

2022 CFA®

Exam Prep

SchweserNotes™

Trading, Performance Evaluation,
Manager Selection, Case Studies,
and Ethical and Professional Standards

LEVEL III BOOK 5

KAPLAN SCHWESER

Book 5: Trading, Performance Evaluation, Manager Selection, Case Studies, and Ethical and Professional Standards

SchweserNotes™ 2022

Level III CFA®



SCHWESERNOTES™ 2022 LEVEL III CFA® BOOK 5: TRADING, PERFORMANCE EVALUATION, MANAGER SELECTION, CASE STUDIES, AND ETHICAL AND PROFESSIONAL STANDARDS

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Published in 2021 by Kaplan, Inc.

Printed in the United States of America.

10 9 8 7 6 5 4 3 2 1

ISBN: 978-1-0788-1813-1

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LEARNING OUTCOME STATEMENTS (LOS)

STUDY SESSION 13

The topical coverage corresponds with the following CFA Institute assigned reading:

25. Trade Strategy and Execution

The candidate should be able to:

- a. discuss motivations to trade and how they relate to trading strategy.
- b. discuss inputs to the selection of a trading strategy.
- c. compare benchmarks for trade execution.
- d. recommend and justify a trading strategy (given relevant facts).
- e. describe factors that typically determine the selection of a trading algorithm class.
- f. contrast key characteristics of the following markets in relation to trade implementation: equity, fixed income, options and futures, OTC derivatives, and spot currency.
- g. explain how trade costs are measured and determine the cost of a trade.
- h. evaluate the execution of a trade.
- i. evaluate a firm's trading procedures, including processes, disclosures, and record keeping with respect to good governance.

The topical coverage corresponds with the following CFA Institute assigned reading:

26. Portfolio Performance Evaluation

The candidate should be able to:

- a. explain the following components of portfolio evaluation and their interrelationships: performance measurement, performance attribution, and performance appraisal.
- b. describe attributes of an effective attribution process.
- c. contrast return attribution and risk attribution; contrast macro and micro return attribution.
- d. describe returns-based, holdings-based, and transactions-based performance attribution, including advantages and disadvantages of each.
- e. interpret the sources of portfolio returns using a specified attribution approach.
- f. interpret the output from fixed-income attribution analyses.
- g. discuss considerations in selecting a risk attribution approach.
- h. identify and interpret investment results attributable to the asset owner versus those attributable to the investment manager.
- i. discuss uses of liability-based benchmarks.
- j. describe types of asset-based benchmarks.
- k. discuss tests of benchmark quality.
- l. describe problems that arise in benchmarking alternative investments.
- m. describe the impact of benchmark misspecification on attribution and appraisal analysis.
- n. calculate and interpret the Sortino ratio, the appraisal ratio, upside/downside capture ratios, maximum drawdown, and drawdown duration.
- o. describe limitations of appraisal measures and related metrics.
- p. evaluate the skill of an investment manager.

The topical coverage corresponds with the following CFA Institute assigned reading:

27. Investment Manager Selection

The candidate should be able to:

- a. describe the components of a manager selection process, including due diligence.
- b. contrast Type I and Type II errors in manager hiring and continuation decisions.
- c. describe uses of returns-based and holdings-based style analysis in investment manager selection.
- d. describe uses of the upside capture ratio, downside capture ratio, maximum drawdown, drawdown duration, and up/down capture in evaluating managers.
- e. evaluate a manager's investment philosophy and investment decision-making process.
- f. evaluate the costs and benefits of pooled investment vehicles and separate accounts.
- g. compare types of investment manager contracts, including their major provisions and advantages and disadvantages.
- h. describe the three basic forms of performance-based fees.
- i. analyze and interpret a sample performance-based fee schedule.

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The topical coverage corresponds with the following CFA Institute assigned reading:

28. Case Study in Portfolio Management: Institutional

The candidate should be able to:

- a. discuss tools for managing portfolio liquidity risk.
- b. discuss capture of the illiquidity premium as an investment objective.
- c. analyze asset allocation and portfolio construction in relation to liquidity needs and risk and return requirements and recommend actions to address identified needs.
- d. analyze actions in asset manager selection with respect to the Code of Ethics and Standards of Professional Conduct.
- e. analyze the costs and benefits of derivatives versus cash market techniques for establishing or modifying asset class or risk exposures.
- f. demonstrate the use of derivatives overlays in tactical asset allocation and rebalancing.

The topical coverage corresponds with the following CFA Institute assigned reading:

29. Case Study in Risk Management: Private Wealth

The candidate should be able to:

- a. identify and analyze a family's risk exposures during the early career stage.
- b. recommend and justify methods to manage a family's risk exposures during the early career stage.
- c. identify and analyze a family's risk exposures during the career development stage.
- d. recommend and justify methods to manage a family's risk exposures during the career development stage.
- e. identify and analyze a family's risk exposures during the peak accumulation stage.
- f. recommend and justify methods to manage a family's risk exposures during the peak accumulation stage.
- g. identify and analyze a family's risk exposures during the early retirement stage.
- h. recommend and justify a plan to manage risks to an individual's retirement lifestyle goals.

The topical coverage corresponds with the following CFA Institute assigned reading:

30. Integrated Cases in Risk Management: Institutional

The candidate should be able to:

- a. discuss financial risks associated with the portfolio strategy of an institutional investor.
- b. discuss environmental and social risks associated with the portfolio strategy of an institutional investor.
- c. analyze and evaluate the financial and non-financial risk exposures in the portfolio strategy of an institutional investor.
- d. discuss various methods to manage the risks that arise on long-term direct investments of an institutional investor.
- e. evaluate strengths and weaknesses of an enterprise risk management system and recommend improvements.

STUDY SESSION 15

The topical coverage corresponds with the following CFA Institute assigned reading:

31 & 32. Code of Ethics and Standards of Professional Conduct, Guidance for Standards I–VII

The candidate should be able to:

- 31a. describe the structure of the CFA Institute Professional Conduct Program and the disciplinary review process for the enforcement of the CFA Institute Code of Ethics and Standards of Professional Conduct.
- 31b. explain the ethical responsibilities required by the Code and Standards, including the sub-sections of each standard.
- 32a. demonstrate a thorough knowledge of the CFA Institute Code of Ethics and Standards of Professional Conduct by interpreting the Code and Standards in various situations involving issues of professional integrity.
- 32b. recommend practices and procedures designed to prevent violations of the Code and Standards.

The topical coverage corresponds with the following CFA Institute assigned reading:

33. Application of the Code and Standards: Level III

The candidate should be able to:

- a. evaluate practices, policies, and conduct relative to the CFA Institute Code of Ethics and Standards of Professional Conduct.
- b. explain how the practices, policies, or conduct does or does not violate the CFA Institute Code of Ethics and Standards of Professional Conduct.

STUDY SESSION 16

The topical coverage corresponds with the following CFA Institute assigned reading:

34. Asset Manager Code of Professional Conduct

The candidate should be able to:

- a. explain the purpose of the Asset Manager Code and the benefits that may accrue to a firm that adopts the Code.
- b. explain the ethical and professional responsibilities required by the six General Principles of Conduct of the Asset Manager Code.

- c. determine whether an asset manager's practices and procedures are consistent with the Asset Manager Code.
- d. recommend practices and procedures designed to prevent violations of the Asset Manager Code.

The topical coverage corresponds with the following CFA Institute assigned reading:

35. Overview of the Global Investment Performance Standards

The candidate should be able to:

- a. discuss the objectives and scope of the GIPS standards and their benefits to prospective clients and investors, as well as investment managers.
- b. explain the fundamentals of compliance with the GIPS standards, including the definition of the firm and the firm's definition of discretion.
- c. discuss requirements of the GIPS standards with respect to return calculation methodologies, including the treatment of external cash flows, cash and cash equivalents, and expenses and fees.
- d. explain requirements of the GIPS standards with respect to composite return calculations, including methods for asset-weighting portfolio returns.
- e. explain the meaning of "discretionary" in the context of composite construction and, given a description of the relevant facts, determine whether a portfolio is likely to be considered discretionary.
- f. explain the role of investment mandates, objectives, or strategies in the construction of composites.
- g. explain requirements of the GIPS standards with respect to composite construction, including switching portfolios among composites, the timing of the inclusion of new portfolios in composites, and the timing of the exclusion of terminated portfolios from composites.
- h. explain requirements of the GIPS standards with respect to presentation and reporting.
- i. explain the conditions under which the performance of a past firm or affiliation may be linked to or used to represent the historical performance of a new or acquiring firm.
- j. explain the recommended valuation hierarchy of the GIPS standards.
- k. discuss the purpose, scope, and process of verification.

The following is a review of the Trading, Performance Evaluation, and Manager Selection principles designed to address the learning outcome statements set forth by CFA Institute. Cross-Reference to CFA Institute Assigned Reading #25.

READING 25: TRADE STRATEGY AND EXECUTION

Study Session 13

EXAM FOCUS

This topic review evaluates the trade execution component of the portfolio management process. Understand trade motivations, trade characteristics, and how these—in conjunction with market conditions—determine the most appropriate approach for a trade. Crucial to determining the optimal trading approach are the costs of trading, which are both explicitly observable (i.e., commissions and fees) and implicitly part of the trading strategy (i.e., execution cost and opportunity cost). It is vital that you can calculate the total costs of trading using the implementation shortfall metric and decompose trading costs into component parts due to delay, trading, opportunity, and fixed fees. Finally, understand the areas addressed by the formal trade policy of an asset manager.

MODULE 25.1: TRADE MOTIVATIONS



LOS 25.a: Discuss motivations to trade and how they relate to trading strategy.

Video covering this content is available online.

CFA® Program Curriculum, Volume 5, page 118

The four categories of trade motivation include the following:

1. Profit seeking. Active portfolio managers seek to outperform their benchmark (i.e., generate alpha) trading securities they believe to be mispriced.

- Managers need to act on their insight before the rest of the market; hence, a key consideration is the rate of **alpha decay**. Alpha decay is deterioration in alpha once an investment decision has been made. Managers with higher rates of alpha decay (e.g., managers trading on daily news flow) need to trade in shorter time frames; therefore, they have greater trade *urgency*. Other managers (e.g., managers with insights based on long-term company fundamentals) will have lower rates of alpha decay and therefore a lower trade urgency.
- To minimize **information leakage** (i.e., alert the market to the security mispricing through their trading activity), managers may execute their trade in multiple venues. This may include less transparent venues called **dark pools**, which are trading systems with low pretrade transparency. Orders entered into a dark venue cannot be seen by other market participants before the trade occurs; hence, users know that there is no risk of information leakage. The disadvantage of dark pools is that traders can't see orders on the other side of the trade, so they do not know the pretrade likelihood of

execution. Dark pools are referred to as alternative trading systems (ATSS) in the United States. In Europe, dark pools may be multilateral trading facilities (MTFs) bringing together buyers and sellers, or systematic internalizers (SIs), which are single-dealer liquidity pools. An execution venue with high pretrade transparency is called a lit venue. National stock exchanges are examples of lit venues.

2. Risk management and hedging needs. Portfolios need to be traded to maintain targeted risk exposures. This may be simply rebalancing the portfolio after a change in market conditions (e.g., a fixed income manager targeting a fixed duration level), or hedging to remove a risk factor from a portfolio (e.g., an equity manager hedging foreign exchange exposure). Derivatives trades may be used to facilitate risk management; however, this does require that appropriate liquid derivative contracts exist and that the fund mandate permits their use. When these conditions are not satisfied, trades in underlying securities will be required. Funds that use leverage need to monitor risk levels closely, since leverage magnifies risk.

3. Cash flow needs. These trades are primarily caused by investor subscriptions into, and redemptions out of, the fund.

- The urgency of the trades depends on the nature of the cash flow, the liquidity of fund investments, and the liquidity terms promised to fund investors. For example, a manager investing in listed securities might promise daily liquidity to investors, whereas a hedge fund manager using less liquid securities might require a one-month notice for redemptions.
- Funds with less liquid holdings will find it difficult to invest new client funds in a short time frame. This may lead to *cash drag*, where the low returns of cash cause the fund to underperform the benchmark. To avoid cash drag, a manager may engage in *equitization* strategies where liquid securities such as exchange-traded funds (ETFs) or derivatives are used to gain market exposure while the investment in underlying securities occurs over time.
- Client redemptions are usually based on the fund's net asset value (NAV) using the closing prices of securities. Liquidating securities at closing prices, therefore, eliminates the risk of selling at prices different to those needed to meet redemptions. When determining which securities to sell to meet redemption requests, managers should consider both liquidity and tax implications.

4. Corporate actions, margin calls, and index reconstitution.

- Corporate actions on portfolio holdings such as mergers, acquisitions, or spinoffs may require portfolio trading. Income-related corporate actions such as dividends or coupons income may need reinvesting. Funds that make regular distributions to investors may have to sell securities when income from investments is insufficient to meet these distributions.
- Margin calls on leveraged positions as well as derivatives positions that are suffering losses may require urgent sales of portfolio holdings.
- When the benchmark index is reconstituted, managers may need to execute trades to reflect the change. This is particularly important for index-tracking funds. Since the value of the index benchmark usually is based on closing prices, trading at closing prices minimizes the fund's tracking error to the benchmark.

Trading Strategy Inputs

LOS 25.b: Discuss inputs to the selection of a trading strategy.

CFA® Program Curriculum, Volume 5, page 124

Once the decision to invest has been made by the portfolio manager, the executing trader and the portfolio manager must work together to identify the optimal trading strategy given the manager's objectives. Key factors that dictate the appropriate trading strategy are (1) order characteristics, (2) security characteristics, (3) market conditions, and (4) individual risk aversion. These factors are discussed as follows:

1. Order characteristics.

These include side, absolute size, and relative size.

- **Side** refers to the direction of the order (buy, sell, short buyback (cover), or short sell). This is particularly important when there is price momentum expected where securities are moving in one direction. For example, it will be more costly to purchase securities in a rising market than to sell them. A list of only buy orders or only sell orders will have greater market risk exposure compared to a list of buys and sells with offsetting market risk exposures.
- **Absolute size** refers to the number of securities being traded. Larger orders will have a higher *market impact cost* than smaller orders. Market impact cost is the adverse effect of the order on prices—the act of buying (selling) puts upward (downward) pressure on prices. Managers will generally trade larger orders with less urgency (if possible) to mitigate the market impact of the order.
- With **relative size**, managers will often consider order size as a percentage of **average daily volume (ADV)**. Orders that constitute a higher percentage of ADV are expected to have higher market impact costs.

2. Security characteristics.

These include security type, short-term alpha, price volatility, and security liquidity.

- **Security type.** Different security types [e.g., underlying securities, ETFs, American depositary receipts (ADRs), global depositary receipts (GDRs), derivatives, and foreign exchange (FX) contracts] trade in different markets with different costs, regulations, and liquidity.
- **Short-term alpha.** For active managers, a high rate of alpha decay requires a more urgent trade strategy. A manager will also have higher urgency in adverse market conditions (i.e., buying into a rising market or selling into a falling market).
- **Price volatility.** High price volatility implies high *execution risk*, defined as the risk that an adverse price movement will occur over the trading horizon.
- **Security liquidity.** Greater liquidity decreases execution risk and market impact cost. Narrow bid-ask spreads and large volume available for trading (i.e., market depth) are two key indicators of high liquidity.

3. Market conditions.

Key market conditions that affect trading cost are volatility and liquidity levels. These can both change adversely (increased volatility and lower liquidity) in times of market crisis, such as the credit crisis of 2008. This can also occur for individual strategies. For example, quantitative equity fund managers experienced a liquidity shock in August 2007 due to managers, having herded into similar trades, attempting to liquidate at the same time. Even in normal market

times, volatility and liquidity will be dynamically changing, and traders need to reflect this in their expectations. Lower liquidity suggests longer trading horizons; however, higher volatility might cause investors to speed up trades and incur higher costs to avoid execution risk of adverse price movements.

4. **Individual risk aversion.** A portfolio manager/trader with higher risk aversion is typically more concerned about the market risk of adverse movements in security prices than market impact costs and therefore will trade with more urgency.

These trade strategy inputs are key factors driving the two major costs of trading: market impact and execution risk. Market impact comes from trading too quickly, causing adverse price movements and information leakage as the market notices the liquidity imbalance in the market. On the flip side, execution risk, the risk of adverse price movements over the trading horizon, is caused by trading too slowly. Therein lies the **trader's dilemma**—alleviating market impact causes execution risk, and vice versa. Skillful traders will use their experience and judgment to balance these costs of trading.

EXAMPLE: Trading costs

A portfolio manager is discussing a list of buy and sell orders with the firm's head trader. The trader is specifically interested in how order size, security liquidity, and rate of alpha decay affects market impact risk and execution risk, respectively.

1. For each of the factors listed (order size, security liquidity, and rate of alpha decay), briefly **describe** how the factor affects the *market impact cost* of the trade. (Note: Consider each factor in isolation.)
2. The portfolio manager makes the following two statements:

Statement 1: High market impact costs could be mitigated by executing the order over a longer trading horizon.

Statement 2: If done correctly, this will not lead to an increase in any other types of trading cost.

Discuss whether the two statements are true or false. Briefly **justify** your response.

Answers:

1. A larger order size will most likely lead to a higher market impact cost; the trader will have to trade at more adverse prices to execute a larger transaction.

Higher liquidity results in narrower bid-ask spreads and higher market depth, both contributing to lower market impact cost; the trader will likely be able to execute the trade close to current market prices.

Higher alpha decay prompts traders to trade quickly, leading to a higher market impact cost.

2. Statement 1 is true. Executing the order over a longer trading horizon will mean the manager can break the order up into smaller parts and therefore lower the market impact cost of the trade.

Statement 2 is false. Executing a trade over a longer time horizon will lead to higher execution risk; the risk of an adverse price movement increases with the trading horizon.



MODULE QUIZ 25.1

To best evaluate your performance, enter your quiz answers online.

1. Which of the following motivations to trade is *most likely* to require the executing trader to target closing prices?
 - A. Margin calls.

- B. Profit seeking.
 - C. Cash flow needs (redemption).
2. An increase in security liquidity is *most likely* to decrease:
- A. execution risk only.
 - B. market impact only.
 - C. both execution risk and market impact.

MODULE 25.2: REFERENCE PRICE BENCHMARKS FOR TRADE EXECUTION

LOS 25.c: Compare benchmarks for trade execution.



Video covering this content is available online.

CFA® Program Curriculum, Volume 5, page 128

Reference prices are used to determine expected trading costs, which enables managers/traders to select the optimal strategy for a trade. Reference prices are also a key input in the calculation of the actual cost of trading for posttrade evaluation.

Reference prices can be categorized as pretrade, intraday, posttrade, or price target. Details of these categories are as follows.

- **Pretrade benchmarks** are known before the start of trading. These include:
 - *Decision price*. This is the price at the time the portfolio manager made the investment decision.
 - *Previous close*. This is the closing price on the previous day (often used as a proxy for decision price by quantitative managers using systematic rules-based, data-driven strategies).
 - *Opening price*. This is the opening price on the day (often used as a proxy for decision price for subjective fundamental managers investing in securities for a long-term alpha, since it does not punish or reward traders for news released overnight when markets were closed). Note that if a trade is to be entered into an opening auction, which sets the day's opening price of a security at a trading venue, then this opening auction price is *not* a good benchmark since it can be affected by the trade.
 - *Arrival price*. This is the price of the security when the order is sent to the market for execution. Active portfolio managers trying to generate alpha will often specify a benchmark for an arrival price.
- **Intraday benchmarks** are based on prices during the trading period. These are used by managers who trade passively over a day or funds that may be rebalancing or minimizing risk. Intraday benchmarks include:
 - *Volume-weighted average price (VWAP)*. This is defined as the average price of all trades, weighted by volume, over the trading horizon. Managers may use the VWAP benchmark when they want to participate with volume patterns over a day (e.g., when rebalancing a portfolio over a day). Managers specify VWAP to help achieve the objective of using the cash received from sell orders to fund buy orders of the rebalancing.
 - *Time-weighted average price (TWAP)*. This is the equal-weighted average price of all trades executed over the trading horizon (i.e., TWAP ignores volume). TWAP may be appropriate for managers who wish to remove the impact of outliers (i.e., large trades that occur at the highs or lows of the day)

since they believe they are less able to participate in these extreme trades. It is also appropriate in market environments with highly fluctuating volume throughout the day.

