: Human Capital, Asset Allocation, and Insurance," Roger G. Ibbotson, Moshe A. Milevsky, Peng Chen, and Kevin X. Zhu
Section 2

38. Regarding the session about the influence of psychological risk profiles on decisions, Reyder's comments about which of the Jones family members is *most* accurate?

A. Gladys
B. Peter
C. Mark

Answer = B

The comment about Peter is most accurate. As an individualist, he is less risk averse than Gladys, who is a methodical investor. Peter is thus more likely to want to increase equity exposure than Gladys. Mark (spontaneous) bases his decisions on feelings, whereas Gladys (methodical) decides based on logical thought. Gladys is not the most self-assured-that is a characteristic of the individualist.

CFA Level III"Managing Individual Investor Portfolios," James W. Bronson, Matthew H. Scanlan, and Jan R. Squires
Section 3.2.3

39. The *best* answer to Dunne's question about the family's risk exposure in retirement is:

A. the proposed life insurance purchase adequately protects against Peter's mortality risk.

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B. that the family's risks are appropriately addressed because the mean–variance model accounts for both financial market and longevity risks.
C. financial market risk remains, given the rate of return and withdrawal assumptions.

Answer = C

The family is still exposed to financial market risk because the constant real return assumption with systematic withdrawals may underestimate the effect of short-term market fluctuations early in retirement and cause the family to eventually run out of money.

CFA Level III
"Lifetime Financial Advice: Human Capital, Asset Allocation, and Insurance," Roger G. Ibbotson, Moshe A. Milevsky, Peng Chen, and Kevin X. Zhu
Section 2

40. The *best* answer to Reyder's question about validated questionnaires relates to the investor's:

A. behavioral links to risk taking.
B. wealth and stage of life.
C. rational risk–return choices.

Answer = A

A questionnaire is used to assess risk based on behavioral factors. A predictive link must exist from the questionnaire responses to the resulting personality typing that is derived, as well as to the subsequent investment behavior that occurs.

CFA Level III
"Managing Individual Investor Portfolios," James W. Bronson, Matthew H. Scanlan, and Jan R. Squires
Section 3.2.3

41. Which of the statements made about meeting Gladys' stated goal is *most* accurate? The statement regarding:

A. fixed annuity products
B. revised asset allocation
C. variable annuity products

Answer = C

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A jointly owned variable payout lifetime annuity product would provide cash flows until the end of the surviving spouse's lifetime. Therefore, the Jones family will not outlive the assets. It is true there is less certainty regarding the cash flows because they are linked to the performance of the underlying investments.

CFA Level III
"Lifetime Financial Advice: Human Capital, Asset Allocation, and Insurance," Roger G. Ibbotson, Moshe A. Milevsky, Peng Chen, and Kevin X. Zhu
Section 3

42. In Reyder's summary on the use of trusts to meet Mark's stated goal, the statement that is *least* accurate is the one dealing with:

A. claims by creditors.
B. yielding control of resources.
C. trust distributions.

Answer = A

The statement about the claims by creditors is inaccurate because the trust assets cannot be reached by the beneficiary's creditors. The other statements are accurate.

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

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

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Philanthropy Source Asset Management (PSA) is a US-based investment consultant for non-profit organizations, including foundations and endowments. In addition to advising on investment policy and asset allocation, PSA offers asset management services for smaller foundations and endowments. Edward Chen, CFA, a senior client adviser with PSA, is preparing for meetings with individuals representing two new US-based clients, the Magyar Foundation (MF) and the Cheyenne Endowment (CYE). Both institutions have hired PSA as their new adviser after experiencing sub-par investment returns over the past three years.

MF provides grants to local charitable organizations to support their operating and capital improvement needs. MF seeks to maintain its grant spending at no more than 5% of the 12-month average asset value, the minimum level required to maintain its US tax-exempt status, because it anticipates no further additions or contributions to its available funds. MF has recently added two independent trustees to its decision-making board: Richard Larson, who has been a director at three area banks, and Christine Kuzmych, an experienced life insurance industry investment professional. Chen meets with them to discuss potential concerns with MF's investment policy.