- **Posttrade benchmarks** are determined after trading has been completed. The most frequently used posttrade benchmark is the closing price, often used by managers who wish to execute at the closing price to reduce the tracking error of the fund. A drawback of this benchmark is that since the closing price is not known until after the trading is completed, a manager cannot assess trading performance during the trading horizon.
- **Price target benchmarks** are prices used by profit-seeking managers aiming to earn short-term alpha, related to the manager's view of the fair value of the security. For example, a manager may believe that a security that is currently priced at \$10 has a true fair value of \$10.50. This manager could use a price target benchmark of \$10.50 in a strategy that purchases as many shares as possible below this level.

Trading Strategy Selection

LOS 25.d: Recommend and justify a trading strategy (given relevant facts).

CFA® Program Curriculum, Volume 5, page 131

The trading strategy selected by the manager and trader should reflect the costs and risks discussed in the previous section and be consistent with the manager's objectives. Examples of some common trade types and their most appropriate trading strategy are shown here:

Trade Type	Description
Short-term alpha	Objective: Trade short-term mispricing in a liquid equity market (e.g., overreaction to news flow). Urgency: High Reference prices: Price target benchmark linked to the manager's estimate of fair value combined with an <i>arrival price benchmark</i> for orders when placed in the market Execution method: Computer algorithm (discussed later)
Long-term alpha	Objective: Trade over the long term due to changes in fundamental conditions (e.g., sell average-sized positions in illiquid bonds that are expected to experience deteriorating credit conditions over the next year). Urgency: Low Reference prices: Difficult to use in practice Execution method: Sell securities gradually over a few weeks in small parts to avoid information leakage and pressure on dealer's prices.

Trade Type	Description
Risk rebalance	<p>Objective: Rebalance or hedge risk exposure (e.g., reduce risk levels in liquid FX markets by liquidating long and short positions to bring fund volatility down to a target level).</p> <p>Urgency: It is low, since the trader is both buying and selling, which lowers execution risk. Execution risk would be higher for trades on only one side of the book since then the trader has directional exposure.</p> <p>Reference prices: TWAP</p> <p>Execution method: Algorithmically target TWAP over the next couple of days.</p>
Cash flow driven (client redemption)	<p>Objective: Liquidate the holding to meet client redemptions (e.g., liquidate small-cap fund to meet redemptions, which will be calculated using the closing prices of securities in the portfolio). The fund bears the risk that liquidations are not made at the closing prices used to calculate the redemption.</p> <p>Urgency: The trade needs to be completed by the end of the trading day.</p> <p>Reference prices: Closing price</p> <p>Execution method: Execute a reasonable amount of liquidity in the closing auction; execute the remainder before the close of trading (e.g., at VWAP).</p>
Cash flow driven (new trade mandate)	<p>Objective: Invest new client funds (e.g., invest large amount with a mandate to track a small-cap index with a 3% tracking error). Performance measurement will begin at the current day's closing price.</p> <p>Urgency: Liquidity is too low to execute in underlying securities by the end of the day, but immediate exposure is required by the client. Liquid index futures contracts exist.</p> <p>Reference prices: Closing price</p> <p>Execution method: Obtain immediate exposure to index through a long position in index futures to eliminate cash drag. Build underlying stock positions over time to reduce market impact, while simultaneously unwinding the futures position.</p> <p>There are two issues with this method:</p> <ul style="list-style-type: none"> ■ There may not be a closing auction for the futures contract, in which case the futures trade would need to be done as close to the market close as possible. ■ The mandate must allow derivatives positions.



MODULE QUIZ 25.2

To best evaluate your performance, enter your quiz answers online.

1. A portfolio manager who wishes to execute a trade passively over a trading day and mitigate the impact of outliers should use which of the following reference prices as a benchmark?
 - A. TWAP.
 - B. VWAP.
 - C. Arrival price.
2. A quantitative U.S. sector-focused equity fund is mandated to have a low tracking error. The benchmark index is undergoing a reconstitution at the end of the trading day, and the fund's NAV is calculated daily using closing market prices. The portfolio manager has generated a list of trades that need to be executed to reflect the index

reconstitution. The appropriate execution strategy for these trades is *most likely*:

- A. VWAP.
- B. arrival price.
- C. market on close.

MODULE 25.3: TRADE EXECUTION AND STRATEGY IMPLEMENTATION



Video covering this content is available online.

LOS 25.e: Describe factors that typically determine the selection of a trading algorithm class.

CFA® Program Curriculum, Volume 5, page 137

Once an appropriate trading strategy has been identified, the trade must be implemented. Trade implementation choices are described as follows:

High-touch approaches involve high levels of human involvement. This is usually required for large trades (known as block trades), since finding the other side to larger trades is more difficult, or in less liquid markets. High-touch approaches include:

- **Principal trades (broker risk trades).** This is where dealers or market makers assume all or some of the risk relating to executing the order, which is priced into their spread. **Quote-driven, over-the-counter (OTC)**, or **off-exchange markets** are primarily principal trade markets. Principal trades also include **request-for-quote (RFQ)** markets where market makers do not provide continuous quotes, but only do so on request.
- **Agency trades.** This is where the broker finds the other side of the trade, and risk for order execution remains with the portfolio manager/trader.

Electronic trading involves trading via computer and is used in more liquid markets. Trading here is typically *order driven* in that electronic systems allow buyers and sellers to advertise their limit orders in a central limit order book. A limit order is an order to trade at a certain (limit) price or better. For example, a trader may execute a buy order with a limit of \$20. This means the trader will buy the security for any price up to \$20, but not pay more than \$20. Similarly, a seller limited at \$20 will sell at any price above \$20, but not lower. Electronic trading generally involves **direct market access (DMA)** and/or **algorithmic trading** (defined next). DMA allows buy-side portfolio managers/traders to access the order book of the exchange directly through a broker's technology infrastructure.

Algorithmic trading is the use of programmed rules to electronically trade orders, primarily used for two purposes: *profit seeking and trade execution*.

Profit-seeking algorithms use real-time market data to determine which securities to buy and sell, and are employed by electronic market makers, quantitative funds, and high-frequency traders.

Execution algorithms trade according to the rules specified by the manager to meet their objectives. Types of execution algorithms include the following:

- *Scheduled algorithms—percent-of-volume (POV), VWAP, and TWAP algorithms.* These execute trades using rules driven by historical volumes or specified time periods.

- *POV algorithms* (a.k.a. participation algorithms) send orders according to a volume participation schedule (e.g., “participate as 5% of traded volume”).
 - Advantage: They automatically exploit increased liquidity when available.
 - Disadvantage: They continue to trade at any (potentially adverse) price, and may not fill the order in a specified time if there is a lack of trading.
- VWAP and TWAP algorithms are *time-slicing algorithms*. VWAP algorithms attempt to match the VWAP price for the period by carving up the trade and sending orders based on *historical* intraday volumes. The usual intraday volume profile is to trade more at the open and close and less in the middle of the day. TWAP algorithms perform a similar task; however, they ensure an equal number of shares is traded in each time period (e.g., each hour).
 - Advantage: They ensure that a specified number of shares are executed in a specified time period.
 - Disadvantage: They may force trades in times of low liquidity or trade too little in times of high liquidity.
- *Liquidity-seeking algorithms* (a.k.a. opportunistic algorithms) aim to take advantage of favorable liquidity conditions when offered by the market. For example, for a buyer, this algorithm would wait until a large seller appeared and then enter a market order. These orders use both lit and dark venues.
- *Arrival price algorithms* seek to trade close to market prices prevailing at the time the order is entered. These algorithms will trade more aggressively (i.e., faster) than other algorithms to trade more shares at close to the arrival price.
- *Dark strategies/liquidity aggregators* execute trades in dark pools, with aggregator algorithms attempting to optimize trading across multiple dark venues.
- *Smart order routers (SORs)* are algorithms that determine the best destination (either lit or dark) to route an electronic order to get the best result. SORs focus on getting the best price for market orders, or the highest probability of execution for limit orders.



PROFESSOR'S NOTE

While the descriptions just listed are important, the LOS requires you to select which algorithm is most appropriate for a given order or set of orders. We will discuss this exam-critical information next.

Which Algorithm?

Scheduled algorithms are appropriate for relatively small orders in liquid markets for managers with less urgency (i.e., greater risk tolerance for longer execution periods) and/or who are concerned with minimizing the market impact (e.g., a risk rebalancing trade executed over a trading day).

Liquidity-seeking algorithms are appropriate for larger orders in less liquid markets with higher urgency while trying to mitigate the market impact. They are also appropriate when a manager is concerned that displaying limit orders may lead to information leakage, or when liquidity is typically thin with sporadic episodes of high liquidity.

Arrival price algorithms are appropriate for relatively small orders in liquid markets for managers who believe prices are likely to move against them during the trade horizon, and therefore wish to trade more aggressively (e.g., a profit-seeking manager). They are also appropriate for more risk-averse managers who want to minimize execution risk.

Dark strategies/liquidity aggregators are appropriate for large orders in illiquid markets, and arrival price or scheduled algorithms would likely lead to high market impact. Since there is a lower chance of execution in dark pools, these strategies are for managers that do not need to execute the full order immediately.

SORs are appropriate for small market orders with low market impact where the market can move quickly, or for small limit orders with low information leakage where there are multiple potential execution venues.

EXAMPLE: Selection of appropriate algorithm

A portfolio manager wishes to execute three trades as follows:

Stock	Side	Share Price	Order Size (Shares)	Average Daily Volume	Urgency
SFDL	Buy	\$8.50	10,000	20,000	High
TWEL	Buy	\$32.31	5,000	100,000	Low
UDSL	Sell	\$2.05	1,000,000	1,000,000	Low

The manager considers executing the orders using the following strategies:

- Scheduled algorithm.
- High-touch principal approach.
- Liquidity-seeking algorithm.

Recommend the most appropriate implementation strategy for each order. (Note: Each strategy should only be used once.)

Answer:

SFDL should be purchased using a liquidity-seeking algorithm. The low liquidity in the market and the high order size make minimization of market impact a key consideration, which a liquidity-seeking algorithm will achieve since it only trades when liquidity is offered by the other side of the market. The high urgency of the trade also makes a liquidity-seeking algorithm appropriate since execution should occur relatively quickly.

TWEL should be purchased using a scheduled algorithm. The low urgency of the trade suggests that concerns about longer trading horizons and adverse price movements are low. With low order size and relatively high liquidity, a scheduled algorithm such as POV, VWAP, or TWAP is most appropriate. These strategies trade passively throughout the day, which minimizes market impact costs.

UDSL should be sold using a high-touch principal approach. This order represents 100% of the ADV; hence, using an algorithm is not appropriate due to the high possibility of information leakage and high market impact cost. Discretion is required to find the other side of the trade; hence, a human intermediary is required, making the high-touch principal approach the most appropriate choice.

Recent developments in algorithmic trading include **clustering** and **high-frequency market forecasting**.

Clustering is a machine learning technique whereby a computer learns to identify which algorithm is optimal for different types of trades based on the key features of trades. The term *clustering* refers to the technique of grouping trades together with similar attributes (e.g., order size as a fraction of the ADV). Note this is similar to the approach

used in the previous example to select optimal order; however, the difference is that clustering will quantitatively test factors for their impact on the performance of different algorithms. The machine learning nature of the process means clustering attempts to *identify* features of trades that determine optimal algorithm type that a human manager had not previously considered important.

High-frequency market forecasting attempts to model short-term market direction. One issue with this process is the (large) number of variables that could potentially explain market movements. The least absolute shrinkage and selection operator (LASSO) is a machine learning technique that helps to reduce the number of explanatory variables to a manageable number of significant variables.

Characteristics of Key Markets

LOS 25.f: Contrast key characteristics of the following markets in relation to trade implementation: equity, fixed income, options and futures, OTC derivatives, and spot currency.

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Equities are usually traded on stock exchanges (lit markets) and dark pools. Equity markets are the most technologically advanced, with most of the trading executed electronically, and the use of algorithms is commonplace.

Fixed-income markets tend to trade in a large number of heterogeneous securities, as many issuers have multiple issues outstanding. While the fixed-income markets tend to have low liquidity, typical order size is large. Due to these characteristics, trading is mostly conducted in dealer-based, quote-driven markets. Electronic RFQ systems are becoming more common; however, algorithmic trading is largely limited to only the most liquid on-the-run (most recently issued) U.S. Treasuries and futures contracts. Electronic trading, while growing for corporate bonds, remains relevant for only a small fraction of the universe. Other fixed-income securities markets generally use high-touch execution methods—urgent trades would require a principal broker risk trade, while less urgent trades would use a broker-agent approach.

Electronic trading is common for exchange-traded derivatives. Algorithmic trading is not as common as for equities markets, and is used more for futures than for options. Buy-side traders generally use DMA.

OTC derivatives trading takes place in a dealer quote-driven market, usually implemented through high-touch approaches. Since the credit crisis of 2008, there has been a move by regulators to increase transparency and central clearing of basic OTC derivatives such as interest rate swaps (e.g., the Dodd-Frank Act of 2010 in the United States).

Spot foreign exchange trading takes place in OTC markets that use both electronic trading and high-touch broker approaches. The market works in three tiers: interbank, interdealer, and bank-to-client, with decreasing trade sizes and increasing spreads, respectively. For large urgent trades, RFQs are used with brokers. For large non-urgent trades, scheduled algorithms or high-touch agency approaches are used. Small trades are usually implemented using DMA.

EXAMPLE: Trade approach by market

The trading desk of a large multiasset buy-side firm has received the following three orders:

Market	Size	Urgency
Futures	Small	High
Agency MBS	Medium	Low
Equity	Large	Low

The trading desk is considering executing the trades using DMA, scheduled algorithms, or high-touch broker risk approaches.

Recommend the most appropriate approach for each order. (Note: Each approach should only be used once.)

Answer:

The most appropriate approach for the futures trade is DMA. Futures markets have well evolved electronic trading, and it is likely that an urgent small trade in futures can be executed most effectively through accessing exchange systems directly. There is no need to employ the high-touch approach of a broker since the order size is small and can be executed on the exchange easily. Algorithmic trading is not well developed in derivatives markets, and scheduled algorithms would likely take too long to execute a high-urgency trade.

The most appropriate approach for the agency MBS trade is a high-touch brokered approach. Fixed-income markets outside of Treasuries and corporate bonds typically use high-touch brokered execution methods. There is unlikely to be algorithmic or DMA available for agency MBS.

The most appropriate approach for the equity trade is a scheduled algorithm. It is likely that the trade, being large, would have too much market impact if executed through DMA. It is unlikely that a high-touch broker trade would be appropriate since the trade is not urgent (hence, does not need immediate execution), and most trading in equity markets is conducted electronically.

MODULE QUIZ 25.3



To best evaluate your performance, enter your quiz answers online.

1. A trading desk has had the following orders submitted by the firm's portfolio managers:

Stock	Execution Risk Aversion	Market Impact	Order Size (% ADV)
PQR	Low	High	50%
STU	High	Low	10%
VWX	Low	Medium	20%

For which order is an arrival price strategy *most likely* to be most appropriate?

- A. PQR.
 - B. STU.
 - C. VWX.
2. Request-for-quote (RFQ) systems are *most likely* to be used to implement trading strategies in which of the following markets?
 - A. Equities.
 - B. Fixed income.
 - C. Exchange-traded derivatives.

MODULE 25.4: TRADE COST MEASUREMENT



LOS 25.g: Explain how trade costs are measured and determine the cost of a trade.

Video covering this content is available online.

CFA® Program Curriculum, Volume 5, page 149

Trading costs are either explicit in that they are easily visible (e.g., commissions and fees) or implicit in that they are embedded in the transaction (e.g., market impact/execution risk). Total costs of trading can be measured using **implementation shortfall (IS)**. At the highest level, the absolute value of IS is calculated as:

$$IS = \text{paper return} - \text{actual return}$$

The paper return is the return a hypothetical portfolio would have had if the trade were executed at the original decision price *with zero cost*. The actual portfolio return of the portfolio is net of all costs. The difference between these two amounts is the total cost of executing the trade.

Usually, IS is expressed as basis points of the total cost of the paper portfolio.

EXAMPLE: Implementation shortfall

A portfolio manager decides to buy 50,000 shares of stock SJB at 9:00 am when the stock price is \$20.00 (this is the decision price for the trade) and submits instructions to the firm's trader. The trader uses a limit price of \$20.50 and in total manages to purchase 40,000 shares at an average price of \$20.34. The fund is charged a commission of \$0.02 per share, and there are no other fees. At the end of the day, SJB closes at \$20.55.

Calculate (*in basis points*) the total IS for this trade.

Answer:

The paper portfolio is hypothetically assumed to fill the full order at the original decision price (\$20.00). Hence, the paper return = $50,000 \times (\$20.55 - \$20.00) = \$27,500$.

The actual return of the portfolio reflects that the trader purchased 40,000 shares at \$20.34, and paid $40,000 \times \$0.02 = \800 for the execution.

Hence, the actual return = $40,000 \times (\$20.55 - \$20.34) - \$800 = \$7,600$.

Therefore, in absolute value terms, IS = $\$27,500 - \$7,600 = \$19,900$.

The initial cost of the paper portfolio is $50,000 \times \$20 = \$1,000,000$, so IS in basis points is calculated as $\$19,900 / \$1,000,000 = 0.0199$, or 199 basis points.



PROFESSOR'S NOTE

Recall that a basis point is 1/100th of 1%. A decimal number is multiplied by 10,000 to convert it to basis points.

IS can be decomposed into the following parts:

- **Execution cost** occurs due to executing shares at a less favorable price than the original decision price. Execution cost can be further broken down into delay cost and trading cost.
 - **Delay cost** is due to adverse price movements in the time between the portfolio manager submitting the order to the trader and the time the trader releases it to the market. This delay is usually due to the time it takes the trading desk to determine the optimal execution strategy for the trade.
 - **Trading cost** is due to the market impact of executing the trade.

- **Opportunity cost** is the cost of *not* trading any unfilled part of the order. Recall that the paper portfolio assumes that all shares are executed immediately at the original decision price—the actual trade may have only filled part of the order, and the lost profit on the unfilled portion is the opportunity cost.
- **Fixed fees** are any explicit commissions or fees incurred in executing the trade.

To demonstrate this decomposition, let us return to the previous example, which had a total IS of \$19,900. Recall that the trader received the order at 9:00 am, when the stock price was at \$20.00. Assume that the trader placed the order 30 minutes later in the market by which time the stock price had moved to \$20.10 (\$20.10 is referred to as the arrival price of the order). The decomposition of IS in dollar terms is as follows:

- *Delay cost* is the adverse movement from \$20.00 to \$20.10 for the 40,000 shares that were executed during the day:

$$\text{delay cost} = 40,000 \times (\$20.10 - \$20.00) = \$4,000$$

- *Trading cost* is the difference between the execution price, \$20.34, and the arrival price, \$20.10, for 40,000 shares traded during the day:

$$\text{trading cost} = 40,000 \times (\$20.34 - \$20.10) = \$9,600$$

- *Opportunity cost* is the paper profit on the 10,000 shares *not* purchased, which relates to the paper profit from buying these shares at \$20.00 and the stock closing at \$20.55:

$$10,000 \times (\$20.55 - \$20.00) = \$5,500$$

- *Fixed fees* are the explicit commission paid on the execution of 40,000 shares:

$$40,000 \times \$0.02 = \$800$$

Then, the total IS value = \$4,000 + \$9,600 + \$5,500 + \$800 = \$19,900.



PROFESSOR'S NOTE

All of the components of IS can be expressed (and usually are) in terms of basis points (bps) of the original cost of the paper portfolio, which in this case is \$1,000,000. Hence, delay cost would be expressed as $\$4,000 / \$1,000,000 = 0.004$, or 40 bps. Similarly, the trading cost is 96 bps, the opportunity cost is 55 bps, and fixed fees are 8 bps—for a total IS of 199 bps.

Improving Execution Performance

Delay costs arise due to adverse price movement during the interval between the trader receiving an order from the portfolio manager and passing it on to a broker/market. Delay costs can be minimized with efficient trading practices that give traders the pretrade and posttrade analysis they need to make a swift decision on an optimal trading strategy.

A detailed analysis of opportunity cost can help managers deploy unused cash into the next-most attractive investment, thereby reducing the impact of opportunity cost on the portfolio. For example, a manager who recognizes that only 80% of an order is likely to be transacted due to a lack of liquidity can invest the remaining 20% of the order into the next-most attractive trade and avoid cash drag on uninvested funds.

Analysis of trading (market impact) costs can also help traders establish proper price benchmarks and appropriate urgency of trade.

EXAMPLE: Implementation shortfall detailed analysis

A portfolio manager decides to sell 100,000 shares of Future Recreation (FTRB) at 1:05 pm when the share price is £2.56. The trading desk of the firm receives the order and conducts a review of the trade details to determine the optimal trade strategy. Due to the low market volume, it is decided that a high-touch agency broker approach is optimal with a limit price of £2.50. The trader submits the order to a broker at 1:13 pm when the share price is £2.59. By the end of the day, the broker had executed 70,000 shares at an average price of £2.60. Commission for the trade is £400. At the end of the day, the stock closes at a price of £2.54 per share.

1. **Calculate** the total IS for the trade in basis points.
2. **Decompose** IS into the delay, trading, opportunity, and fixed-fee costs.

Answers:

1. Note that because this is a sell order, positive returns are earned when the actual trading price rises above the decision price.

$$\text{Return of the paper portfolio} = 100,000 \times (\text{£2.56} - \text{£2.54}) = \text{£2,000}$$

$$\text{Return of actual portfolio} = 70,000 \times (\text{£2.60} - \text{£2.54}) - \text{£400} = \text{£3,800}$$

$$\text{IS} = \text{paper return} - \text{actual return} = \text{£2,000} - \text{£3,800} = -\text{£1,800}$$

$$\text{Original cost of paper portfolio} = 100,000 \times \text{£2.56} = \text{£256,000}$$

$$\text{IS in basis points} = -\text{£1,800} / \text{£256,000} = -0.00703, \text{ or } -70.3 \text{ basis points}$$

A negative cost is a benefit; it means that the trader's actions added value relative to the paper portfolio. If the trader had immediately executed the sell order (with no costs), the portfolio would be worse off than the actual portfolio (because prices subsequently rose, and the executions were made at higher prices). Negative IS indicates that the trader's actions benefited the portfolio.

2. Delay cost = $70,000 \times (\text{£2.56} - \text{£2.59}) = -\text{£2,100}$

$$\text{Delay cost (bps)} = -\text{£2,100} / \text{£256,000} = -82.0 \text{ basis points}$$

Negative delay cost represents value added since the price movement during the time the trading desk received the order and submitted it to the market worked in favor of the seller.

$$\text{Trading cost} = 70,000 \times (\text{£2.59} - \text{£2.60}) = -\text{£700}$$

$$\text{Trading cost (bps)} = -\text{£700} / \text{£256,000} = -27.3 \text{ basis points}$$

Negative trading cost indicates that the execution price improved on the arrival price of the order.

$$\text{Opportunity cost} = 30,000 \times (\text{£2.56} - \text{£2.54}) = \text{£600}$$

$$\text{Opportunity cost (bps)} = \text{£600} / \text{£256,000} = 23.4 \text{ basis points}$$

$$\text{Fixed fees} = \text{£400} \text{ (given)}$$

$$\text{Fixed fees (bps)} = \text{£400} / \text{£256,000} = 15.6 \text{ basis points}$$

$$\text{Total IS} = -82.0 - 27.3 + 23.4 + 15.6 = -70.3 \text{ bps}$$

MODULE 25.5: EVALUATING TRADE EXECUTION

LOS 25.h: Evaluate the execution of a trade.

Video covering this content is available online.

Trade cost analysis is vital for portfolio managers to be able to assess the effectiveness of brokers, algorithms, and other strategies. Costs are evaluated versus specified price benchmarks, which vary depending upon the objectives of the manager/nature of the order. This benchmark price could be an arrival price, VWAP, TWAP, or the closing market price. There can even be more than one relevant benchmark if the strategy has several objectives.

In general, buyers incur costs if they execute trades above relevant benchmark prices, while sellers incur costs if they execute below relevant benchmark prices. Trade costs are calculated such that a positive value represents underperformance against the benchmark, and can generally be formulated as follows:

$$\text{absolute cost (\$)} = \text{side} \times (\text{execution price} - \text{benchmark price}) \times \text{shares executed}$$

where:

side = +1 for a buy order, -1 for a sell order



PROFESSOR'S NOTE

This is a general formulation of the cost idea that was used in IS in the previous section. Keep in mind the intuition that we suffer costs (i.e., underperformance) when we buy high (execution price > benchmark price), or sell low (execution price < benchmark price).

These costs are often expressed in *basis points* of the original benchmark price, using the following expression:

$$\text{trade cost (bps)} = \text{side} \times \frac{(\text{execution price} - \text{benchmark price})}{\text{benchmark price}} \times 10,000$$

EXAMPLE: Trade cost

A portfolio manager is executing a buy order using a market on close (MOC) benchmark. The manager purchases at \$25.50, and the closing price of the stock is \$25.60. Calculate the cost (in basis points) based on the closing price benchmark.

Answer:

Since this is a buy order, side = +1. Using the formula for the absolute cost (per share), we find the following:

$$\text{absolute cost per share} = +1 \times (\$25.50 - \$25.60) = -\$0.10$$

In basis points, this cost is $-\$0.10 / \$25.60 = -0.00391$, or -39.1 basis points. The negative sign indicates that the trader's actions added value (*a negative cost is a benefit*). This can clearly be seen since the buy trade has been executed below the benchmark price, and buying low is adding value from a trading perspective.

Regardless of the skill of the trader, buy orders in a rising market and sell orders in a falling market incur positive trading costs due to adverse price movements. To remove the impact of market movements on trade cost, traders can use **market-adjusted cost**. The market-adjusted costs ensure a trader is not penalized or rewarded for general market movements over the trade horizon by subtracting the *index cost* adjusted for the security's beta. The index cost is a representation of the costs due to general market index movements, and is calculated as follows:

$$\text{index cost (bps)} = \text{side} \times \frac{(\text{index VWAP} - \text{index arrival price})}{\text{index arrival price}} \times 10,000$$



PROFESSOR'S NOTE

Index cost is simply a measurement of how much VWAP has increased over the trading period versus the original arrival price of the index. Recall that the arrival price is the price of a security when an order is first submitted to a market. This is expressed in basis points as a proportion of the index arrival price.

The market-adjusted cost of the trade is given by the following expression:

$$\text{market-adjusted cost (bps)} = \text{arrival cost (bps)} - \beta \times \text{index cost (bps)}$$

where:

arrival cost = the arrival cost of the trade based on an arrival price benchmark

β = beta of the security versus the index used to calculate index cost

EXAMPLE: Market-adjusted cost

A trader submits a buy order to a market when the security price is €10.00 and a relevant index price is €3,500. The order is executed over the next hour at an average price of €10.15. VWAP for the index over this period is €3,507, and the beta of the security is 1.5.

Calculate the market-adjusted cost of this trade in basis points.

Answer:

Since the order is a buy, side = +1. The index cost in basis points is given by:

$$\text{index cost (bps)} = +1 \times \frac{(\text{€3,507} - \text{€3,500})}{\text{€3,500}} \times 10,000 = 20 \text{ bps}$$

The arrival cost of the trade is given by:

$$\text{arrival cost (bps)} = +1 \times \frac{(\text{€10.15} - \text{€10.00})}{\text{€10.00}} \times 10,000 = 150 \text{ bps}$$

Then, the market-adjusted cost is given by:

$$\text{market-adjusted cost (bps)} = 150 \text{ bps} - (1.5 \times 20 \text{ bps}) = 120 \text{ bps}$$

Added Value

A different method of trade cost analysis is comparing the arrival cost to the estimated pretrade cost. The estimated pretrade cost is calculated using a model that incorporates key trade cost variables such as order size, liquidity of the market, and so on. If a fund executes at less than the pretrade cost estimate, then the trader has added value. More formally:

$$\text{added value (bps)} = \text{arrival cost (bps)} - \text{estimated pretrade cost (bps)}$$

In the previous example, the arrival cost of the trade was 150 bps. If the pretrade cost estimate was 160 bps, then the added value for the trade is 150 bps - 160 bps = -10 bps. Again, be careful with signs here—remember that a negative cost is a benefit, and this trader has added value through his trading decisions.

Trade Governance

LOS 25.i: Evaluate a firm's trading procedures, including processes, disclosures, and record keeping with respect to good governance.

It is both a good practice, and is usually required by regulation, that an asset manager has a formal written trade policy that clearly spells out trade procedures. Trade policy has four key areas: (1) the meaning of *best execution*, (2) the factors that determine the optimal trading approach, (3) a listing of approved brokers and execution venues, and (4) details of the monitoring processes used by the asset manager. These areas are further discussed as follows:

1. Meaning of best execution. *Best execution* is a general term used by regulators to describe the duty of asset managers to seek the best possible *result* for clients when trading their assets. Trade policy should define *best execution* within the applicable regulatory framework. Generally, the factors that determine best execution include:

- Execution price.
- Trading costs.
- Speed and likelihood of execution and settlement.
- Order size and liquidity.
- Nature of the trade (e.g., urgency of the trade).

Note that best execution does *not* simply mean seeking the best price or trading at the lowest cost. For example, a manager with a large stake in a company that the manager is confident is going to file for bankruptcy would likely achieve a better *result* for clients if the manager sold a block with a trusted dealer at a significantly discounted price, even if there were higher bids for small quantities at other listed execution venues. This could be justified as *best execution* because of the execution risk of adverse market movements and the risk of information leakage if the manager began hitting the bids at the execution venues (though these prices are initially higher than the broker price).

2. Factors that determine the optimal execution approach. The trade policy needs to communicate these criteria, which usually include:

- Urgency and size of order.
- Liquidity of security (ADV) and the nature of security (e.g., standardized vs. customized).
- Characteristics of available execution venues.
- Investment strategy objectives (e.g., long term vs. short term in nature).
- Reason for the trade.

These factors will need to reflect both the relevant regulations and market trading conventions for different asset classes used by the manager. For example, new regulations called MiFID II (Markets in Financial Instruments Directive) have effectively prohibited the use of soft-dollar arrangements in Europe. Soft-dollar arrangements are arrangements whereby an asset manager can pay for goods or services using rebates from client commissions offered in return for executing a high amount of volume with the broker, which may jeopardize the best execution if the manager uses the client's soft dollars for the manager's own benefit.

As discussed earlier, different asset classes have different methods of trading. For example, equities and exchange-traded derivatives are more likely to be traded using algorithms than fixed-income products, which are likely to be traded using a more high-touch approach.

3. List of eligible brokers and execution venues. Trade policy should include a list of approved brokers and a description of the process used to create it. The best practice is to establish a **best execution monitoring committee (BEMC)** consisting of portfolio execution, compliance, and risk personnel that is responsible for maintaining, updating, and distributing the list to parties involved in trade execution. Due diligence of brokers is particularly important for OTC trades where there is no protection of exchange rules, low transparency, and no central clearing to mitigate counterparty risk. General principles for approval to the list include:

- High quality of service in terms of competitive execution price or speed of service/trade size capacity.
- Financial stability to mitigate counterparty risk.
- Good reputation for ethical behavioral.
- Adequate settlement facilities.
- Competitive explicit costs such as commissions.
- Willingness to commit capital to principal trades when required for less liquid securities.

4. Process for monitoring execution arrangements. The approved broker list should be constantly monitored for reputational issues, trading error frequency, criminal actions, and financial stability. Any brokers who fail to meet the required standard should be removed promptly. Execution quality should also be monitored on an ongoing basis. Trading records should be kept in order to facilitate this analysis and to address any client or regulator concerns regarding the executions or trade allocations made by an asset manager to her clients.



MODULE QUIZ 25.4, 25.5

To best evaluate your performance, enter your quiz answers online.

1. A portfolio manager submits an order to sell 10,000 shares of stock STU to the trading desk when the price is \$32.50. After careful analysis of the trade details, the trading desk submits the order to the market when the price is \$32.60 with a limit of \$32.60. The trader executes 4,000 shares at a price of \$32.65 and commissions are \$0.03 per share. The stock closes at the end of the trading day at \$32.35. The total implementation shortfall (IS) for this trade, in basis points, is *closest* to:
 - A. 9.23 bps.
 - B. 12.92 bps.
 - C. 33.23 bps.
2. A portfolio manager executes a sell order at an average price of \$8.38. The arrival price of the order was \$8.40. The relevant index value at the time of order entry was 3,000 and the VWAP for the index over the trading period was 3,050. If the stock has a beta of 1.3, the market-adjusted cost of the trade is *closest* to:
 - A. -142.5 bps.
 - B. 23.8 bps.
 - C. 240.5 bps.
3. The trade policy of an investment firm makes the following two statements:

Statement 1: The head trader is exclusively responsible for firm-wide trade execution monitoring and implementation of sound trade governance.

Statement 2: A list of eligible brokers used by the firm is created and maintained by the BEMC of the firm. This committee ensures that only brokers who execute with the lowest implicit and explicit trading costs are admitted to the list.

How many of the statements are in line with trade governance best practice?

- A. Zero.
- B. One.
- C. Two.

KEY CONCEPTS

LOS 25.a

The four motivations for a portfolio manager to trade are as follows:

Motivation	Impact on Trading Strategy
Profit seeking	<ul style="list-style-type: none">■ High alpha decay → high urgency■ Low alpha decay → low urgency■ May use dark pools to mitigate information leakage
Risk management/hedging	<ul style="list-style-type: none">■ Derivatives could be used if contracts exist and mandate permits
Cash flow needs	<ul style="list-style-type: none">■ Cash drag on inflows into funds with illiquid holds could be mitigated through <i>equitization</i> strategies■ Client redemptions are usually based on closing NAV (hence, managers will typically target closing prices as execution benchmarks)
Corporate actions/index reconstitutions/margin calls	<ul style="list-style-type: none">■ Income may need reinvesting■ Index reconstitutions are usually based around closing prices (hence, managers will typically target closing prices as execution benchmarks)■ Margin calls will likely require high urgency

LOS 25.b

Key factors that dictate the appropriate trading strategy are as follows:

- Order characteristics: These are side, quantity, and percentage of ADV.
 - Larger trades are normally executed over longer time horizons to lower market impact.
- Security characteristics: These are type, short-term alpha, volatility, and liquidity.
 - Higher volatility implies a higher urgency to lower execution risk.
- Market conditions: A crisis can adversely impact volatility and liquidity.
- Individual risk aversion: Higher risk aversion implies higher urgency to lower execution risk.

The trader's dilemma is balancing the market impact cost of trading too quickly versus the execution risk of trading too slowly.

LOS 25.c

Reference price benchmarks include the following:

Reference Price	Examples
Pretrade	<ul style="list-style-type: none"> ■ Decision price ■ Previous close: often used by quantitative managers ■ Opening price: often used by longer-term fundamental managers ■ Arrival price: used by profit-seeking managers
Intraday	<ul style="list-style-type: none"> ■ VWAP: used when managers want to participate with volume ■ TWAP: used when managers want to trade evenly and mitigate the impact of outliers, and for markets with unpredictable trading volumes
Posttrade	<ul style="list-style-type: none"> ■ Closing price: used by index-tracking managers ■ Price target benchmarks: usually based on the manager's view of fair value
Price target	<ul style="list-style-type: none"> ■ Usually based on the fair value estimate of an active manager

LOS 25.d

The primary goal of a trading strategy is to balance expected costs, risks, and alpha decay in line with the manager's objectives, risk aversion, and other constraints.

LOS 25.e

Trade implementation choices include the following:

Approach	Appropriate For
Higher touch—principal	Large urgent trades in illiquid securities
Higher touch—agent	Large trades in illiquid securities that are less urgent
DMA	Small trades in liquid electronic markets
Profit-seeking algorithms	Used by electronic market makers, quantitative funds, and high-frequency traders
Scheduled algorithms: POV, VWAP, TWAP	Relatively small orders in liquid electronic markets for managers with less urgency (e.g., portfolio rebalancing)
Liquidity-seeking algorithms	Larger orders in less liquid electronic markets with higher urgency, or when liquidity is sporadic
Arrival price algorithms	Relatively small orders in liquid electronic markets with high urgency (e.g., profit-seeking managers)
Dark strategies	Large orders in illiquid markets and arrival price or scheduled algorithms would likely lead to high market impact
SORs	Small market orders with low market impact where the market can move quickly, and small limit orders with low information leakage where there are multiple potential execution venues

LOS 25.f

The main characteristics of key markets are as follows:

- Equities are mostly traded electronically on lit exchanges and dark pools. Algorithmic trading is common.

- Fixed-income securities are typically traded in dealer-driven, high-touch principal markets. Clients use electronic RFQ systems to access quotes from dealers. Algorithmic trading is limited to the most liquid on-the-run U.S. Treasuries.
- Exchange-traded derivatives are largely traded electronically, though algorithmic trading is less common than for equity markets. Buy-side traders generally use DMA.
- OTC derivatives historically have been traded in high-touch dealer markets. Since the credit crunch, there has been a move to increase transparency and force basic OTC derivatives to be centrally cleared.
- Spot foreign exchange trading takes place in OTC markets that use both electronic (algorithms and DMA) and high-touch approaches for larger trades.

LOS 25.g

The total implicit and explicit costs of trading are measured by the implementation shortfall (IS):

$$IS = \text{paper return} - \text{actual return}$$

Usually, IS is expressed as basis points of the total cost of the paper portfolio.

IS can be decomposed into the following parts:

- **Execution cost** is when the execution price is worse than the decision price and comprises:
 - **Delay cost**, which is when the arrival price is worse than the decision price.
 - **Trading cost**, which is when the execution price is worse than the arrival price.
- **Opportunity cost** occurs on unexecuted shares when the closing price is worse than the decision price.
- **Fixed fees** are any explicit commissions or fees incurred in executing the trade.

LOS 25.h

When performing trade cost analysis:

$$\text{trade cost (bps)} = \text{side} \times \frac{(\text{execution price} - \text{benchmark price})}{\text{benchmark price}} \times 10,000$$

where:

side = +1 for a buy order, and -1 for a sell order

Benchmark price could be the arrival price, VWAP, TWAP, or closing price of the stock.