Larson tells Chen: "I would like MF's investment policy to reflect my belief that MF should have a more substantial community impact. This change could be accomplished by funding large capital improvement projects for two local charities over the next five years. The timing of the charities' cash requirements is expected to be quite irregular, so we may need to reduce portfolio risk. In my professional experience there are similarities between a bank's management of its liabilities and a foundation's management of its spending requirements. We should consider adopting an asset/liability management model similar to that used by banks. Both foundation and bank portfolios have intermediate-term time horizons. However, foundations have lower liquidity requirements than banks, and because of the need to provide stable funding for required charitable grants, foundations have lower risk tolerances."

Kuzmych believes comparing needs of an insurance company and MF might be helpful in preparing MF's investment policy statement. She comments: "MF's grants are similar to a property and casualty insurance company's liabilities in that outlays are relatively certain in value but uncertain in timing. In addition, MF's liquidity requirements are similar to those of a property and casualty insurer. These insurers keep an asset valuation reserve to deal with their liquidity requirements. However, in contrast to a property and casualty insurance company, MF can avoid income and capital gains tax considerations."

Kuzmych continues, "Mr. Larson and I serve on the board of directors for CYE. CYE funds 75% of Cheyenne College's annual administrative budget and actively solicits donations through annual fundraisers. Donations, equal to approximately 3% of the portfolio's current value, offset potential shortfalls between average returns and the spending rate. In preparation for our discussion regarding a new investment policy statement for CYE, I have examined MF's investment policy. After noting

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similarities and differences between CYE's and MF's portfolios, I have reached the following conclusions:

Conclusion I: The spending policies of both portfolios must balance the needs of current and future beneficiaries.

Conclusion II: The magnitude of importance that CYE's portfolio distributions have in Cheyenne College's administrative budget reduces CYE's risk tolerance.

Conclusion III: The portfolios of MF and CYE each have long time horizons."

Larson adds: "Ms. Kuzmych and I have limited experience with alternative investment funds, but it appears to us that they function as another type of institutional investor. Would you please explain how their investment policies compare with those of foundations and endowments?"

Chen informs Larson and Kuzmych: "PSA's client portfolios use our proprietary alternative investment mutual funds, such as the Alpha Commodity Pool Mutual Fund and the Omega Market Neutral Mutual Fund. Alpha and Omega can be thought of as investment intermediaries. All institutional investors are generally either financial or investment intermediaries and exhibit some of the following characteristics:

Characteristic I: They have well defined purposes besides investing.

Characteristic II: The amounts of money invested are usually larger relative to private investors.

Characteristic III: Investment objectives and constraints cannot be expected to generally apply to all members of a given group.

---

43. MF is *most likely* a(n):

A. operating foundation.
B. independent foundation.
C. community foundation.

Answer = B

MF is an independent foundation. An independent (or private) foundation is a grant-making organization established to aid social, educational, charitable, or religious activities. The decision-making authority lies with the donor, members of the donor's family, or independent trustees. At least 5% of the 12-month average asset value constitutes an annual spending requirement. Independent foundations generally do not engage in fund raising campaigns and may not receive any new contributions from the donor nor receive any public support.

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CFA Level III
"Managing Institutional Investor Portfolios" by R. Charles Tschampion, Lawrence B. Siegel, Dean J. Takahashi, and John L. Maginn
Section 3.1

44. When suggesting that MF adopt an asset/liability management model, Larson is *most likely* accurate about:

A. liquidity requirements.
B. time horizon.
C. risk tolerance.

Answer = A

Foundations have lower liquidity requirements than banks because they mostly consist of anticipated grant needs. Foundations also have higher return objectives and tolerance for risk than banks, as well as much longer time horizons.