To not reward or punish a manager for the market movement over the trading horizon, market-adjusted cost removes the cost associated with the market move as follows:

$$\text{market-adjusted cost (bps)} = \text{arrival cost (bps)} - \beta \times \text{index cost (bps)}$$

where:

$$\text{market-adjusted cost (bps)} = \text{arrival cost (bps)} - \beta \times \text{index cost (bps)}$$

where:

$$\text{index cost (bps)} = \text{side} \times \frac{(\text{index VWAP} - \text{index arrival price})}{\text{index arrival price}} \times 10,000$$

When a pretrade estimate of cost is available, the added value of the trader's actions is given by:

$$\text{added value (bps)} = \text{arrival cost (bps)} - \text{estimated pretrade cost (bps)}$$

LOS 25.i

An asset manager should have a formal written trade policy which clearly sets out its procedure. Trade policy has four key areas: (1) the meaning of best execution, (2) the factors that determine the optimal trading approach, (3) a listing of approved brokers and execution venues, and (4) details of the monitoring processes used by the asset manager.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 25.1

1. **C** Client redemptions from investment funds are usually based on the fund's net asset value, which is calculated using closing prices of securities. In this case, trading at the closing price eliminates the risk to the fund of executing liquidating sales at price different to those used to calculate the redemption proceeds required for investors. The target price for a profit-seeking trade will depend on the urgency of the trade. Trades with a high rate of alpha decay will require immediate execution; trades with a low rate of alpha decay will require less urgent execution. Trades to meet margin calls usually need to be executed immediately. (LOS 25.a)
2. **C** Market impact is the adverse movement in price caused by submitting an order to the market and forcing prices up as a buyer, or down as a seller. For a given order size, impact is higher in less liquid markets than it is in more liquid markets. Hence, an increase in security liquidity will lower market impact costs. Execution risk is the risk of an adverse movement in a share price in the time it takes to execute an order. In a more liquid market, a given order size can be executed in a shorter time horizon; hence, execution risk is also lower. (LOS 25.b)

Module Quiz 25.2

1. **A** A manager who wishes to trade passively over a trading day will want to execute at the average price over the day (hence, will choose TWAP or VWAP). If a manager wants to minimize the impact of outliers, the manager should use TWAP as a benchmark since this will not overweight large buy or sell orders at extreme prices over the day. Arrival price benchmarks are relevant for managers trading short-term alpha opportunities (hence, not relevant for a manager wishing to trade passively). (LOS 25.c)
2. **C** Executing the trading list as close to the closing market prices of the securities on the trading day is the most appropriate strategy, since this will best align the trade execution prices with the closing prices used to calculate fund NAV and reconstitute the benchmark. This will minimize the tracking error of the fund versus the benchmark as per the low tracking error mandate of the fund. (LOS 25.d)

Module Quiz 25.3

- B** Arrival price strategies will execute orders with high urgency, or when the manager has high risk aversion against the execution risk associated with longer execution time periods. They are not appropriate for orders with high market impact or relatively illiquid markets. Therefore, the best answer choice here is STU because it is an order with high execution risk aversion, low market impact, and the order size is a small percentage of average daily volume (ADV). An arrival price strategy is not appropriate for orders in PQR or VWX due to the lower risk aversion, higher market impact, and higher order sizes. (LOS 25.e)
- B** RFQ systems are systems used by investors to request prices from dealers in less liquid quote-driven markets. Fixed-income markets are most likely to use RFQ systems since these markets are less liquid and driven by dealer quotes. Due to higher liquidity levels and more advanced technology, equity markets and exchange-traded derivatives markets are more likely to be electronic and order driven rather than quote-driven markets using RFQ systems. (LOS 25.f)

Module Quiz 25.4, 25.5

- B** The paper portfolio assumes that all the shares are immediately sold at the original decision price with no trading costs. The paper return is as follows:

$$\text{paper return} = 10,000 \times (\$32.50 - \$32.35) = \$1,500$$

The actual portfolio return reflects the actual P/L generated by the trading of the order, after commissions of $4,000 \times 0.03 = \$120$. In this case, the actual return is as follows:

$$\text{actual return} = 4,000 \times (\$32.65 - \$32.35) - \$120 = \$1,080$$

Hence, the IS in dollars is $\$1,500 - \$1,080 = \$420$. As a proportion of the initial paper portfolio, this is $\$420 / (10,000 \times \$32.50) = 0.0012923$, or 12.92 basis points. (Module 25.4, LOS 25.g)

- C** The market-adjusted cost of an execution is given by:

$$\text{market-adjusted cost (bps)} = \text{arrival cost (bps)} - \beta \times \text{index cost (bps)}$$

The arrival cost of the trade is given by:

$$\text{arrival cost (bps)} = \text{side} \times \frac{(\text{execution price} - \text{arrival price})}{\text{arrival price}} \times 10,000$$

Since this order is a sale, 'side' = -1 and the arrival cost is:

$$\text{arrival cost (bps)} = -1 \times \frac{(\$8.38 - \$8.40)}{\$8.40} \times 10,000 = 23.8 \text{ bps}$$

The index cost is given by:

$$\text{index cost (bps)} = \text{side} \times \frac{(\text{index VWAP} - \text{index arrival price})}{\text{index arrival price}} \times 10,000$$

For this order:

$$\text{index cost (bps)} = -1 \times \frac{(3,050 - 3,000)}{3,000} \times 10,000 = -166.7 \text{ bps}$$

Then, the market-adjusted cost is:

$$\text{market-adjusted cost (bps)} = 23.8 - (1.3 \times -166.7) = 240.5 \text{ bps}$$

(Module 25.5, LOS 25.h)

3. A Neither statement is best trade governance practice.

Statement 1 is not best practice since a firm should establish a BEMC, which should collaborate with portfolio managers, risk management, and legal/compliance to enact trade governance.

Statement 2 is not best practice since best execution does not simply relate to the lowest-cost broker. Best execution needs to consider the overall result from executing trades, which goes beyond prices and costs; it also needs to consider factors such as speed of execution, likelihood of execution and settlement, order size, and the nature of trades. (Module 25.5, LOS 25.i)

The following is a review of the Trading, Performance Evaluation, and Manager Selection principles designed to address the learning outcome statements set forth by CFA Institute. Cross-Reference to CFA Institute Assigned Reading #26.

READING 26: PORTFOLIO PERFORMANCE EVALUATION

Study Session 13

EXAM FOCUS

Performance evaluation of a portfolio is important to managers, sponsors, and clients who need to quantify performance and understand key drivers of both risk and return. Some of the calculations in the reading, if done in full, can be extremely tedious and are best left to spreadsheets and software programs. For the exam, expect the calculations to be reasonable. Also expect a fair balance of testing on both the calculations and the qualitative concepts. There is a sizable amount of material in the reading that overlaps with previous readings as well as the subsequent reading on investment manager selection.

MODULE 26.1: PERFORMANCE EVALUATION



In a large institutional portfolio, it is common to have multiple investment managers where decisions are made by both the fund sponsor as well as by individual managers within the fund that affect portfolio performance. Performance evaluation can deconstruct returns to quantify which decisions added or subtracted value for the fund.

Video covering this content is available online.

The fund sponsor's perspective will capture all value added or lost, while the manager's perspective will focus only on what a manager did to add or lose value for the fund. The material presupposes a large investor (e.g., a pension fund, endowment, or foundation) selects several investment managers to meet their investment goals and objectives.

The objective of the reading is to provide the tools necessary to evaluate active investment decisions made by plan sponsors and portfolio managers.

Components of Performance Evaluation

LOS 26.a: Explain the following components of portfolio evaluation and their interrelationships: performance measurement, performance attribution, and performance appraisal.

CFA® Program Curriculum, Volume 5, page 191

Performance evaluation consists of three interrelated components that build upon each other:

- **Performance measurement** serves as the initial foundation phase and calculates both the return and the risk of the fund over specified time periods. It is imperative to determine, before any performance evaluation analysis, if the portfolio will be

compared to a benchmark (relative performance) or to a target return percentage that is specified in advance by the portfolio manager (absolute performance).

- **Performance attribution** determines the key drivers that generated the account's performance. Performance attribution expands upon the risk and return that was quantified through performance measurement and explains how the return was achieved given the risk taken by the portfolio manager. Also, performance attribution can explain both relative and absolute returns.
- **Performance appraisal** determines whether the performance was affected primarily by investment decisions, by the overall market, or by chance. Performance appraisal combines output from both performance measurement and performance attribution to render a professional judgment on the quality of the performance. If a fund's performance is attributed to luck, we cannot expect the portfolio manager to exhibit similar returns in the future.

In summary, performance evaluation answers three questions regarding a portfolio's performance:

1. What performance did the fund achieve during the period (performance measurement)?
2. How did the fund manager achieve their performance (performance attribution)?
3. Did the fund manager achieve their performance via skill or luck (performance appraisal)?

Performance Attribution

It is crucial to analyze the results of performance attribution as part of the portfolio evaluation process. As data is becoming more readily available, performance attribution has become more frequently used by many types of industry practitioners, including individual clients, who want to better understand the portfolio manager's investment process. For performance attribution to be a useful tool, it is imperative that the attribution process account for all aspects of the fund's risk and return. An attribution that does not account for the total risk and return of the fund is misleading and cannot be relied upon for any meaningful analysis.

LOS 26.b: Describe attributes of an effective attribution process.

CFA® Program Curriculum, Volume 5, page 192

An effective performance attribution process includes:

- A reflection of 100% of the portfolio's return or risk exposure.
- The portfolio manager's current decision-making process.
- The active investment decisions taken by the portfolio manager.
- A full explanation of the portfolio's excess return and risk.

The attribution analysis must account for 100% of the portfolio's risk and return and adequately represent the portfolio manager's current investment process. If the fundamental investment process of the fund has recently changed, then that attribution analysis must be updated to reflect those changes in the investment process.

Performance Attribution—Return Attribution & Risk Attribution

LOS 26.c: Contrast return attribution and risk attribution; contrast macro and micro return attribution.

CFA® Program Curriculum, Volume 5, page 193

Return attribution evaluates the impact of the active portfolio management decisions on the fund's investment returns.

Risk attribution is the parallel of return attribution but analyzes the impact of the portfolio manager's active investment decisions on portfolio risk.

Risk is generally compared to the portfolio's appropriate benchmark, but it can also be calculated in absolute terms, independent of a benchmark. For example, a relative-based risk attribution analysis would not be appropriate for a portfolio manager who has predetermined an absolute target return investment goal. Unfortunately, many investors often compare their portfolio's performance to a widely quoted passive index such as the S&P 500. A widely quoted index may or may not be an appropriate benchmark for their portfolio.

After a 10-year bull market in the S&P 500, performance attribution is likely to become even more important as portfolio managers justify their performance and fees during periods of negative returns. An additional benefit of performance attribution is its function as a form of quality control when reviewing an active portfolio. Basically, did the fund manager do what they said they were going to do?

Micro Attribution vs. Macro Attribution

Performance attribution is extremely flexible and can be analyzed at both the fund sponsor and the individual portfolio manager level.

Micro attribution analyzes the portfolio at the portfolio manager's level and seeks to verify that the portfolio manager did what they said they would and to understand the drivers of the portfolio's return.

Macro attribution analyzes investment decisions at the fund sponsor's level; it's commonly used with institutional investing. Macro attribution quantifies the fund sponsors' decisions to deviate from their strategic asset allocation and the timing when they made those decisions.

Performance Attribution—Returns-Based, Holdings-Based, and Transactions-Based

LOS 26.d: Describe returns-based, holdings-based, and transactions-based performance attribution, including advantages and disadvantages of each.

CFA® Program Curriculum, Volume 5, page 193

The three main approaches to conducting performance attribution are returns-based, holdings-based, and transactions-based methods.

Returns-based attribution regresses total portfolio returns against major risk factors (for example, systematic risk, size, value) to identify the active bets of the manager and their impact on active returns.

Holdings-based attribution uses beginning-of-period portfolio holdings to assess the active sector/stock selection bets of the manager and their contribution to active return. This method does not adjust for portfolio changes made during the evaluation period; hence, the output may not fully reconcile to overall portfolio returns for a manager with high turnover. This mismatch is referred to as a “timing” or “trading” effect, which can be reduced by using shorter evaluation periods.

Transactions-based attribution improves upon the holdings-based attribution by including the impact of any trades executed during the evaluation period.

The selection of attribution method will be driven by the nature of the data available, the investment process of the manager, and the need for accuracy by the analyst. A summary of the advantages and disadvantages of the three methods is displayed in Figure 26.1.

Figure 26.1: Advantages and Disadvantages of Performance Attribution Methods

Method	Advantages	Disadvantages
Returns-based	<ul style="list-style-type: none">■ Easy to implement■ Does not require holdings data (useful for private funds—e.g., hedge funds)	<ul style="list-style-type: none">■ Least accurate because does not consider underlying holdings■ Returns data can be manipulated
Holdings-based	<ul style="list-style-type: none">■ More accurate than returns-based because considers underlying holdings	<ul style="list-style-type: none">■ Needs data on fund holdings■ Mismatch due to trading effect—not appropriate for high turnover active funds with long evaluation periods
Transactions-based	<ul style="list-style-type: none">■ Most accurate method	<ul style="list-style-type: none">■ Highest data requirements■ Highest complexity



PROFESSOR'S NOTE

Note that the returns-based and holdings-based attribution methods are analogous to the returns-based and holdings-based style analysis methods discussed in the Equity section of the Level III curriculum. For the exam, make sure you can recommend the most appropriate method, given the advantages/disadvantages of each.

An example of a returns-based attribution is the fundamental factor-based model, and an example of a holdings-based approach is the Brinson model, both of which are discussed later in this reading.



MODULE QUIZ 26.1

To best evaluate your performance, enter your quiz answers online.

1. Which component of performance evaluation attempts to determine whether performance was affected primarily by chance?
 - A. Performance appraisal.
 - B. Performance attribution.
 - C. Performance measurement.
2. Which method of performance attribution is the *most* reliable?
 - A. Returns-based.
 - B. Holdings-based.
 - C. Transactions-based.

MODULE 26.2: APPROACHES TO RETURN ATTRIBUTION



LOS 26.e: Interpret the sources of portfolio returns using a specified attribution approach.

Video covering
this content is
available online.

CFA® Program Curriculum, Volume 5, page 195

Arithmetic Attribution and Geometric Attribution

Arithmetic attribution calculations focus on the active return of a portfolio in a single period by subtracting the benchmark return, B , from the portfolio return, R . A problem with this approach is that single-period arithmetic active returns do not compound to equal active returns over multiple periods without a “smoothing” adjustment.

To demonstrate, consider the following returns data for a portfolio and a benchmark over two periods:

	Period 1	Period 2
Portfolio Return (R)	5%	5%
Benchmark Return (B)	3%	3%

If you invested \$100 in the portfolio over these two periods, you would end up with a portfolio worth $\$100 \times 1.05^2 = \110.25 and a two-period performance of 10.25%.

Comparing this to the benchmark ending wealth of $\$100 \times 1.03^2 = \106.09 , and its two-period performance of 6.09%, implies a two-period active return of $10.25\% - 6.09\% = 4.16\%$.

Note that an arithmetic attribution would calculate an active return of $5\% - 3\% = 2\%$ for each period. These arithmetic active returns of 2% do not compound to equal the two-period active return of 4.16%, because $(1.02^2 - 1) = 4.04\%$.

A solution to this problem is to use *geometric* attribution, which defines the periodic excess return of the portfolio, G , as a ratio rather than a subtraction:

$$G = \frac{1+R}{1+B} - 1$$

In our example above, the two-period geometric active return is $1.1025/1.0609 - 1 = 3.92\%$, while each single-period geometric active return is $1.05/1.03 - 1 = 1.94\%$. These single-period geometric returns *do* compound across two periods because $(1.0194)^2 - 1 = 3.92\%$.



PROFESSOR'S NOTE

All the attribution models that follow in this reading are arithmetic models, which is representative of the fact that a vast majority of performance appraisal practitioners use arithmetic attribution.

Equity Return Attribution—the Brinson Model

LOS 26.h: Identify and interpret investment results attributable to the asset owner versus those attributable to the investment manager.

The Brinson Model comprises two different, but very similar, performance attribution methods, referred to as the Brinson-Hood-Beebower (BHB) method and the Brinson-Fachler (BF) method.

The Brinson-Hood-Beebower (BHB) Method

We shall illustrate the **BHB method** through application to the following portfolio and benchmark data, relating to an institutional fund that has allocated to two external managers—a growth manager and a value manager. We will assess the value added/lost by the decision to allocate to these external managers in terms of how the manager's style performs relative to the overall benchmark, and how well the managers perform relative to their style.



PROFESSOR'S NOTE

As we shall see later in this reading, attribution of the value added by a fund sponsor's decision to allocate to asset classes, styles, and individual styles is referred to as a macro attribution.

Figure 26.2: BHB Model Example

Style	Fund Weight	Fund Return	Benchmark Weight	Benchmark Return
Growth Equity Style	75%	13%	60%	10%
Value Equity Style	25%	19%	40%	20%
Total	100%	14.5%	100%	14.0%

First, note some basic calculations. The total portfolio return is given by:

$$\text{portfolio return, } R = \sum_{i=1}^n w_i R_i$$

where:

w_i = portfolio weight of the i th segment (usually style, sector, or geography)

R_i = portfolio return in the i th segment

n = number of segments in the portfolio

In this case, the total portfolio return is calculated as $(0.75 \times 13\%) + (0.25 \times 19\%) = 14.5\%$.

Similarly, the total benchmark return is given by:

$$\text{benchmark return, } B = \sum_{i=1}^n W_i B_i$$

where:

W_i = benchmark weight of the i th segment

B_i = benchmark return in the i th segment

In this case, the total benchmark return is calculated as $(0.60 \times 10\%) + (0.40 \times 20\%) = 14.0\%$.

Note that the total active return of the portfolio is $R - B = 14.5\% - 14.0\% = 0.5\%$.

The BHB method breaks the total active return of the portfolio (0.5%) into three components: the allocation effect, the selection effect, and the interaction effect.

The **allocation effect** measures the value added/subtracted through the decision to overweight/underweight a segment versus the benchmark. It is calculated by multiplying the active weight in the segment by the passive benchmark segment return.

The allocation effect for segment i , A_i , can be formulated as:

$$A_i = (w_i - W_i) \times B_i$$

In this example:

- growth allocation effect = $(0.75 - 0.60) \times 10\% = 1.5\%$
- value allocation effect = $(0.25 - 0.40) \times 20\% = -3.0\%$
- total allocation effect = $1.5\% - 3.0\% = -1.5\%$

Note how the total allocation effect here is negative, indicating that the decision to overweight growth and underweight value was an incorrect decision in a period where the value style outperformed growth.

The **selection effect** measures the value added/subtracted through selecting investments in the portfolio different from those of the benchmark. It is calculated by multiplying the passive benchmark weight of the segment by the active return generated in the segment.

The selection effect for segment i , S_i , can be formulated as:

$$S_i = W_i \times (R_i - B_i)$$

In this example:

- growth selection effect = $0.60 \times (13\% - 10\%) = 1.8\%$
- value selection effect = $0.40 \times (19\% - 20\%) = -0.4\%$
- total selection effect = $1.8\% - 0.4\% = 1.4\%$

Note how the selection effect is positive in the growth style where the manager selected outperformed the growth benchmark; however, the selection effect was negative in the value segment due to poor performance of manager selected versus the value benchmark.

The **interaction effect** measures the impact on active return of the allocation and selection effects acting *together*.

The interaction effect for segment i , I_i , can be formulated as:

$$I_i = (w_i - W_i) \times (R_i - B_i)$$

In this example:

- growth interaction effect = $(0.75 - 0.60) \times (13\% - 10\%) = 0.45\%$
- value interaction effect = $(0.25 - 0.40) \times (19\% - 20\%) = 0.15\%$
- total interaction effect = $0.45\% + 0.15\% = 0.60\%$

Note that the interaction effect is positive in the growth segment because the portfolio was overweight a style where the manager selected by the portfolio outperformed. The interaction effect was also positive in the value segment because the portfolio was underweight a style where manager selection was poor.

PROFESSOR'S NOTE



It might not be immediately obvious as to what role the interaction effect is playing. It is required because the allocation effect is **purely** looking at the impact of going overweight/underweight segments (in this case style)—it ignores any selection ability. The selection effect is **purely** looking at the impact of picking the right investments (in this case allocating to outperforming managers)—it ignores any impact of overweighting/underweighting segments. The interaction effect is required because there will be a “compounding” together of the impact of selection and segment weighting. For example, a portfolio that is overweight a style in which superior managers were selected will outperform by more than the sum of the allocation and selection effects.

While the interaction effect might be the least intuitive of the three effects, it is worth noting that it is simply derived from the first term of the allocation effect multiplied by the second term of the selection effect.

A summary of the output of the BHB model is displayed below:

Style	Allocation	Selection	Interaction
Growth Equity Style	1.50%	1.80%	0.45%
Value Equity Style	-3.00%	-0.40%	0.15%
Total	-1.50%	1.40%	0.60%

Note the total value added = $-1.50\% + 1.40\% + 0.60\% = 0.50\%$, which matches the figure calculated at the beginning of the analysis for total active return.

The Brinson-Fachler (BF) Method

The BF method addresses a minor drawback in the way the BHB method calculates the allocation effect for individual segments of the portfolio. The allocation effect for segment i under the BHB method is potentially problematic because the sign of the resulting allocation effect does not automatically indicate whether the decision to overweight/underweight a particular segment of the portfolio was correct.

In the example above, it should be obvious that it was a bad decision to overweight the growth style during the period because the style performed worse than the benchmark as a whole (the passive return for the growth style was 10%, while the overall benchmark return was 14%).

However, under the BHB method, the growth-style allocation effect was calculated as $(0.75 - 0.60) \times 10\% = +1.5\%$. This positive allocation effect is potentially misleading because the decision to overweight the growth style was a bad decision and detracted from the active return of the portfolio. This can only be seen when we calculate the allocation effect for the value style to be $(0.25 - 0.40) \times 20\% = -3.0\%$ and aggregate to a total allocation effect of $+1.5\% - 3.0\% = -1.5\%$.

The BF model tweaks the way the allocation effect is calculated to address this drawback of the BHB model. Under the BF model, the allocation effect looks at the active weight in the segment multiplied by the passive benchmark return of the segment *relative to the overall benchmark*. This can be formulated as:

$$A_i = (w_i - W_i) \times (B_i - B)$$

Under the BF method, the allocation effect is calculated as:

- growth allocation effect = $(0.75 - 0.60) \times (10\% - 14\%) = -0.60\%$
- value allocation effect = $(0.25 - 0.40) \times (20\% - 14\%) = -0.90\%$
- total allocation effect = $-0.60\% - 0.90\% = -1.50\%$

Under the BF method, we can see more clearly that the decision to overweight growth was a bad decision. Note that the aggregate allocation effect of -1.50% remains the same under both the BHB and the BF approaches.

The selection effect and the interaction effect are calculated in exactly the same way under both the BHB and the BF methods.

A summary of the output of the BF model is displayed below:

Style	Allocation	Selection	Interaction
Growth Equity Style	-0.60%	1.80%	0.45%
Value Equity Style	-0.90%	-0.40%	0.15%
Total	-1.50%	1.40%	0.60%

Note that the only difference between the BF output and the BHB output is the individual growth and value allocation effects.



PROFESSOR'S NOTE

In practice, the BF model tends to be the more popular model.

Macro Attributions vs. Micro Attribution

Investment decisions for an institutional fund, such as a university endowment fund, will have investment decisions being made on many different levels.

It will have an investment committee at the top of its investment decision-making structure responsible for setting overall strategic asset allocation weights and overseeing internal investment staff. The internal investment staff of the endowment would be responsible for tactical deviations from strategic asset allocation and the selection of external portfolio managers. Together, the investment committee and the internal investment staff would be referred to as the fund sponsor. Conducting a performance attribution on the decisions made by the fund sponsor is called a **macro attribution**.

The BHB and the BF model attributions in the previous section were macro attributions. They looked at the value added through the decisions made by the sponsor to overweight/underweight different styles of *manager* versus the benchmark and the value added by the sponsor's ability to select good *managers* in these styles.

Further down the investment decision-making structure are individual portfolio managers (either internal or external to the endowment) making decisions to overweight/underweight segments (e.g., substyle/sector/geography) of their portfolio to generate an active return. A performance attribution applied to these decisions made at the individual investment-manager level is called **micro attribution**.

For example, an expansion of the example above might show that the managers made active bets on size (small-cap vs. large-cap stocks) as follows:

Figure 26.3: Micro Attribution Example

Style	Fund Weight	Fund Return	Benchmark Weight	Benchmark Return
Growth Equity Style	75%	13%	60%	10%
<i>Large-cap growth equities</i>	50%	15%	30%	8%
<i>Small-cap growth equities</i>	25%	9%	30%	12%
Value Equity Style	25%	19%	40%	20%
<i>Large-cap value equities</i>	25%	19%	40%	20%
Total	100%	14.50%	100%	14.00%

Using the BF model, the allocation effect for a micro attribution calculates the allocation effect of the *size* bets made by the growth and value managers. Recall that the allocation effect is calculated as:

$$A_i = (w_i - W_i) \times (B_i - B)$$

Applying this calculation to the active bets of the growth manager made with respect to size gives:

- large-cap growth allocation effect = $(0.50 - 0.30) \times (8\% - 14\%) = -1.20\%$
- small-cap growth allocation effect = $(0.25 - 0.30) \times (12\% - 14\%) = 0.10\%$
- total growth allocation effect = $-1.20\% + 0.10\% = -1.10\%$

The key takeaway from these calculations is that the growth manager allocated poorly by overweighting large-cap growth stocks when large-cap growth stocks underperformed the general benchmark.

Recall that the selection effect is formulated as:

$$S_i = W_i \times (R_i - B_i)$$

Applying this calculation to the active bets of the growth manager made with respect to size gives:

- large-cap growth selection effect = $0.30 \times (15\% - 8\%) = 2.10\%$
- small-cap growth selection effect = $0.30 \times (9\% - 12\%) = -0.90\%$
- total growth selection effect = $2.10\% - 0.90\% = 1.20\%$

These calculations show that good stock picking in the large-cap growth segment more than outweighed poor stock picking in the small-cap growth segment.

Recall that the interaction effect is formulated as:

$$I_i = (w_i - W_i) \times (R_i - B_i)$$

Applying this calculation to the active bets of the growth manager made with respect to size gives:

- large-cap growth interaction effect = $(0.50 - 0.30) \times (15\% - 8\%) = 1.40\%$
- small-cap growth interaction effect = $(0.25 - 0.30) \times (9\% - 12\%) = 0.15\%$
- total growth interaction effect = $1.40\% + 0.15\% = 1.55\%$

These calculations show that the growth manager benefited from overweighting large-cap stocks where they exhibited good stock-picking ability, and likewise benefitted from

underweighting small-cap stocks where they exhibited poor stock-picking ability.

Applying similar calculations to the value manager yields the following results:

Figure 26.4: Micro-Attribution Output

Style	Allocation	Selection	Interaction
Growth Equity Style	-1.10%	1.20%	1.55%
<i>Large-cap growth equities</i>	-1.20%	2.10%	1.40%
<i>Small-cap growth equities</i>	0.10%	-0.90%	0.15%
Value Equity Style	-0.90%	-0.40%	0.15%
<i>Large-cap value equities</i>	-0.90%	-0.40%	0.15%
Total	-2.00%	0.80%	1.70%

Some important points to note here:

- The total allocation + selection + interaction effect is $-2.00\% + 0.80\% + 1.70\% = 0.5\%$, which is the total active return of the portfolio. Note that this is the same as the macro-attribution output.
- The total growth equity style effects are calculated by summing the individual effects for large-cap growth and small-cap growth segments. These totals are not the same as the numbers calculated for the growth manager under the macro attribution; however they do aggregate to the same overall active return across all effects (The sum of the growth manager effects under the macro analysis was $-0.60\% + 1.80\% + 0.45\% = 1.65\%$. The sum of the growth manager effects under the micro analysis above is $-1.10\% + 1.20\% + 1.55\% = 1.65\%$.).

Micro attribution can be conducted on many different types of portfolio segments—for example, style, industrial sector, or geography. As the macro/micro attributions above show, a manager's allocation and selection effects can be different if the attribution is performed along different types of segments. For example, a manager may have negative aggregate selection effect with respect to industrial sector and positive aggregate selection effect with regard to geography. This begs the obvious question: is the manager a good stock picker? The answer to that question lies in the decision-making process. If the manager constructs the portfolio along geographical lines, then the data show the manager to be a good stock picker. If sector selection is central to the manager's decision process, then the data are showing that the manager is a poor stock picker.



PROFESSOR'S NOTE

The curriculum goes on to apply the BF model to a portfolio segmented by sector, geography, and even individual security. In each case, the attribution is performed by applying the BF formulas in the same way as above to each segment of the portfolio. Some points to note:

1. In later attributions, the reading presents the selection and interaction effect together rather than individually. A shortcut to lumping together the selection and interaction effects is to use the formula for the selection effect above with portfolio weights instead of benchmark weights: $w_i \times (R_i - B_i)$

For example, in the large-cap growth equity segment in the micro attribution above, the selection effect was calculated to be 2.10% and the interaction effect was calculated to be 1.40%. The sum of selection and interaction (3.50%) could be

calculated quickly by basing selection effect on actual portfolio weights using the formula $w_i \times (R_i - B_i) = 0.5 \times (15\% - 8\%) = 3.50\%$.

2. When the micro attribution is conducted on a single stock, the allocation effect actually represents the selection effect (because an allocation to a single security is really a stock-selection decision), and the selection effect represents the market timing and transaction costs of the manager with respect to the individual security.

Equity Return Attribution—Factor-Based Return Attribution

In the previous section, we demonstrated that the BHB model calculates the attribution of security selection, asset allocation, and their interaction effects. It is common to analyze additional investment manager decisions to better understand an investment strategy. A frequently used attribution model is the **fundamental factor model**, where a portfolio's sensitivity to additional factors can be tested.

The **Carhart model** calculates the excess return from active portfolio management investment decisions by determining the impact on the portfolio due to the following factors: (1) market index (RMRF), (2) market capitalization (SMB), (3) book value to price (HML), and (4) momentum (WML). For more in-depth analysis, the Carhart model allows practitioners to remove the effects of known market factors to quantify the excess returns from active management decisions that are not accounted for in the Carhart model.

$$R_p - R_f = a_p + b_{p1}RMRF + b_{p2}SMB + b_{p3}HML + b_{p4}WML + E_p$$

where:

R_p = portfolio return

R_f = risk-free rate

a_p = alpha or return above the expected return for the portfolio's level of systematic risk

b_p = various portfolio factor sensitivities

RMRF = return on a value-weighted equity index above that of the one-month T-bill rate

SMB = small minus big, a size (market-capitalization) factor; equal to the difference between the average return on three small-cap portfolios and the average return on three large-cap portfolios

HML = high minus low, a value factor; equal to the difference between the average return on two high-book-to-market portfolios and the average return on two low-book-to-market portfolios

WML = winners minus losers, a momentum factor; equal to the difference between the return on a portfolio of the past year's winners and the return on a portfolio of the past year's losers

E_p = error term to capture the part of the portfolio return unexplained by the model

In applying the Carhart factor model, consider the attribution results for a portfolio manager's investment decisions.

Figure 26.5: Sample Carhart Factor Model Attribution

	Factor Sensitivity				Contribution to Active Return	
	Portfolio	Benchmark	Difference	Factor Return	Absolute	Proportion of Total
Factor	1)	2)	3)	4)	3) × 4)	Active
RMRF	0.98	1.00	-0.02	4.62%	-0.09%	-5.59%
SMB	-1.10	-1.00	-0.10	-2.06%	0.21%	12.46%
HML	0.30	0.00	0.30	4.30%	1.29%	78.01%
WML	0.09	0.05	0.04	8.75%	0.35%	21.17%
	Factor tilts return			1.75%	106.05%	
	+ Security selection			-0.10%	-6.05%	
	Active return			1.65%	100%	

Analyzing attribution analysis results is important in determining the manager's ability to consistently add value. To start the analysis, one can review either the portfolio or its benchmark. Looking at the benchmark (Figure 26.5, column 2) the sensitivity to RMRF of 1 suggests that the benchmark is a diversified index. The negative coefficient of the benchmark's sensitivity to SMB indicates the benchmark has a large-cap focus tilt. We can summarize the benchmark as large-cap blend (no tilt toward growth or value) that does not use momentum.

To analyze the investment decisions by the portfolio manager, review column 1 (portfolio) and column 3 (difference between portfolio and benchmark). The portfolio exhibits a value tilt but closely resembles the benchmark on the other factors.

The next step in the attribution analysis is to determine if the value tilt taken by the portfolio manager added or detracted value from the portfolio. From the factor sensitivities table, the value tilt contributed 1.29%, or over 78% of the total realized active return for the portfolio. The other effects were minor compared to the value tilt taken by the portfolio manager. Finally, the portfolio manager's effectiveness at stock picking (security selection) detracted slightly (-0.10%) from the portfolio's returns.

It is important to check if the portfolio manager's prospectus indicates that they follow a value-based strategy. If the prospectus indicates the manager is a growth investor, this was not demonstrated in the model attribution and further due diligence is required.

Fixed-Income Return Attribution

LOS 26.f: Interpret the output from fixed-income attribution analyses.

CFA® Program Curriculum, Volume 5, page 206

Three common methods of fixed-income attribution include:

- Exposure decomposition—duration based.
- Yield curve decomposition—duration based.
- Yield curve decomposition—full-repricing based.



PROFESSOR'S NOTE

For the exam, candidates are not responsible for fixed-income attribution calculations but are responsible for interpreting the results from any of the fixed-income attribution methods.

Exposure Decomposition—Duration Based

The major active bets that a fixed-income manager could take to generate active return versus the benchmark are the following:

- Duration—for example, a manager that expects the yield curve to shift *down* would *increase* the duration of the portfolio versus the benchmark.
- Curve shape—a manager could position the portfolio to outperform by correctly anticipating a change in the shape of the yield curve—for example a steepening of the curve
- Sector selection—a manager that believes that corporate spreads will narrow, leading to corporate bonds outperforming government bonds, would increase exposure to the corporate bond sector.
- Bond selection—a manager could overweight individual bonds that are expected to outperform the benchmark.

An exposure decomposition partitions both the portfolio and the benchmark by weight into duration “buckets” (e.g., short/mid/long). For each duration bucket, the portfolio and the benchmark are also partitioned by weight into sectors (e.g., government/corporate). From here, the attribution analysis decomposes the active return of the manager into the sources listed above for each duration bucket and each sector.

Figure 26.7 shows the breakdown of a hypothetical portfolio and its benchmark by weights, which would act as an input to an exposure decomposition attribution. The buckets are segmented into short and medium durations.

Figure 26.6: Fixed-Income Exposure Decomposition Analysis

Bucket	Duration
Short	2 or less
Medium	Greater than 2 up to and including 8

Figure 26.7: Exposure Decomposition Example

	Portfolio Weights			Portfolio Duration			Portfolio Contribution to Duration		
	Short	Medium	Total	Short	Medium	Total	Short	Medium	Total
Corporate	20%	45%	65%	1.20	7.30	5.42	0.24	3.29	3.53
Government	20%	15%	35%	1.40	6.90	3.76	0.28	1.04	1.32
Total	40%	60%	100%	1.30	7.20	4.84	0.52	4.32	4.84

	Benchmark Weights			Benchmark Duration			Benchmark Contribution to Duration		
	Short	Medium	Total	Short	Medium	Total	Short	Medium	Total
Corporate	25%	20%	45%	1.20	7.30	3.91	0.30	1.46	1.76
Government	31%	24%	55%	1.40	6.90	3.80	0.43	1.66	2.09
Total	56%	44%	100%	1.31	7.08	3.85	0.73	3.12	3.85

	Portfolio Weights			Portfolio Return			Portfolio Contribution to Return		
	Short	Medium	Total	Short	Medium	Total	Short	Medium	Total
Corporate	20%	45%	65%	2.10%	2.18%	2.16%	0.42%	0.98%	1.40%
Government	20%	15%	35%	3.00%	2.76%	2.90%	0.60%	0.41%	1.01%
Total	40%	60%	100%	2.55%	2.33%	2.42%	1.02%	1.40%	2.42%

	Benchmark Weights			Benchmark Return			Benchmark Contribution to Return		
	Short	Medium	Total	Short	Medium	Total	Short	Medium	Total
Corporate	25%	20%	45%	2.10%	2.18%	2.14%	0.53%	0.44%	0.96%
Government	31%	24%	55%	3.00%	2.76%	2.90%	0.93%	0.66%	1.60%
Total	56%	44%	100%	2.60%	2.50%	2.56%	1.46%	1.10%	2.56%

Note: Figures are rounded for presentation.

Key points to note here:

- The total return of the portfolio was 2.42%. The total return of the benchmark was 2.56%. The purpose of this attribution is to explain why the active return of the portfolio was $2.42\% - 2.56\% = -0.14\%$
- The overall portfolio duration was 4.84, versus an overall benchmark duration of 3.85. This implies that the portfolio would outperform if the yield curve experienced a parallel shift down. The manager achieved this higher duration through having a higher total weight in the medium duration bucket (60%) versus the benchmark (44%).
- The manager was overweight corporate bonds in the portfolio (65%) versus the benchmark (45%). This implies that the manager expected corporate bond spreads to narrow, leading to corporate bonds outperforming government bonds.

From the inputs displayed above, an attribution can be performed, the results of which are summarized in Figure 26.8 below.

Figure 26.8: Hypothetical Decomposition—Attribution Results

Duration Bucket	Duration Effect	Curve Effect	Total Interest Rate Allocation	Sector Allocation	Bond Selection	Total
Short	-0.15%	-0.16%	-0.31%	0.05%	0.00%	-0.26%
Medium	0.48%	-0.23%	0.25%	-0.13%	0.00%	0.12%
Total	0.33%	-0.39%	-0.06%	-0.08%	0.00%	-0.14%

Key points to note here:

- The higher duration active position of the manager generated positive outperformance of 0.33%. The manager was correct to extend the duration of the portfolio, which implies that the yield curve did indeed fall.
- 39 bps of active return was lost due to changes in the shape of the yield curve. Because the manager was overweight higher duration assets, this suggests that medium yields rose and short yields fell. This implies a steepening of the yield curve.
- 8 bps were lost because the manager overweighed the corporate sector. This implies that, contrary to the manager's expectations, corporate spreads widened during the period. This is also evidenced by the lower returns in the benchmark for corporate bonds than for government bonds.
- The manager did not engage in active bond selection during the period.

The duration-based exposure decomposition method allows simple presentation of the output of the attribution with relatively low data requirements. The model is usually used for marketing and client reporting where there is a high need to present results in a clearly understandable way.



PROFESSOR'S NOTE

Remember that the important thing here is to interpret the output of the attribution, not to perform calculations to derive the figures.

Yield Curve Decomposition—Duration Based

The total return of a bond can be decomposed into several different sources. These sources include the following:

- Yield or income—the return earned through collecting the coupon income
- Roll—the impact of time passing and the bond “rolling down” a stable yield curve
- Shift—the impact of a parallel shift in the yield curve estimated through duration and convexity
- Shape—the impact of a change in the yield curve, such as a change in slope or curvature
- Spread—the impact of a change in spread for either a sector, a specific security, or both
- Residual—unexplained movements due to the estimation involved in assessing the components above (in particular, duration and convexity)



PROFESSOR'S NOTE

The first three of these sources of return: yield, roll, and shift were calculated for an individual bond in the total return decomposition performed in the fixed-income section of the curriculum.

The duration-based yield curve decomposition decomposes the *active* return of a portfolio manager to these sources of return. For example, a manager with an overweight position in high-coupon, high-yield corporate bonds will expect to have a positive contribution to active return from the yield component due to the high coupon and the spread component due to a presumed expected narrowing of the credit spread. Note that should their holdings default on coupons, or spreads in fact widen, then these effects would be negative, indicating that the manager lost value versus the benchmark due to the overweight position in high-yield corporate bonds.

Duration-based yield curve decomposition requires more data showing that the exposure decomposition method and the calculations involve more operational complexity. As such, these models tend to be used by analysts and portfolio managers rather than for marketing or client communication.

Yield Curve Decomposition—Full Repricing

A full repricing yield curve decomposition is the most comprehensive form of fixed-income attribution. Instead of estimating the impact of active bets using duration and yields to maturity, the full repricing approach breaks down the active return of the manager using individual *spot rates* for cash flows occurring at different maturities. Recall that a spot rate is a rate of return earned by a single cash flow at a specified maturity.

The full repricing approach breaks the active returns of the manager down to the individual cash flows that generated the active returns. As such, it is the most precise of the three fixed-income attribution methods and can accommodate the broadest range of instruments and yield curve changes. The drawback of the full repricing method is that it is the most complex method and, therefore, is least likely to be easily understood by the recipient of the output.

Risk Attribution

LOS 26.g: Discuss considerations in selecting a risk attribution approach.

CFA® Program Curriculum, Volume 5, page 212

Selecting the most appropriate risk metric for attribution analysis requires an in-depth understanding of the investment process of the portfolio manager. It is critical to identify whether the portfolio manager follows a top-down or bottom-up investment process and to define the portfolio's appropriate benchmark.

While performance attribution is important in the overall portfolio analysis process, only looking at returns is insufficient to evaluate the complete investment process. The risk taken by the portfolio manager must also be analyzed to fully evaluate the investment management process. Risk attribution identifies the sources of risk taken by the investment manager that resulted in the fund's returns.

The following table summarizes investment process (row) and type of attribution analysis (column). The correct approach to risk attribution occurs at the intersection of the relevant row and column in the following table.

Investment Process	Type of Attribution Analysis	
	Relative	Absolute
Bottom up	Security's marginal contribution to tracking risk (tracking error)	Security's marginal contribution to total risk
Top down	Attribute tracking error to relative allocation and selection	Factor's marginal contribution to total risk and specific risk
Factor based	Factor's marginal contribution to tracking error and active specific risk	

Tracking risk (or tracking error) is the relevant risk measure to consider for relative attribution analysis, and the general objective is to determine the returns generated from active management and compare them to the amount of tracking risk assumed. For the bottom-up approach, each security in the portfolio has a marginal contribution to tracking risk, and that amount is multiplied by its active weight to determine the contribution to tracking risk. In contrast, the top-down approach takes a more macro approach and attributes active return to allocation; then it attributes tracking error to allocation and selection.

Absolute attribution analysis quantifies general risk arising from market, size, and style exposures and specific risk arising from stock picking. A common risk measure to use is standard deviation. For example, a bottom-up approach could be focused on selection decisions. Therefore, it would be necessary to obtain each security's marginal contribution to total risk—in other words, the change in portfolio standard deviation resulting in a small increase of the security holding in the portfolio. Taking the sum of the marginal contributions to total risk for all the securities and dividing by total portfolio risk will provide the overall risk contribution due to selection decisions.