CFA Level III
"Managing Institutional Investor Portfolios" by R. Charles Tschampion, Lawrence B. Siegel, Dean J. Takahashi, and John L. Maginn
Sections 3.1 and 5.1.3

45. In comparing MF's investment policy with a property and casualty insurance company's investment policy, Kuzmych is *most likely* correct about:

A. liquidity requirements.
B. tax considerations.
C. the timing of outlays.

Answer = B

As a US-based private foundation, MF is essentially considered a tax-exempt investor. This status differs from a property and casualty insurance company, which is subject to income, capital gains, and other types of taxes.

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"Managing Institutional Investor Portfolios" by R. Charles Tschampion, Lawrence B. Siegel, Dean J. Takahashi, and John L. Maginn
Sections 3.1.5 and 4.1.5

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46. Regarding the comparison of the CYE and MF portfolios, which of Kuzmych conclusions is *most likely*?:

A. Conclusion II
B. Conclusion I
C. Conclusion III

Answer = C

The only correct conclusion is that both the foundation and endowment portfolios have long time horizons. The foundation has no obligation to balance the needs of current and future beneficiaries. CYE has a high tolerance for risk with its long time horizon and ability to replenish itself through donations.

CFA Level III
"Managing Institutional Investor Portfolios" by R. Charles Tschampion, Lawrence B. Siegel, Dean J. Takahashi, and John L. Maginn
Sections 3.1 and 3.2

47. Alpha and Omega are *least likely* consistent with which of the institutional investor characteristics described by Chen?

A. Characteristic II
B. Characteristic I
C. Characteristic III

Answer = B

Mutual funds have no other corporate purpose besides investing. Mutual funds (investment companies) and hedge funds are investment intermediaries, whereas foundations, endowments, insurance companies, and banks are financial intermediaries. Compared with individual investors, they all usually have larger amounts of money to invest.

CFA Level III
"Managing Institutional Investor Portfolios" by R. Charles Tschampion, Lawrence B. Siegel, Dean J. Takahashi, and John L. Maginn
Sections 1 and 5.2

48. When comparing investment objectives and constraints, Alpha and Omega *most likely* have similar:

A. return objectives.

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B. risk tolerances.
C. legal and regulatory constraints.

Answer = C

Both Alpha and Omega are mutual funds, a type of investment company. They would share similar legal and regulatory constraints, such as a need to describe their objectives, constraints, and costs in legally prescribed formats (e.g., a prospectus). However, they would have different risk and return objectives that would match different needs in investor portfolios.

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"Managing Institutional Investor Portfolios" by R. Charles Tschampion, Lawrence B. Siegel, Dean J. Takahashi, and John L. Maginn
Section 5.2

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Behavioral Finance - Emerald

Laura Davidson is a financial advisory partner with Emerald Private Bank (Emerald). Emerald is based in Dublin, Ireland, and manages money on behalf of high-net-worth individual investors, foundations, and endowments. Davidson works in Emerald's private wealth group (PWG). This group is tasked with meeting clients, developing financial plans, and implementing recommendations from Emerald's investment committee. The PWG meets weekly to review new client relationships and to discuss the most appropriate approach for working with each client. Emerald believes there are significant benefits to incorporating behavioral finance as part of their client assessment process and has recently made changes to this effect. During preparation for the weekly PWG meeting, Davidson reviews the financial holdings of three new clients along with their risk assessment questionnaires. Her observations are summarized in Exhibit 1.

Exhibit 1

Client Assessment Highlights

Client	Assessment Notes
Kyra Conner	· Conner is a mid level executive at a publicly traded technology company. Approximately 80 percent of her defined contribution plan is invested in her own company's stock. Conner focuses on short-term performance and is not comfortable with change. Her assessment indicates she is not comfortable taking excessive risks.
Michael Donnelly	· Donnelly recently sold a large publishing firm that he founded 20 years ago. Although he has substantial assets, he spends at a rate that does not appear to be sustainable. He has a very high risk tolerance and enjoys chasing high risk investments recommended by friends. He is strong willed and questions the benefits of portfolio diversification.
Alan O'Driscoll	· O'Driscoll is a retired biotechnology executive. His investment portfolio is comprised of a variety of mutual funds and stocks he has acquired over the years based on recommendations from friends and colleagues. He tends to be drawn to the latest, popular investment themes. He is indicated as a moderate risk taker.