Risk attribution provides insight into the amount of risk that was introduced into the fund. Risk attribution must be combined with return attribution to fully understand the portfolio manager's active investment decisions.



MODULE QUIZ 26.2

To best evaluate your performance, enter your quiz answers online.

1. The following is an extract from a micro attribution analysis of one of the investment managers of the Hiatus fund:

Economic Sectors	Portfolio Weight (%)	Sector Benchmark Weight (%)	Portfolio Return (%)	Sector Benchmark Return (%)
Energy	8.38	7.72	3.55	3.32
Financial	15.48	13.42	1.66	1.10
Technology	17.89	22.01	3.21	3.18

*The overall benchmark return was 2.32%.

Using the previous table, calculate and evaluate:

- (i) The allocation effect for the energy sector using the Brinson-Fachler model.
- (ii) The selection effect for the financial sector.

(iii) The interaction effect for the technology sector.

Use the following information for Questions 2 through 4.

Patty McDaniel and Peggy Peterson are consultants to Sigma Advisors. Sigma manages funds for wealthy individuals and small institutions. McDaniel and Peterson have been asked by Sigma to develop a plan to evaluate investment manager performance.

As part of McDaniel's and Peterson's task, Sigma asks them to perform micro performance attribution on one of its managers, Frank Matson. Matson invests primarily in large-cap value stocks. Matson's performance relative to the appropriate benchmark is shown in the following table.

	Portfolio Sector Weight	Benchmark Sector Weight	Portfolio Sector Return	Benchmark Sector Return
Agricultural	4.00%	6.00%	-2.00%	-1.00%
Capital goods	8.00%	9.00%	-4.00%	-5.00%
Consumer durables	32.00%	35.00%	2.00%	3.00%
Energy	6.00%	6.00%	8.00%	2.00%
Financial	20.00%	18.00%	6.40%	4.00%
Technology	16.00%	16.00%	2.60%	-2.00%
Utilities	12.00%	10.00%	4.00%	-2.00%
Cash	2.00%	0.00%	0.20%	
Total	100.00%	100.00%		
Portfolio plus cash return			2.90%	0.86%

2. From the data in the table, does Matson demonstrate an ability to wisely allocate funds to the capital goods and/or financial sectors?
 - A. Yes, but only in the capital goods sector.
 - B. Yes, but only in the financial sector.
 - C. Yes, in both capital goods and financial sectors.
3. Does Matson demonstrate an ability to select stocks in the consumer durables and/or technology sectors?
 - A. Yes, in both technology and consumer durables sectors.
 - B. Yes, but only in the technology sector.
 - C. No, he does not demonstrate the ability to select stocks in either sector.
4. Does Matson demonstrate an ability to generate a positive return from interaction effect in the agricultural and/or utilities sectors?
 - A. Yes, but only in the agricultural sector.
 - B. Yes, in both agricultural and utilities sectors.
 - C. Yes, but only in the utilities sector.

MODULE 26.3: BENCHMARKING INVESTMENTS AND MANAGERS

Liability-Based Benchmarks

LOS 26.i: Discuss uses of liability-based benchmarks.



Video covering this content is available online.

A more frequent benchmark in institutional investing is the **liability-based benchmark**, which is likely to be used by fund sponsors and portfolio managers when a firm has a specific liability to pay in the future (e.g., a defined benefit plan). A liability-based benchmark focuses on the cash flows necessary to satisfy the liability and frequently limits the investment choices available to the portfolio manager (e.g., equity and fixed income only). Frequently used assets within a liability-based benchmark include nominal bonds, inflation-adjusted bonds, and high-quality stocks.

As an example of a liability, consider a defined benefit plan that requires future cash flows to fund future liabilities. Some of the plan features will likely impact the structure of the liability and therefore impact which assets the portfolio manager should select to meet those cash flows.

Such features include:

- How many years until the average number of workers will retire in the plan.
- How many workers have already retired and are drawing cash from the plan.
- The impact of inflation on the liabilities.
- The correlation between the company's operating profit (EBIT) and the plan assets.
- If the plan is frozen or has a terminal life.
- Any actuarial assumptions, including life expectancy and required discount rate for the plan.

Asset-Based Benchmarks

LOS 26.j: Describe types of asset-based benchmarks.

CFA® Program Curriculum, Volume 5, page 224

The *seven primary types of benchmarks* are as follows:

1. Absolute. An **absolute benchmark** is a return objective that aims to exceed a minimum target return. An example would be the minimum acceptable return (MAR) that is used in computing the Sortino ratio.

- Advantage:
 - Simple and straightforward benchmark.
- Disadvantage:
 - Absolute return objective is not an investable benchmark.

2. Broad market indexes. There are several well-known broad market indexes that are used as benchmarks (e.g., S&P 500 for U.S. common stocks).

- Advantages:
 - Well recognized, easy to understand by clients, and widely available.
 - Unambiguous, generally investable, measurable, and may be specified in advance.
 - Appropriate to use if it reflects the current investment process of the manager.
- Disadvantage:
 - Manager's style may deviate from the style reflected in the index (e.g., it is not appropriate to use the S&P 500 for a small-capitalization U.S.

growth stock manager).

3. Style indexes. Investment-style indexes represent specific portions of an asset category. Four well-known U.S. common stock style indexes are (1) large-capitalization growth, (2) large-capitalization value, (3) small-capitalization growth, and (4) small-capitalization value.

- Advantages:

- They are widely available, widely understood by clients, and widely accepted.
- If the index reflects the manager's style and it is investable, it is an appropriate benchmark.

- Disadvantages:

- Some style indexes can contain weightings in certain securities and sectors that may be larger than considered prudent.
- Differing definitions of investment style can produce quite different benchmark returns, making them inappropriate benchmarks.

4. Factor-model-based. Factor models involve relating a specified set of factor exposures to the returns on an account. A well-known one-factor model (CAPM) is the market model where the return on a portfolio is expressed as a linear function of the return on a market index. A generalized factor model equation would be:

$$R_p = a_p + b_1 F_1 + b_2 F_2 + \dots + b_K F_K + \varepsilon$$

where:

R_p = periodic return on an account

a_p = "zero factor" term, representing the expected value of R_p if all factor values were zero

F_i = factors that have a systematic effect on the portfolio's performance; $i = 1$ to K

b_i = sensitivity of the returns on the account to the returns generated from factor i

ε = error term; portfolio return not explained by the factor model

Some examples of factors are the market index, industry, growth characteristics, a company's size, and financial strength. The benchmark portfolio (normal portfolio) is the portfolio with exposures to the systematic risk factors that are typical for the investment manager.

The manager's past portfolios are used as a guide.

- Advantages:

- It is useful in performance evaluation.
- It provides managers and sponsors with insight into the manager's style by capturing factor exposures that affect an account's performance.

- Disadvantages:

- Focusing on factor exposures is not intuitive to all managers or sponsors.

- The data and modeling are not always available and may be expensive to obtain.
- It may be ambiguous because different factor models can produce different outputs, leading to misspecification.

5. Returns-based. Returns-based benchmarks are constructed using (1) the managed account returns over specified periods and (2) corresponding returns on several style indexes for the same periods. Those return series are submitted to an allocation algorithm that solves for the combination of investment-style indexes and most closely tracks the account's returns.

- Advantages:
 - Generally easy to use and intuitive.
 - Meets the criteria of a valid benchmark.
 - Useful where the only information available is account returns.
- Disadvantages:
 - The style indexes may not reflect what the manager owns or what the manager or client would be willing to own.
 - Enough monthly returns would be needed to establish a statistically reliable pattern of style exposures.
 - Will not work when applied to managers who change style.

6. Manager universes. The **median manager** or fund from a broad universe of managers or funds (that follows a similar investment process) is used as the benchmark. The median manager is the fund that falls at the middle when funds are ranked from highest to lowest by performance.

- Advantage:
 - It is measurable.
- Disadvantages:
 - Manager universes are subject to “survivor bias,” as underperforming managers often go out of business and their performance results are then removed from the universe history.
 - Fund sponsors who choose to employ manager universes must rely on the compiler’s representations that the universe has been accurately compiled.
 - They cannot be identified or specified in advance, so it is not investable; thus, it’s not an acceptable benchmark.

7. Custom security-based. Custom security-based benchmarks are designed to reflect the manager’s security allocations and investment process.

- Advantage:
 - Meets all the required benchmark properties and all the benchmark validity criteria.
 - Allows continual monitoring of investment processes.
 - Allows fund sponsors to effectively allocate risk across investment management teams.
- Disadvantages:
 - It can be expensive to construct and maintain.

- A lack of transparency by the manager (e.g., hedge funds) can make it impossible to construct such a benchmark.



PROFESSOR'S NOTE

Although not directly required by the LOS, it's important to understand the properties that constitute a valid benchmark. A valid benchmark should possess the following seven characteristics, which should align the benchmark's style and risk with that of the manager and provide the manager with an appropriate management objective:

- Specified in advance.** The benchmark is known to both the investment manager and the fund sponsor. It is specified at the start of an evaluation period.
- Appropriate.** The benchmark is consistent with the manager's investment approach and style.
- Measurable.** Its value and return can be determined on a reasonably frequent basis.
- Unambiguous.** There are clearly defined identities and weights of securities constituting the benchmark.
- Reflective of the manager's current investment opinions.** The manager has current knowledge and expertise of the securities within the benchmark.
- Accountable.** The manager(s) should accept the applicability of the benchmark and agree to accept differences in performance between the portfolio and benchmark as caused only by their active management.
- Investable.** It is possible to replicate the benchmark and forgo active management.

Benchmark Quality Evaluation

LOS 26.k: Discuss tests of benchmark quality.

CFA® Program Curriculum, Volume 5, page 228

A portfolio return can be broken up into three components: market, style, and active management.

$$P = M + S + A$$

where:

P = investment manager's portfolio return

M = return on the market index

S = B - M = excess return to style; difference between the manager's style index (benchmark) return and the market return—S can be positive or negative

A = P - B = active return; difference between the manager's overall portfolio return and the style benchmark return

This relationship recognizes first that the manager's style benchmark can earn more or less than the market. Had the manager taken a passive position in a broad market index, the return on that index, M , would be an appropriate benchmark, and $S = 0$. Because the manager might specialize in a particular style, however, we add (if $B > M$, $S > 0$) or subtract (if $B < M$, $S < 0$) the difference between the benchmark and market returns. Finally, the return to active management, A , is the difference between the manager's portfolio return and the benchmark return and is attributed to active management.

EXAMPLE: Test of Benchmark Quality

A large-cap growth portfolio fell 11% in the first six months of the year. In the same period, a relevant large-cap growth index fell by 12% and the broad domestic equity index fell by 10%.

A client has expressed concern about the active return of the manager during the period, stating that they would have expected a skillful growth manager to outperform the broad market during the period.

Evaluate the validity of the concern of the client.

Answer:

The concern of the client is not valid, because the manager has performed well for a growth-style manager, even though underperforming the broad market during the period.

The incremental return to the large-cap growth style, S , for the period is equal to the return of the large-cap growth index (B) minus the return of the broad market index (M) = $-12\% - (-10\%) = -2\%$. This indicates that the growth style has been out of favor during the period and has underperformed the general market.

The return due to active management, A , is the return of the portfolio (P) minus the growth index return (B) = $-11\% - (-12\%) = +1\%$. This indicates that the manager has outperformed the style-specific benchmark and therefore has positive returns to active management. This implies that the client's comment regarding active return is not valid. It is the style of the manager that has caused the portfolio to underperform the market, not the active return of the manager.

Benchmarking Alternative Investments

LOS 26.l: Describe problems that arise in benchmarking alternative investments.

CFA® Program Curriculum, Volume 5, page 232

Hedge Funds

Three general types of benchmarks could be considered for hedge funds: (1) broad market indexes, (2) risk-free rate, and (3) hedge fund peer universes. However, they present some problems.

Broad market indexes are not appropriate to use as a benchmark for hedge funds because hedge funds cover a wide range of investment strategies. In addition, hedge funds differ significantly from each other and can have wide asset allocation fluctuations in the long term, which makes the use of broad market indexes problematic. With hedge funds using leverage, short positions, and derivatives—plus their overall lack of liquidity, transparency, ability to monitor, and low or no correlation of returns with the broad market index—broad market indexes should not be used as a benchmark for hedge funds.

The risk-free rate with an added spread could be used for some hedge fund strategies that focus on arbitrage. The idea here is that the risk-free nature of arbitrage strategies should be matched with the risk-free rate as the appropriate benchmark. Any additional spread would take into account the incremental returns due to active management net of costs. Unfortunately, the vast majority of hedge funds will carry some systematic risk, and the use of leverage will only exacerbate the risk. As a result, the spread would need to be increased accordingly. Finally, as with broad market indexes, the lack of correlation of hedge fund returns and the risk-free rate makes the risk-free rate an unsuitable benchmark.

Hedge fund peer universes are not suitable because a specific peer group's risk and return objectives are not likely to match those of a specific hedge fund. Additionally, peer universes are subject to backfill and survivorship bias. Finally, because of the frequent illiquidity of underlying assets in hedge funds, current pricing may not be exact and may be based on an appraisal or prior period price. As a result, there may be a smoothing

effect, which reduces the reported standard deviation, thereby increasing the Sharpe ratio and the allocation to hedge funds.

Real Estate

Many real estate benchmarks exist but they are not all suitable for real estate investments:

- The benchmarks are derived from a sample of the real estate universe, which means they are not completely representative of the real estate asset class.
- The performance of the index probably bears a very high correlation to the largest investments.
- Benchmark returns are self-reported, so some subjectivity and/or bias may be present.
- Benchmarks that are value-based could be biased toward the most expensive properties or geographical areas.
- The use of appraisal data (e.g., infrequent pricing) leads to a smoothing effect and understated volatility or risk.
- There is a lack of comparability with benchmark returns given that some benchmarks use leverage while others do not.
- The indexes assume no transaction costs, full transparency, and normal liquidity, which is usually not the case; those factors would impact actual real estate returns.

Additionally, there is lack of consistency in the use of return measures. For example, the cash inflows and outflows for open-end funds are controlled by the investor, so time-weighted returns would be used. In contrast, the cash inflows and outflows for closed-end funds are controlled by the manager, so an internal rate of return (IRR) would be used.

Private Equity

Benchmarks exist to allow for performance comparisons specific private equity funds and that of a relevant peer group. The metric used is usually IRR, taking into account all investment cash flows since inception plus the ending investment value. Key problems with such benchmarks include managers using different methods of valuation, which makes comparison more difficult. In addition, IRR may be biased by losses or gains occurring near the beginning of an investment. Finally, all the results are reported at one common point in time, even though the firms are likely in varying stages of development.

Commodities

Benchmarks for commodity investments are usually based on futures as opposed to actual assets. This may result in significant differences between the benchmark and the commodity investments portfolio, which reduces the comparability. Similar to other alternative investments, the different amounts of leverage employed by portfolios versus benchmarks—as well as the different weightings of exposures between portfolios and benchmarks—make the benchmarking process problematic for commodities.

Managed Derivatives

Managed derivatives funds, often referred to as managed futures funds, use specific derivatives trading strategies to generate returns. Benchmarks are either strategy-specific or peer group-based. An example of a strategy-specific benchmark is the Mount

Lucas Management Index, which follows a basic momentum trading strategy. Peer-group benchmarks are similar to those used for hedge funds and will potentially exhibit the same issues as hedge fund peer-group-based benchmarks such as survivorship bias.

Distressed Securities

Given the illiquidity and severe lack of marketability of distressed securities, it is almost impossible to determine an appropriate benchmark. Should the financial state of a distressed company become better, it may become more liquid. However, it is likely to require a significant amount of time to occur (if it even does) and that creates valuation problems (e.g., stale pricing).

Market indexes do exist such as the Barclay Distressed Securities Index; however, they may take into account numerous strategies so the suitability of indexes for a specific strategy is questionable. As well, the indexes may perform valuations at erratic intervals so the issue of stale pricing may not be solved.

Appropriate Choice of Benchmark

LOS 26.m: Describe the impact of benchmark misspecification on attribution and appraisal analysis.

CFA® Program Curriculum, Volume 5, page 230

The phrase *garbage in, garbage out* is appropriate to use regarding the impact of benchmark misspecification on attribution and appraisal analysis. Useful performance evaluation (and any of its three components) requires an appropriate fund benchmark. When an incorrect benchmark is used in the performance evaluation process then performance measurement, which comprises attribution and appraisal analysis, will not be useful or provide valid information on understanding the investment process.

Misspecified benchmarks will result in misfit active return.

To illustrate active return, suppose a manager invests in large and liquid French stocks. The sponsor assesses the manager's performance using the Euronext 100 Index. Although French stocks comprise the majority of the Euronext 100 Index, the Euronext 100 does include stocks from the Netherlands, Belgium, Portugal, and Luxembourg. As a result, the CAC 40 (large and liquid French stocks) would be more appropriate to label as the manager's normal portfolio. Assume the manager's portfolio return is 10%, the Euronext 100 (investor benchmark) return is 9% and the CAC 40 (normal portfolio) return is 12%.

Based on the returns provided, the manager outperformed the investor benchmark (10% versus 9%) but underperformed its proper benchmark (10% versus 12%). In other words, the misfit active return is +3% and the *true* active return is -2%.



MODULE QUIZ 26.3

To best evaluate your performance, enter your quiz answers online.

1. Rhombus Asset Management (Rhombus) runs a U.S. small-cap equity portfolio. The portfolio generated an 8.9% return during 2005. Rhombus uses the Russell 2000® Index as the most appropriate benchmark. The Russell 2000® Index yielded 9.1% over the same evaluation period. The Wilshire 5000, a broad U.S. equity market index, yielded 8.5% over the same evaluation period.

Calculate Rhombus's return due to style and due to active management. Assess Rhombus's performance compared to the benchmark and to the market.

2. Hexagon PLC is an investment management company based in London. It manages portfolios consisting of European equities only. It states that its benchmark is to beat the median manager. Discuss the validity of the median manager benchmark approach.

MODULE 26.4: PERFORMANCE APPRAISAL



Video covering this content is available online.

LOS 26.n: Calculate and interpret the Sortino ratio, the appraisal ratio, upside/downside capture ratios, maximum drawdown, and drawdown duration.

LOS 26.o: Describe limitations of appraisal measures and related metrics.

CFA® Program Curriculum, Volume 5, page 235

The final stage of the performance evaluation process is performance appraisal. Performance appraisal is designed to assess whether the investment results are more likely due to skill or luck.

Should we hire or fire the manager? Risk-adjusted performance measures are one set of tools to use in answering such questions. Active investment management skill is evident when the portfolio manager's investment process adds value on a risk-adjusted basis. In other words, can the fund manager outperform their appropriate benchmark on a risk-adjusted basis consistently?



PROFESSOR'S NOTE

Unfortunately, many investment managers have only a few years of performance to evaluate, which makes it extremely difficult to differentiate between luck and skill through the appraisal process. It is recommended to have many years of observations to determine at an appropriately high confidence level that the manager truly possesses superior investment skill.

The following seven appraisal measures will be discussed (the first five are risk-adjusted measures):

1. Sharpe ratio.
2. Treynor ratio.
3. Information ratio.
4. Appraisal ratio.
5. Sortino ratio.
6. Capture ratios (upside and downside).
7. Drawdown (maximum drawdown, drawdown duration).

Sharpe Ratio

$$S_A = \frac{\bar{R}_A - \bar{r}_f}{\hat{\sigma}_A}$$

The Sharpe ratio is calculated as the incremental or excess return over the risk-free rate (numerator) divided by standard deviation (denominator). A key drawback with the ratio

is that the denominator does not differentiate between volatility that is upside versus downside. Therefore, with the Sharpe ratio, there is a penalty for all volatility, even if it is “good” volatility.

Treynor Ratio

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

The Treynor ratio is similar to the Sharpe ratio, but the denominator for the former is measured by beta, so it only considers systematic risk rather than total risk like the latter. Therefore, with the Treynor ratio, the universe of appropriate benchmarks is limited to only those that assume efficient markets. The Treynor ratio is only useful in evaluating portfolios that have systematic risk and do not have unsystematic risk; in other words, such portfolios are well diversified.

Information Ratio

$$IR = \frac{E(r_p) - E(r_B)}{\sigma(r_p - r_B)}$$

The information ratio (IR) is used to measure a portfolio's performance against the benchmark but accounts for differences in risk. The numerator is the difference between the mean returns of the portfolio and the benchmark, respectively. The denominator is known as the tracking risk, or the variability in the portfolio performance with that of its benchmark.