During the meeting, fellow adviser Liam Roche makes the following observation based on the information in Exhibit 1: "Mr. Donnelly should respond favorably to education focused on how the investment program affects financial security, retirement planning, and future generations. However,

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Ms. Connor and Mr. O'Driscoll will respond better to education on portfolio metrics, such as the Sharpe Ratio."

Amanda Kelly is an investment strategist and a member of Emerald's investment committee. Kelly sits in on the PWG meeting to provide an update on the firm's investment themes and positioning. Emerald has developed a multi-factor macro model to forecast such variables as GDP growth and interest rate movements. At the meeting, Kelly provides detailed information about the macro model, including many statistics on how the factors have performed using both in-sample and out-of-sample backtesting. The model appears to have had a good track record of predicting changes in the macro environment over time.

As part of her investment update, Kelly notes that the macro model predicts that interest rates in Europe are going to revert to their historical averages over the next three years and that this move will start within the next six to nine months. Davidson asks Kelly if recent unprecedented monetary policy actions by the Bank of England and European Central Bank have affected the reliability of the model. Kelly responds that because the macro model incorporates more than 100 different variables, central bank policies are accurately accounted for.

Later that day, Kelly attends Emerald's weekly investment committee meeting. Kelly brings up Davidson's concerns regarding how central bank activity may affect the accuracy of their macro model. Emerald's chief investment officer (CIO), who chairs the meeting, dismisses Davidson's concerns as uninformed. The rest of the committee members agree. The CIO then suggests updating their stock selection model to incorporate a price momentum factor. Kelly states that she is concerned that momentum will not be effective across all sectors. The CIO counters that because a number of behavioral biases support the persistence of price momentum, they would be foolish not to incorporate this factor. After a brief discussion, the other committee members agree with the CIO and momentum is added to the stock selection model.

Following the meeting, Kelly is frustrated and writes an email to the CIO with suggestions she believes will improve the dynamics of the investment committee in the future. Her recommendations include the following:

1. Spending more time analyzing prior committee decisions
2. Structuring the committee to ensure a higher level of common skills and experiences
3. Requesting stated opinions from members prior to any formal committee discussion

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49. Benefits of the recent changes to Emerald's client assessment process *least likely* include:

A. closer adherence to client expectations.
B. reducing portfolio risk.
C. improving Emerald's client retention metrics.

Answer = B

Incorporating behavioral finance does not have a direct impact on portfolio risk. In some cases, this approach will help encourage a reduction in portfolio risk, but it may also help other clients to take on more risk as appropriate. Investing as the client expects and improvements to client retention metrics are both benefits of incorporating behavioral finance.

CFA Level III
"Behavioral Finance and Investment Processes," Michael M. Pompian, Colin McLean, and Alistair Byrne
Section 3

50. Roche's observation regarding client education is *least likely* accurate for which client?

A. Kyra Conner
B. Alan O'Driscoll
C. Michael Donnelly

Answer = A

Both Conner and Donnelly are exhibiting emotional biases. When advising emotionally biased investors, advisers should focus on explaining how the investment program being created affects such issues as financial security, retirement, or future generations rather than focusing on quantitative details. The recommendation for Conner would be more suited for a cognitively biased investor. O'Driscoll is a cognitively biased investor (friendly follower). As such, focusing on such metrics as the Sharpe Ratio would be appropriate for this client.