Appraisal Ratio

The appraisal ratio measures the ratio of active return, α , to the volatility of the residual term, σ_ε , both derived from a factor-based regression.

$$AR = \frac{\alpha}{\sigma_\varepsilon}$$

A manager with a higher AR is generating more active return per unit of active risk (as represented by residual risk σ_ε also referred to as the “standard error of the regression”) and is therefore a superior active manager according to this measure.



PROFESSOR'S NOTE

The “standard error of the regression,” σ_ε is the volatility of the error term in a factor-based regression. As such, it represents the component of the volatility of manager returns that is not explained by the regression model factors. This component of volatility is generated by the manager taking active bets relative to the factors in the model, hence σ_ε here is playing the role of active risk. You should not concern yourself with the direct calculation of σ_ε however, it can be deduced from basic portfolio and benchmark performance data as per the example below.

The AR is analogous to the information ratio—it looks at active return per unit of active risk. The only difference to the information ratio is that the AR uses a factor-based regression to estimate active return and active risk.

A common single-factor application is the capital asset pricing model (CAPM). Recall that under the CAPM, the fair return of manager i is given by:

$$E(R_i) = R_f + \beta_i [E(R_m) - R_f]$$

where:

R_i = return of manager i

R_f = risk-free rate

β_i = relative systematic risk

R_m = market return

Under the CAPM framework, α can be calculated as the difference between the forecasted return of the security and the CAPM fair return. It can also be shown that the variance of the manager, σ_i^2 , is driven partly by the systematic variance of the manager related to market variance, and partly by residual variance specific to the manager as follows:

$$\sigma_i^2 = \beta^2 \sigma_m^2 + \sigma_\epsilon^2$$

This implies that σ_ϵ can be deduced from:

$$\sigma_\epsilon^2 = \sigma_i^2 - \beta^2 \sigma_m^2$$



PROFESSOR'S NOTE

If required to calculate residual risk in this way, be sure to remember to take the square root of σ_ϵ^2 before using it in the denominator of the appraisal ratio.

EXAMPLE: Appraisal ratio

Annualized data relating to the performance of an investment manager is presented below:

Portfolio return	8%
Portfolio standard deviation	20%
Portfolio beta	1.2
Market index return	6%
Market standard deviation	16%
Risk-free rate	1%

Calculate the appraisal ratio of the manager.

Answer:

The fair return of the manager according to CAPM is calculated as:

$$\begin{aligned} E(R_i) &= R_f + \beta_i [E(R_m) - R_f] \\ &= 1\% + 1.2(6\% - 1\%) \\ &= 7\% \end{aligned}$$

The alpha of the manager is equal to the portfolio return less the CAPM fair return = 8% - 7% = 1%. Nonsystematic variance of the manager is calculated as:

$$\begin{aligned} \sigma_\epsilon^2 &= \sigma_i^2 - \beta^2 \sigma_m^2 \\ &= 0.20^2 - (1.2^2 \times 0.16^2) = 0.003136 \end{aligned}$$

The appraisal ratio is calculated as:

$$AR = \frac{0.01}{\sqrt{0.003136}} = 0.18$$

Sortino Ratio

The Sortino ratio only considers the standard deviation of the downside risk. That is in contrast to the Sharpe ratio, which considers all risk (e.g., both upside and downside). Positive volatility associated with the upside can be considered “good” volatility.

In practice, however, clients tend to be more concerned about volatility associated with negative returns. As a result, the Sortino ratio can provide a more meaningful view of a portfolio’s risk-adjusted performance than the Sharpe ratio.

$$SR_D = \frac{E(r_p) - r_T}{\sigma_D}$$

$$\widehat{SR}_D = \frac{\bar{r}_p - \bar{r}_T}{\widehat{\sigma}_D}$$

In the previous equation, the r_T refers to a target rate of return—sometimes called the minimum acceptable return (MAR)—and σ_D refers to target semideviation.

Semideviation measures the standard deviation of returns *below the target return*. In other words, the Sortino ratio penalizes managers only for “bad” volatility by considering only returns below the MAR; it ignores “good” volatility generated by returns above the target return. To calculate the semideviation of a series of returns, an analyst would sum the squares of the distances of returns below the target return, *ignoring those returns that beat the target return*. Dividing by the *total* number of observations (*including* those above the target return) gives semivariance. The square root of this number is the semistandard deviation.

Therefore, assuming an average portfolio return of 7%, MAR of 3%, and semi-standard deviation of 5%, the Sortino ratio is calculated as $(7\% - 3\%) / 5\% = 0.80$. Similar to the Sharpe ratio, the higher the Sortino ratio, the better the risk-adjusted performance.

The Sortino ratio is more appropriate for investments with non-normal (nonsymmetrical) return distributions. Positively skewed and negatively skewed investment strategies would both result in lower Sharpe ratios (e.g., higher standard deviation in the denominator), but only the negatively skewed investment strategy would result in a lower Sortino ratio (e.g., higher semi-standard deviation in the denominator). Therefore, for investments that have nonsymmetrical or skewed return distributions, such as hedge funds or options, the Sortino ratio appears to be a more appropriate performance metric. However, a comparability problem exists with the Sortino ratio because the determination of MAR is subjective and specific to each investor.

Capture Ratios

Capture ratios determine the manager’s relative performance when markets are up or down. Consider an up market where the index or benchmark return is positive. The question is whether the manager’s portfolio return is also positive and if it is above or below the benchmark return. For example, if the benchmark return is 4% and the portfolio return is 5%, the upside capture ratio is 125% ($5\% / 4\% = 1.25$) and there is outperformance during a period of positive returns. Assuming the same benchmark return but a portfolio return of only 3%, the upside capture ratio is 75% ($3\% / 4\% = 0.75$) and there is underperformance during a period of positive returns.

Similarly, consider a down market where the index or benchmark return is negative. For example, if the benchmark return is -4% and the portfolio return is -5% , the downside capture ratio is $125\% (-5\% / -4\% = 1.25)$ and there is underperformance during a period of negative returns. Assuming the same benchmark return but a portfolio return of -3% , the downside capture ratio is $75\% (-3\% / -4\% = 0.75)$ and there is outperformance during a period of negative returns.

One can now calculate the capture ratio (upside capture divided by downside capture). Using the previous examples with benchmark returns of $+4\%$ and -4% and portfolio returns of $+5\%$ and -5% , the capture ratio is $1.25 / 1.25 = 1$. A capture ratio of 1 is indicative of a symmetrical return profile. Therefore, if the capture ratio > 1 , then there is a positively asymmetrical (convex) return profile in that there is greater upside capture than downside capture. Correspondingly, if the capture ratio < 1 , there is a negatively asymmetrical (concave) return profile in that there is greater downside capture than upside capture.

For example, during an up market, if the manager earns 7% and the benchmark earns 8% , the upside capture is 87.5% . If, during a down market, the manager earns -6% and the benchmark earns -10% , the downside capture is 60% . Therefore, the capture ratio is about $1.46 (87.5\% / 60\%)$, which indicates a positively asymmetrical (convex) return profile. Ideally, the manager would capture as much of the upside as possible and capture as little of the downside as possible to maximize the capture ratio.

Drawdown

Drawdown is a measure, based on past performance, that calculates the maximum loss incurred if an investor had invested at a peak valuation and subsequently liquidated at a trough valuation. Drawdown duration is the total time required to fully recover a drawdown; it is from when the drawdown commences up to when the cumulative drawdown is zero. Drawdown duration can be subdivided into a drawdown phase and a recovery phase. Maximum drawdown occurs at the very end of the drawdown phase and at the very start of the recovery phase; it is the point at which the cumulative drawdown is at its highest (in absolute terms).

To illustrate and calculate drawdown duration and maximum drawdown, consider the following data pertaining to the monthly returns of a stock for a 12-month period.

Month	Monthly Return	Drawdown	Cumulative Drawdown	Comments
01/2018	3.14%		0.00%	
02/2018	-2.55%	-2.55%	-2.55%	Drawdown phase begins
03/2018	-2.71%	-2.71%	-5.26%	
04/2018	-4.66%	-4.66%	-9.92%	
05/2018	-4.91%	-4.91%	-14.83%	
06/2018	-0.73%	-0.73%	-15.56%	Maximum drawdown
07/2018	2.18%		-13.38%	Recovery phase begins
08/2018	3.11%		-10.27%	
09/2018	2.45%		-7.82%	
10/2018	3.65%		-4.17%	
11/2018	4.03%		-0.14%	
12/2018	4.14%		0.00%	Drawdown recovered

Based on the data provided, the maximum drawdown was calculated as -15.56% and the drawdown duration was approximately 10 months (from beginning of drawdown in 02/2018 to full recovery of drawdown in 12/2018).

Manager Skill Evaluation

LOS 26.p: Evaluate the skill of an investment manager.

CFA® Program Curriculum, Volume 5, page 251

The skill of an investment manager can be evaluated through attribution analysis as well as appraisal analysis. An example of each type of analysis is provided next.

Example of Attribution Analysis

Manager X has a benchmark of the Euronext 100. The following summary information states that Manager X underperformed the benchmark by 67 bps. The question is whether the underperformance is due to lack of skill or bad luck.

Market	Manager X		Euronext 100		Attribution Effects		
	Weight	Annualized Return	Weight	Annualized Return	Allocation	Selection + Interaction	Total
France	60%	10.14%	63%	11.49%	-0.04%	-0.81%	-0.85%
Netherlands	15%	8.78%	19%	7.65%	0.09%	0.17%	0.26%
Belgium	15%	9.12%	11%	8.12%	-0.07%	0.15%	0.08%
Portugal	6%	4.35%	5%	4.99%	-0.05%	-0.04%	-0.09%
Luxembourg	4%	7.14%	2%	7.92%	-0.04%	-0.03%	-0.07%
Total	100%	9.32%	100%	9.99%	-0.12%	-0.56%	-0.67%

The manager underperformed the benchmark by 12 bps due to country weighting decisions. Although the manager made a good decision in underweighting the Netherlands by 4% because it underperformed the total benchmark by 2.34%, the manager made bad decisions in all of the other countries. For example, the manager underweighted France by 3% when it outperformed the total benchmark by 1.50% and

overweighted Belgium by 4% when it underperformed the total benchmark by 1.87%. Overall, the manager was not successful with country weighting decisions.

The manager underperformed the benchmark by 56 bps due to stock picking decisions. Although the manager selected outperforming stocks in the Netherlands and Belgium that earned a total of 32 bps, there was significant underperformance in France that lost 81 bps. Overall, the manager was not successful with picking stocks. Additionally, the selection effect was significantly greater than the allocation effect.

In the next example, the level of risk taken to achieve the manager's performance will be considered by comparing performance to other managers.

Example of Appraisal Analysis

In this section, performance appraisal measures for the same period will be analyzed for Managers X, Y, and Z. All managers will be compared to the same benchmark; return and standard deviation percentages are all expressed on an annualized basis.

Appraisal Measure	Manager X	Manager Y	Manager Z	Benchmark
Return	9.32%	11.42%	8.12%	9.99%
Standard deviation	11.65%	13.76%	10.11%	11.98%
Sharpe ratio	0.63	0.68	0.61	0.67
Treynor ratio	0.07	0.08	0.06	0.08
Information ratio	(0.22)	0.41	(0.72)	–
Sortino ratio (MAR = 4%)	0.75	0.78	0.63	0.87

Manager X's volatility of returns (as measured by standard deviation) is only slightly below that of the benchmark. Manager X's volatility of returns is between that of Manager Z (Z is lower by about 1.5%) and Manager Y (Y is higher by about 2.1%). Those observations are confirmed by the Sharpe ratios for all three managers and the benchmark (using an assumed risk-free rate of 2%). Therefore, although Manager X took on less total risk and earned less return than the benchmark and Manager Y, Manager X's return was relatively lower than both of them on an excess return (annualized return less risk-free rate) per unit of risk basis. Manager X did perform better than Manager Z on a risk-adjusted basis.

The conclusions based on the Sharpe ratio are consistent with those for the Treynor ratio and IR. Given that both Manager X and Manager Z underperformed the benchmark, it makes sense that their IRs are negative. Therefore, on the basis of systematic risk only, Manager X did not perform as well as Manager Y or the benchmark.

Manager X's Sortino ratio of 0.75 is higher than its Sharpe ratio of 0.63, which suggests that Manager X should be able to earn greater returns in relation to the 4% threshold for measuring downside risk.

Conclusion

Overall, Manager X was not able to demonstrate sufficient skill in investing as demonstrated by losses incurred due to poor country allocation and poor stock selection decisions, relative to the benchmark.

Additionally, on a risk-adjusted basis, Manager X did outperform Manager Z but fell short when compared to Manager Y and the benchmark.

Consideration may need to be given to replacing Manager X with a suitable manager who is able to outperform the benchmark in terms of country allocation and stock selection as well as outperform its peers on a risk-adjusted basis.



MODULE QUIZ 26.4

To best evaluate your performance, enter your quiz answers online.

1. One of your portfolio managers, Mort Van Sleet, has recently complained that by measuring risk-adjusted returns using the Sharpe ratio, he is placed at an unfair disadvantage. He has stated flatly that the standard deviation of his portfolio returns is artificially inflated. Explain how this can be true, and offer and explain a potential solution to the problem.
2. During an up market, assume a manager earns 4% and the benchmark earns 3%. Then, in a down market, the same manager earns -4% and the benchmark earns -8%. Which of the following amounts is *closest* to the manager's capture ratio?
 - A. 0.25.
 - B. 0.38.
 - C. 2.67.

KEY CONCEPTS

LOS 26.a

Performance evaluation answers three questions regarding a portfolio's performance:

1. What performance did the fund achieve during the period (performance measurement)?
2. How did the fund manager achieve their performance (performance attribution)?
3. Did the fund manager achieve their performance via skill or luck (performance appraisal)?

LOS 26.b

An effective performance attribution process includes:

- A reflection of 100% of the portfolio's return or risk exposure.
- The portfolio manager's current decision-making process.
- The active investment decisions taken by the portfolio manager.
- A full explanation of the portfolio's excess return and risk.

LOS 26.c

Return attribution evaluates the impact of the active portfolio management decisions on the fund's investment returns. Risk attribution is the parallel of return attribution but analyzes the impact of the portfolio manager's active investment decisions on portfolio risk.

Micro attribution analyzes the portfolio at the portfolio manager's level and seeks to verify that the portfolio manager did what they said they were going to do and to understand the drivers of the portfolio's return. Macro attribution analyzes investment decisions at the fund sponsor's level and quantifies the decisions made by the fund sponsors to deviate from their strategic asset allocation and the timing when they made those decisions.

LOS 26.d

Returns-based attribution uses regressions to analyze the portfolio returns over some period and isolates the asset class components through indexes that would have generated these returns. There is no attempt to determine the actual holdings of the portfolio.

Holdings-based attribution uses beginning-of-period portfolio assets; the accuracy of analysis improves as the time interval for the analysis becomes smaller (e.g., annual to monthly, to weekly). Since holdings-based attribution does not adjust for any portfolio changes that are made after the initial period, this analysis frequently does not match the actual portfolio returns.

Transactions-based attribution improves upon the holdings-based attribution by updating the attribution of the beginning-of-period holdings of the portfolio with any subsequent trades. Both the weights and the returns of the portfolio will reflect the actual transactions, including any transaction costs.

LOS 26.e

The Brinson-Hood-Beebower (BHB) and Brinson-Fachler models quantify the portfolio returns into three attribution effects: the allocation effect, the security selection effect, and the interaction effect.

- The allocation effect refers to the portfolio manager's decision to overweight or underweight specific sector weightings in the portfolio versus the portfolio benchmark.
- The security selection refers to the value the portfolio manager either added or detracted from the portfolio by selecting individual securities within the sector and weighting the portfolio differently compared to the benchmark's weightings.
- The interaction effect refers to the residual amount that ensures the arithmetic return minus the relative benchmark is fully accounted for in attribution analysis.

The Carhart model calculates the excess return from active portfolio management investment decisions by determining the impact on the portfolio due to the following factors: (1) market index (RMRF), (2) market capitalization (SMB), (3) book value to price (HML), and (4) momentum (WML).

LOS 26.f

Exposure decomposition is a top-down approach that utilizes duration to quantify active portfolio manager decisions regarding interest rate decisions relative to its benchmark.

Yield decomposition (duration) can be either top-down or bottom-up and utilizes both duration and yield to maturity (YTM) in computing price return (as one component in calculating total return).

Yield decomposition (full repricing) involves repricing based on zero-coupon curves, or spot rates. The full-repricing method is the most accurate measure of price changes in securities.

LOS 26.g

There are two general methods of risk attribution: relative and absolute.

For relative attribution analysis, tracking risk (or tracking error) is the relevant risk measure to consider and the general objective is to determine the returns generated from active management and compare them to the amount of tracking risk assumed.

Absolute attribution analysis quantifies general risk arising from market, size, and style exposures and specific risk arising from stock picking. A common risk measure to use is standard deviation.

LOS 26.h

Macro attribution analysis looks at the impact of fund sponsor decisions. Micro attribution analysis looks at the impact of portfolio manager decisions. Both types of analysis utilize the BHB and Brinson-Fachler model computations to determine allocation, selection, and interaction effects.

LOS 26.i

A liability-based benchmark focuses on the cash flows necessary to satisfy the liability and frequently limits the investment choices available to the portfolio manager (e.g., equity and fixed income only). Frequently used assets within a liability-based benchmark include nominal bonds, inflation-adjusted bonds, and high-quality stocks.

LOS 26.j

There are seven types of benchmarks:

1. An absolute benchmark is a return objective that aims to exceed a minimum target return.
2. Broad market indexes, such as the S&P 500 for U.S. common stocks, can be used as benchmarks.
3. Investment-style indexes represent specific portions of an asset category and can be used as a benchmark. Four well-known U.S. common stock style indexes are (1) large-capitalization growth, (2) large-capitalization value, (3) small-capitalization growth, and (4) small-capitalization value.
4. Factor models involve relating a specified set of factor exposures to the returns on an account. Some examples of factors are the market index, industry, growth characteristics, a company's size, and financial strength. The benchmark portfolio (the normal portfolio) is the portfolio with exposures to the systematic risk factors that are typical for the investment manager. The manager's past portfolios are used as a guide.
5. Returns-based benchmarks are constructed using (1) the managed account returns over specified periods and (2) corresponding returns on several style indexes for the same periods. Those return series are submitted to an allocation algorithm that solves for the combination of investment-style indexes that most closely tracks the account's returns.
6. A manager universe looks at a wide group of managers that have a similar investment process. The median manager or fund from that universe is used as the benchmark. The median manager is the fund that falls at the middle when funds are ranked from highest to lowest by performance.
7. Custom security-based benchmarks are designed to reflect the manager's security allocations and investment process.

LOS 26.k

A portfolio return can be broken up into three components: market, style, and active management.

$$P = M + S + A$$

where:

P = investment manager's portfolio return

M = return on the market index

S = P - M = excess return to style; difference between the manager's style index (benchmark) return and the market return—S can be positive or negative

A = P - B = active return; difference between the manager's overall portfolio return and the style benchmark return

LOS 26.1

Three general types of benchmarks could be considered for hedge funds: (1) broad market indexes, (2) risk-free rate, and (3) hedge fund peer universes. However, broad market indexes are not appropriate to use as a benchmark for hedge funds because hedge funds cover a wide range of investment strategies and differ significantly from each other. The risk-free rate is not appropriate because the vast majority of hedge funds will carry some systematic risk and the use of leverage will only exacerbate the risk. Hedge fund peer universes are not suitable because a specific peer group's risk and return objectives is not likely to match that of a specific hedge fund.

With the many real estate benchmarks that could be used, they may not be suitable for all real estate investments for reasons including: small sample size, bias toward larger investments, use of appraisal data, lack of consistency regarding use of leverage, and unrealistic assumptions of no transaction costs, full transparency, and normal liquidity.

Private equity benchmarks usually use internal rate of return (IRR) measures but managers may be using different methods of valuation. Also, IRR may be biased by losses or gains occurring near the beginning of an investment. Finally, all the results are reported at one common point in time even though the firms are likely in varying stages of development.

Benchmarks for commodity investments are usually based on futures as opposed to actual assets. That may result in significant differences between the benchmark and the commodity investments portfolio, which reduces the comparability.

Managed derivatives use specific benchmarks because of the lack of market indexes. As a result, such benchmarks may be too specific or not specific enough for a given investment strategy and therefore not suitable.