CFA Level III
"Behavioral Finance and Investment Processes," Michael M. Pompian, Colin McLean, and Alistair Byrne
Section 2

51. Which behavioral investor type *most likely* describes Michael Donnelly?

A. Independent individualist
B. Active accumulator

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C. Friendly follower

Answer = B

Donnelly is entrepreneurial and created his own wealth. He lacks spending controls, does not believe in the benefits of portfolio diversification, has a high risk tolerance, and prefers high-risk investments recommended by friends. These are all attributes of an active accumulator.

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Section 2

52. In Kelly's response to Davidson, she is *most likely* exhibiting:

A. illusion of control bias.
B. gambler's fallacy.
C. self-attribution bias.

Answer = A

The illusion of control bias can be encouraged by complex models. The illusion of control can lead to analysts being overly confident when forecasting complex patterns, such as future interest rate movements.

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Section 5

53. Which of the following biases *least likely* provides behavioral support for the factor being added to the stock selection model?

A. Framing
B. Availability
C. Hindsight

Answer = A

Framing bias is a type of cognitive error in which a person answers a question differently based on the way in which it is asked. This behavior is unlikely to explain the persistence of momentum. Regret is a type of hindsight bias that can result in investors purchasing securities

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after a significant run-up in price because of a fear of not participating. This bias could explain momentum. With availability bias, also referred to as the recency effect, the tendency to recall recent events more vividly can result in investors extrapolating recent price gains into the future. This bias could also explain momentum.

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Section 5 and 7

54. Which of Kelly's recommendations is *least likely* to be effective?

A. Recommendation 1
B. Recommendation 2
C. Recommendation 3

Answer = B

It is recommended that investment committees be composed of people with differing skills and experiences, not similar as Kelly has suggested. Decision makers are most likely to learn to control harmful behavioral biases when they have repeated attempts at decision making and there is good quality feedback on prior outcomes. The investment committee chair should actively encourage alternative opinions so that all perspectives are covered. Asking for individual views prior to discussion can help mitigate the impact of group thinking.

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Section 8.6

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Trading Monitoring Rebalancing - Brooks

Placid Lake, LP (Placid), located in upstate New York, is an equity management firm that manages separate accounts and two mutual funds. Pat Brooks is the chief investment officer and Rob Craig is the lead portfolio manager. Jack Ramsey was recently hired as the firm's head trader. Brooks and Craig are meeting with Ramsey to discuss Placid's trading practices and the impact of trading costs on the investment performance of their clients' portfolios.

Craig is analyzing a trade in which Placid had entered an order to buy shares of ABC stock at market. Dealer price and volume information at the time of the trade order and trade execution are provided in Exhibit 1.

Exhibit 1

ABC Stock Price and Volume

Order	Bid Price	Bid Size	Ask Price	Ask Size
Entry	$20.00	200	$20.04	200
Execution	$19.97	200	$20.03	100

Placid attempts to minimize implicit and explicit trading costs by splitting trades into market and limit orders. Illustrating with an example, Brooks describes to Ramsey a purchase order for 300 shares of DEF stock. A market order for 200 shares and a limit order for 100 shares were placed with the stock trading at a bid price of $32.21 and an ask price of $32.25. One hundred shares of the market order were executed at $32.25 and the balance of the market order was executed at $32.32. The limit order, with a limit price of $32.20, was not filled because the stock closed at a price of $32.29. Implicit trading costs related to the market order and the limit order did not equal Placid's targets for these trading cost components. The remaining implicit and explicit costs did equal Placid's targets for these trading cost components. Placid's target trading cost is 15 cents per share and consists of the target trading cost components shown in Exhibit 2.

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Exhibit 2 Target Trading Cost Components	
Bid-ask spread	4 cents
Market impact	5 cents
Brokerage commissions	1 cent
Missed trade opportunity cost	5 cents

Ramsey suggests to Craig and Brooks that implicit trading costs should be measured with reference to a price benchmark. Craig agreed by stating that Placid typically calculates price benchmark measures, such as the volume-weighted average price (VWAP) and implementation shortfall. Brooks, comparing these benchmark measures, makes the following comments regarding the weaknesses of these measures:

Comment A: "Reliability can be limited whenever traders game their trading decisions."

Comment B: "Integration can be delayed because of extensive data collection and interpretation."

Comment C: "Measurement can be constrained by an unfamiliar evaluation framework imposed on traders."

Ramsey, recalling his belief that implementation shortfall was not adequately monitored by his prior firm, asks how Placid deals with market movement when monitoring trading cost components. Craig acknowledges that market movement is a component of trading costs and, accordingly, is captured by Placid in quantifying implementation shortfall. The trade blotter for a recent trade in GHI stock is provided in Exhibit 3.

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Exhibit 3

Trade Blotter for GHI Stock Trades

Day	*Time*	*Price*	*Order Type*	*Order Limit*	*Order Size*	*Order Filled*	*Trade Commissions*
Monday	Close	$50.00					
Tuesday	Pre-open	$50.00	Buy	$49.50	1,000		
Tuesday	Close	$50.50					
Wednesday	Pre-open	$50.50	Buy	$50.40	1,000	700	$25.00
Wednesday	Close	$50.50	Canceled				

Ramsey asks Brooks to share his expectation about how traders should be motivated to trade. Brooks acknowledges that different types of traders may use different types of orders depending on the motivation of the portfolio manager. He states, "At Placid, we wait for prices to move so that we can accumulate and distribute large positions quietly over lengthy trading horizons. We often use limit orders because we are predominantly focused on the price level of trade execution and less focused on the time of trade execution."

Craig asks Ramsey to comment on trading tactics at his previous firm. Ramsey replies that trading tactics were directly related to trade motivation, which enabled him to trade significant positions in stocks the firm had considerable information about. Accordingly, these trades were often expensive in terms of commissions and price concessions in order to achieve timely execution.

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55. Based on Exhibit 1, the effective spread for the executed ABC stock trade is *most likely*:

A. equal to the quoted bid–ask spread.
B. greater than the quoted bid–ask spread.
C. less than the quoted bid–ask spread.

Answer = C

Effective spread is a measure of execution costs that captures both the effects of price improvements and market impact. The effective spread is two times the deviation of the actual execution price from the midpoint of the market quote at the time an order is entered.

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Effective spread = 2× (Actual execution price - Mid-point of market quote at time of order entry) = 2× ($20.03 - $20.02) = 2 cents.

Quoted spread = $20.04 - $20.00 = 4 cents.

The price improvement from the trade has resulted in an effective spread that is lower than the quoted spread by 2 cents (0.02 effective spread - 0.04 quoted spread).

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Section 2.2.1

56. In executing the DEF stock trade, were Placid's execution costs *most likely* less than its target per share cost based on the target trading cost components provided in Exhibit 2?

A. No, because of market impact
B. Yes
C. No, because of the bid–ask spread

Answer = A

Placid did not execute the DEF stock transaction at its target execution cost because of the market impact cost of 7 cents, which exceeded Placid's 5 cent target for market impact cost. The limit order created a missed trade opportunity cost of 4 cents, which was below Placid's 5 cent target for missed trade opportunity cost. The remaining explicit costs (commissions) and implicit costs (bid–ask spread) were equal to the target.

DEF transaction cost = 16 cents.

Explicit cost—commissions: 1 cent

Implicit cost—bid–ask spread: 4 cents

Implicit cost—market impact: 7 cents

Implicit cost—missed trade opportunity cost: 4 cents

Market impact = $32.32 (execution price on the second 100 shares) – $32.25 (execution price on the initial 100 shares) = 7 cents.

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Missed trade opportunity cost = $32.29 (closing price) – $32.25 (ask price at order entry) = 4 cents.

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Section 3.1

57. Which of Brooks's comments about price benchmark measures can *likely* be characterized as a disadvantage of volume-weighted average price?

A. Comment C
B. Comment B
C. Comment A

Answer = C

Gaming (trade delaying) is a disadvantage of VWAP. The VWAP is partly determined at different points of time in the day. Having that knowledge, a trader can compare the current price with an estimate of that day's VWAP and decide to trade that day or wait until the next day. Another disadvantage of VWAP (trade size) is that it is less informative for trades that represent a large fraction of volume. In extreme cases, if a single trading desk were responsible for all the buys in a security during a day, that desk's average price would equal the VWAP and thus appear to be good, regardless of how high the prices paid. Despite these disadvantages, an advantage of the VWAP is that it is readily obtainable and is a useful measure of quality of execution for smaller trades in non-trending markets.

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Section 3.1

58. Using the trade blotter provided in Exhibit 3, the implementation shortfall cost for the GHI stock trade is *closest* to:

A. 86 bps.
B. 119 bps.
C. 91 bps.

Answer = C

Implementation shortfall is 91 bps and is calculated as follows.

Cost of paper portfolio = 1,000 shares × $50.00 decision price = $50,000.

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Return on paper portfolio = ($50.50 price when order canceled - $50.00 decision price) × 1,000 shares = $500.

Value of real portfolio = 700 shares × $50.50 Wednesday closing price = $35,350.

Cost of real portfolio = (700 shares × $50.40 limit price) + $25.00 trading costs = $35,305.

Return on real portfolio = $35,350 - $35,305 = $45.

Dollar implementation shortfall = Return on paper portfolio - Return on real portfolio = $500 - $45 = $455.

Percentage implementation shortfall = Dollar implementation shortfall/Cost of paper portfolio = $455/$50,000

= 0.0091% = **91 bps.**

Implementation shortfall may also be calculated via its separate components:

Commissions = 5 bps.

Calculation: $\frac{\$25}{\$50{,}000} = 0.0005\% = 5 \text{ bps.}$

This amount consists of the trading commissions and costs as a percentage of the paper portfolio.

Realized (-Profit) / Loss = -14 bps.

Calculation: $\frac{700}{1{,}000} \times \frac{\$50.40 - \$50.50}{\$50.00} = 0.7\% \times (-0.002\%) = -0.0014\% = -14 \text{ bps.}$

This amount reflects the difference between the execution price and the relevant decision price and is based on the amount of the order filled.

Delay costs = 70 bps.

Calculation: $\frac{700}{1{,}000} \times \frac{\$50.50 - \$50.00}{\$50.00} = 0.7\% \times 0.01\% = 0.007\% = 70 \text{ bps.}$

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This amount reflects the price difference attributable to the delay in filling the order and is based on the amount of the order filled.

Missed trade opportunity cost = 30 bps.

Calculation: $\frac{300}{1000} \times \frac{\$50.50 - \$50.00}{\$50.00} = 0.3\% \times 0.01\% = 0.003\% = 30 \text{ bps.}$

This amount reflects the difference between the price at cancellation and the original benchmark price (decision price) and is calculated on the amount of the order that was not filled.

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Section 3.1

59. Based on Craig's statement about types of traders and preferred order types, Placid's preference is *most likely* a trader that is:

A. information motivated.
B. value motivated.
C. liquidity motivated.

Answer = B

Value-motivated traders trade only when the price moves into their value range. Their motivation is to take advantage of perceived valuation errors. With respect to trade execution, their preference is price (versus time). They often use limit orders.

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"Execution of Portfolio Decisions," Ananth Madhavan, Jack L. Treynor, and Wayne H. Wagner
Sections 4.1 and 4.2

60. The trading tactics at Ramsey's previous firm *most likely* focused on:

A. liquidity at any cost.
B. the need for a trustworthy agent.
C. costs not being important.

Answer = A

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Liquidity at any cost is a trading tactic for immediate execution in institutional block size. Liquidity at any cost tactics are typically used by information-motivated traders who require timely execution. Weaknesses of liquidity at any cost include high costs, such as commissions and price concessions, related to market impact.

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Section 5.2

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