Given the illiquidity and severe lack of marketability of distressed securities, it is almost impossible to determine an appropriate benchmark.

LOS 26.m

When an incorrect benchmark is used in the performance evaluation process then performance measurement, which comprises attribution and appraisal analysis, will not be useful. Misspecified benchmarks will result in "misfit" active return.

LOS 26.n and 26.o

The Sharpe ratio is calculated as the incremental or excess return over the risk-free rate (numerator) divided by standard deviation (denominator). A key drawback with the ratio is that the denominator does not differentiate between volatility that is upside versus downside.

The Treynor ratio is similar to the Sharpe ratio but the denominator for the former is measured by beta so it only considers systematic risk rather than total risk like the latter.

The information ratio (IR) is used to measure a portfolio's performance against the benchmark but accounting for differences in risk. The numerator is the difference between the mean returns of the portfolio and the benchmark, respectively. The denominator is known as the tracking risk, or the variability in the portfolio performance with that of its benchmark.

The appraisal ratio (AR) is calculated as alpha divided by the standard deviation of the residual/unsystematic risk (or otherwise known as the standard error of regression). Alpha is excess return, calculated as the return earned by the portfolio minus the return suggested by CAPM.

The Sortino ratio only considers the standard deviation of the downside risk. It uses a minimum acceptable return (MAR, or target rate of return) and target semi-standard deviation (target semideviation). The Sortino ratio penalizes managers only for "bad" volatility by considering only returns below the MAR.

Capture ratios determine the manager's relative performance when markets are up or down. Consider an up market where the index or benchmark return is positive. The question is whether the manager's portfolio return is also positive and if it is above or below the benchmark return (upside capture). Similarly, consider a down market where the index or benchmark return is negative. The question is whether the manager's portfolio return is negative and if it is above or below the benchmark return (downside capture). Using those amounts, the capture ratio is calculated as upside capture divided by downside capture.

Drawdown duration is the total time required to fully recover a drawdown; it is from when the drawdown commences up to when the cumulative drawdown is zero. Maximum drawdown occurs at the very end of the drawdown phase and at the very start of the recovery phase.

LOS 26.p

The skill of an investment manager can be evaluated through attribution analysis as well as appraisal analysis.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 26.1

1. A Performance appraisal determines whether the performance was affected primarily by investment decisions, by the overall market, or by chance. Performance appraisal combines output from both performance measurement and performance attribution to render a professional judgment on the quality of the performance.

Performance measurement serves as the initial foundation phase and calculates both the return and the risk of the fund over specified time periods. Performance attribution determines the key drivers that generated the account's performance. (LOS 26.a)

2. C Transactions-based attribution improves upon the holdings-based attribution by updating the attribution of the portfolio's beginning-of-period holdings with any

subsequent trades. Transactions-based attribution is the most reliable of the measures.

Returns-based attribution uses regressions to analyze the portfolio returns over some period and isolates the asset class components through indexes that would have generated these returns. There is no attempt to determine the actual holdings of the portfolio. It is the least reliable of the three methods but the easiest to implement.

Holdings-based attribution uses beginning-of-period portfolio assets; the accuracy of analysis improves as the time interval for the analysis becomes smaller.

Holdings-based attribution frequently offers a higher level of quality of attribution analysis than the returns-based attribution. (LOS 26.d)

Module Quiz 26.2

1. (i) energy sector allocation effect = $[(0.0838 - 0.0772) \times (3.32\% - 2.32\%)] = 0.0066\%$

This shows that the decision to overweight a sector that performed better than the overall benchmark resulted in a positive contribution to portfolio performance.

(ii) financial sector security selection effect = $0.1342 \times (1.66\% - 1.10\%) = +0.0752\%$

The positive contribution shows that the Hiatus portfolio held financial stocks that performed better than the financial stocks contained in the sector benchmark.

(iii) technology sector interaction effect = $[(0.1789 - 0.2201) \times (3.21\% - 3.18\%)] = -0.0012\%$

Underweighting the portfolio in the technology sector when the fund performed better than the sector benchmark has led to a negative contribution. (LOS 26.h)

2. C To answer this question, we must first examine the return for the overall benchmark versus the return for the benchmark in both sectors. The overall return for the benchmark is given at 0.86%. The capital goods sector return in the benchmark was -5.00%. For the financial sector, it was 4.00%. Thus, relative to the overall benchmark return of 0.86%, the capital goods sector was an underperforming sector and the financial sector outperformed. Now determine whether Matson overweighted or underweighted each sector. He underweighted the weak capital goods sector (8.00% allocation for the manager versus 9.00% for the benchmark), and he overweighted the strong financial sector (20.00% allocation for the manager versus 18.00% for the benchmark). Because Matson underweighted a weak sector and he overweighted a strong sector, he made correct decisions for both.

No calculations are needed to reach these conclusions. However, the allocation effect can be calculated by multiplying the difference between the portfolio and benchmark allocation by the difference in sector benchmark return and overall benchmark return for each sector. For the capital goods sector, it is $(8.0\% - 9.0\%) \times$

$(-5.00\% - 0.86\%) = 0.0586\%$. For the financial sector, it is $(20.0\% - 18.0\%) \times (4.00\% - 0.86\%) = 0.0628\%$. (LOS 26.h)

3. **B** To answer this question, examine the return for the manager against the return for the benchmark in each sector. Matson's return in the consumer durables sector was 2% versus 3% for the benchmark, so he did not outperform the benchmark for security selection in this sector. However, the return for the manager in the technology sector was 2.6% versus -2% for the benchmark, so he did outperform the benchmark for security selection in this sector.

No calculations are needed to reach the conclusions just listed. However, the selection effect can be calculated by multiplying the difference between the portfolio and benchmark return in each sector by the benchmark's weight. For the consumer durables sector, it is $(2.0\% - 3.0\%) \times 35\% = -0.35\%$. For the technology sector, it is $(2.6\% + 2.0\%) \times 16\% = 0.736\%$. (LOS 26.h)

4. **B** To answer this question, multiply the difference in weightings for the manager and the benchmark by the difference in returns for the manager and the benchmark in each sector. In the agricultural sector, this is $(4\% - 6\%) \times (-2\% + 1\%) = 0.02\%$. In the utilities sector, this is $(12\% - 10\%) \times (4\% + 2\%) = 0.12\%$. (LOS 26.h)

Module Quiz 26.3

1. style return = $B - M = 9.1\% - 8.5\% = +0.6\%$

active management return = $P - B = 8.9\% - 9.1\% = -0.2\%$

The positive style return tells us small-cap stocks outperformed the market as a whole.

However, the negative active management return tells us Rhombus has underperformed its benchmark for the evaluation period in question. Consistently underperforming the benchmark would bring Rhombus's investment management skills under question. (LOS 26.k)

2. The median manager is not a valid benchmark because that manager cannot be specified in advance and is not investable. It is not a passive alternative to active management. The only benchmark characteristic it meets is it can be measured after the fact. (LOS 26.j)

Module Quiz 26.4

1. In calculating the traditional standard deviation, all returns for the measurement period are used (e.g., all the positive and negative alphas). This is like looking at the entire normal distribution, with the benchmark return as the center of the distribution. Negative alphas would fall to the left of the benchmark return, and positive alphas would fall to the right.

The manager is arguing that only negative alphas are relevant for measuring risk. This would be analogous to using only the left half of that normal distribution. Using the Sortino ratio compensates for this by only using returns below a designated level.

Excess return for the Sortino ratio (the numerator) is calculated as the portfolio return less the minimum acceptable portfolio return (MAR). The denominator of the ratio is the standard deviation of returns calculated using only returns below the MAR. The motivation behind the downside measure of volatility utilized in the Sortino ratio is the sense that very good performance (high returns) can unfairly inflate the volatility measure (the standard deviation used as the risk measure). (LOS 26.o)

2. C If, during an up market, the manager earns 4% and the benchmark earns 3%, the upside capture is 133.3%. If, during a down market, the manager earns -4% and the benchmark earns -8%, the downside capture is 50%. Therefore, the capture ratio is about 2.67 ($133.3\% / 50\%$). (LOS 26.n)

The following is a review of the Trading, Performance Evaluation, and Manager Selection principles designed to address the learning outcome statements set forth by CFA Institute. Cross-Reference to CFA Institute Assigned Reading #27.

READING 27: INVESTMENT MANAGER SELECTION

Study Session 13

EXAM FOCUS

The investment manager selection process involves both quantitative and qualitative considerations, although the focus in the reading is primarily qualitative. Some topics in the reading (e.g., returns-based and holdings-based style analysis, and pooled investment vehicles) are covered in other areas of the curriculum or were covered in previous levels (e.g., Type I and II errors), which should allow for more efficient coverage of the material. Key areas of focus for the exam include Type I and II errors, capture ratios and drawdowns, and computing performance-based fees.

MODULE 27.1: MANAGER SELECTION PROCESS



LOS 27.a: Describe the components of a manager selection process, including due diligence.

Video covering this content is available online.

CFA® Program Curriculum, Volume 5, page 266

Due diligence is the analysis and investigation in support of an investment decision, action, or recommendation. Due diligence on investment managers must emphasize the sources and reasons behind the actual returns generated in the past. Then there must be an evaluation on the probability of repeatedly earning sufficient or better returns in the future using the same investment process. Overall, due diligence must consist of manager universe, quantitative analysis, and qualitative analysis.

Manager Universe

The manager universe consists of only those managers who are *suitable* for the portfolio in terms of the objectives and constraints of the IPS, invest in the relevant *style* (e.g., value, growth, mixed) desired by the client, and will manage the portfolio with the appropriate balance between *active versus passive* approaches.

This is a process of elimination that must carefully balance having too many or too few managers in the candidate pool from which to make a selection. The purpose of the manager search is crucial. For example, the desire for a specific new strategy or risk exposure will involve trying to find the best manager for that strategy or exposure. Or the inclusion of a new manager to diversify an existing portfolio would require a manager who could complement the existing holdings. The terms “best” and “complement,” for example, have an aspect of subjectivity that must be looked at in the context of the IPS.

The search usually begins by establishing the role for the potential manager within the portfolio and that is defined by the benchmark. The benchmark can be determined using one or more of: third-party categorization, returns-based style analysis, holdings-based style analysis, and manager experience. With third-party categorization of managers provided by database or software providers, the problem is that the provider's definition may not be the same as that definition for the purposes of the role within the portfolio. Manager experience can be ascertained by analyses of holdings within the manager's portfolios as well as past returns. Returns-based and holdings-based style analyses will be examined in greater detail later.

At the manager universe stage, there should not be any performance assessment; that will occur later during quantitative analysis. Instead, there must be an emphasis on the manager's risk profile and whether or not it is a good fit for the portfolio's requirements. The universe of managers is constantly changing as strategies change and as managers come and go.

Quantitative Analysis

The manager's performance should be evaluated objectively in terms of the distribution of past returns. Through performance *attribution and appraisal*, one can distinguish between managerial skills versus luck (e.g., external market factors). The *capture ratio* would examine performance in both good and weak market conditions. Finally, one must check for any significant *drawdowns* (i.e., peak-to-trough decline in percentage terms for a specific time period).

Qualitative Analysis

Two important issues arise in qualitative analysis: (1) What is the likelihood that the same level of returns will continue in the future? (2) Does the manager's investment process account for all the relevant risks? Those two issues will be elaborated somewhat here.

Continuity of returns can be assessed by looking at the four Ps—philosophy, process, people, and portfolio. In short, the *philosophy* focuses on a specific area of market inefficiency to earn excess returns. Then the *process* and *people* will determine whether the strategy is feasible and if it is possible to execute the strategy with the given knowledge and skills of the employees. Finally, the *portfolio* must be built in a way that is congruent with the philosophy and process.

Risk assessment considers the *firm* and whether it is robust and performing well, and its likelihood of remaining a going concern. Examining the *process and procedures* of the firm involves aspects such as the quality of the back office, the ability to safeguard assets, and the ability to prepare useful reports on a timely basis. Going into such detail with operational due diligence is meant to determine any risks not evident in the firm's past returns and to determine the firm's sustainability. The proposed *investment vehicle* must be assessed for suitability within the portfolio and the *terms* of the manager contract must be reasonable and relevant in context of the investment strategy and vehicle. Finally, continual *monitoring* of the manager is needed to ensure the manager continues to be the appropriate one for the portfolio.

LOS 27.b: Contrast Type I and Type II errors in manager hiring and continuation decisions.

Type I and II Errors

In making decisions on whether to hire a new manager or to keep or fire an existing manager, hypothesis testing can be used. The null hypothesis (H_0) is that there is no value added, therefore, to demonstrate that it is value added on a statistically significant basis, the calculated test statistic would have to be large enough so that the null hypothesis would be rejected.

As a result, there could be a Type I error whereby the null hypothesis is rejected, when in fact, there was no value added. In other words, the hired or kept manager did not demonstrate sufficient skill. Alternatively, there could be a Type II error whereby the null hypothesis is not rejected, when in fact, there was value added. In other words, the manager who was not hired or the manager who was fired did demonstrate sufficient skill. Figure 27.1 summarizes Type I and II errors.

Figure 27.1: Type I and Type II Errors

		Realization	
		Below expectations (no skill)	At or above expectations (skill)
Decision	Hire/Retain	Type I	Correct
	Not Hire/Fire	Correct	Type II

Type I errors receive much more attention than Type II errors. One reason may relate to the notion of regret aversion by the decision maker, which is linked to an error of commission (a Type I error). Errors of commission are active decisions that result in explicit (or visible) costs. In contrast, Type II errors are errors of omission, so they result in implicit or opportunity (less visible) costs. Another reason is that Type I errors are easier to determine; for example, a manager's relative performance can be measured against a benchmark. Such performance also impacts the decision maker's compensation so additional care would be taken to reduce the risk of a Type I error. In contrast, Type II errors are difficult to determine; for example, how can one objectively determine how a manager (who was not hired) would have performed? Finally, Type I errors are much more visible to clients who can easily determine that their investments have underperformed the benchmark over a specific time period, for example. In contrast, clients are less likely to follow or monitor managers who are not hired or who are fired to determine if such managers would have added value over the same time period.

Preventing Type II Errors

An excessive number of Type II errors would be indicative of a problem with the hiring and firing of managers. The obvious solution to minimizing Type II errors would be to track the subsequent performance of managers who were not hired as well as those who were fired. For example, what are the characteristics of the managers who are selected versus those who are not selected and are those characteristics of the selected managers consistent with the portfolio investment objectives? As well, what are the characteristics of the managers who are retained versus fired, and again, are the characteristics of the retained managers consistent with the portfolio investment objectives? Ultimately, it is

important not to hire or fire managers because of short-term performance or because of behavioral biases.

Costs of Type I and II Errors

Type I errors result in costs associated with retaining managers who are weak, while Type II errors result in costs associated with not retaining managers who are strong. Therefore, assuming two separate groups of managers (e.g., strong and weak), the greater the differences in sample size and mean, the greater the costs of Type I and II errors. The wider the dispersion of returns between strong and weak managers, the easier it is to distinguish between their relative skills. Therefore, it makes it less likely to have a Type I or II error which results in a lower expected cost of a Type I or II error.

In an efficient market, the dispersion of return distributions between the two groups is probably smaller due to greater difficulty in achieving alpha through active management, which would lessen the costs of hiring or retaining weak managers (Type I error).

If markets are mean-reverting, then Type I errors may occur when firing a poor performer, only to have performance improve subsequently or hiring a strong performer only to have performance deteriorate subsequently (Note: That is not a Type II error because the assumption is that the poor and strong performers have been accurately determined initially but it is the mean-reversion of the markets that leads to the Type I error). Type II errors occur in mean-reverting markets when strong managers are fired or not hired (e.g., they subsequently underperform when the market goes down) or managers who have weaker short-term performance (but have sufficiently strong long-term performance) are fired or not hired and they subsequently outperform when the market goes up.



MODULE QUIZ 27.1

To best evaluate your performance, enter your quiz answers online.

1. Quantitative analysis of the manager selection process includes:
 - A. defining the universe.
 - B. evaluating a performance appraisal.
 - C. performing investment due diligence.
2. The difference in expected cost between Type I and Type II errors is:
 - A. higher the lower the perceived difference between the distribution of skilled and unskilled managers.
 - B. lower the greater the perceived difference between the distribution of skilled and unskilled managers.
 - C. higher the greater the perceived difference between the distribution of skilled and unskilled managers.
3. A return distribution of skilled managers that is not distinct from the return distribution of unskilled managers, *most likely* implies a:
 - A. highly inefficient market.
 - B. low opportunity cost of not hiring a skilled manager.
 - C. high opportunity cost of not hiring a skilled manager.

MODULE 27.2: APPROACHES TO MANAGER ANALYSIS



Video covering this content is available online.

LOS 27.c: Describe uses of returns-based and holdings-based style analysis in investment manager selection.

CFA® Program Curriculum, Volume 5, page 272

Style Analysis

Style analysis examines the manager's risk exposures (e.g., industry, concentration, capitalization) in relation to an appropriate benchmark and the changes in those exposures over time. The risk exposures allow for the classification of managers (e.g., value, growth) by style for selection purposes and to perform returns-based style analysis (RBSA) and holdings-based style analysis (HBSA). Once RBSA and HBSA have been performed, congruence between the output and the investment process is crucial to ensure the process can be replicated consistently in the future. Monitoring the RBSA and HBSA output over time can help to detect style drift, whereby the manager's actions are deviating from the manager's stated style.

Style analysis is relevant when comparisons can be made over time and between different managers, when it is done on a timely basis, when the risks analyzed are the key sources of the manager's risk and return, and when the reported amounts are consistent with the manager's actual risk exposures. Style analysis works best for publicly traded investments with frequent pricing data. For less liquid investments, style analysis can still be used to generate questions in the due diligence process. In sum useful style analysis must be *meaningful, accurate, consistent, and timely*.

RBSA

RBSA estimates the portfolio's sensitivities to security market indexes for a set of key risk factors. One complication of RBSA is that the risk factors are estimated rather than using predetermined style categories. However, the approach is top-down in nature and little additional data is needed to perform the analysis so the computational approach is relatively easy. RBSA can determine the key risk factors and return drivers for basic and complex strategies. Also, RBSA uses objective data and allows for comparability between managers and through time. Finally, RBSA can be performed on a timely basis (e.g., right after the data is released).

RBSA lacks precision since it essentially assumes that there is a static portfolio for the period. As a result, it makes it difficult to ascertain the impact of multiperiod investment decisions for a given period, and could alter the breakdown of the sources of value added. The portfolio may also contain illiquid securities, so stale prices could underestimate risk exposure. When performance is computed based on appraisals of ongoing projects and the internal rate of return of cash distributions (e.g., venture capital and private equity), the short-term volatility may be understated. A manager's true return standard deviation is best gauged over a longer time period. Finally, reporting timeliness will decrease in the presence of illiquid or nontraded securities due to the longer time required for pricing.

HBSA

HBSA looks at the actual securities included in the portfolio at one time. That allows one to estimate the current risk exposures using a more security-specific (bottom-up) approach. Many of the advantages are the same as for RBSA (e.g., determine key risk factors and return drivers, comparability between managers and through time,

performed on a timely basis). Overall, HBSA is most appropriate for equity-based strategies.

A key drawback of HBSA is the increased computational requirement as complexity increases and transparency decreases. HBSA uses a point in time analysis format that may not be useful in projecting into the future or if the portfolio has high turnover. Similar to RBSA, the presence of illiquid and nontraded securities results in stale pricing and that could underestimate risk exposure as well as decrease reporting timeliness.

LOS 27.d: Describe uses of the upside capture ratio, downside capture ratio, maximum drawdown, drawdown duration, and up/down capture in evaluating managers.

CFA® Program Curriculum, Volume 5, page 275

Capture Ratios

Capture ratios determine how suitable a manager is with respect to the investor's risk tolerance and time horizon. The **upside capture ratio** (UC) looks at capture when the benchmark has a positive return. Based on the benchmark return, UC that is higher (lower) than 100% is indicative of outperformance (underperformance). Conversely, the **downside capture ratio** (DC) looks at capture when the benchmark has a negative return. Based on the benchmark return, DC that is lower (higher) than 100% is indicative of out- (under-) performance.

The **capture ratio** (CR) = UC ratio / DC ratio. The CR is a measure of return asymmetry, > 1 = positive asymmetry (convex shape), and < 1 = negative asymmetry (concave shape).

In examining positive asymmetry (convex shape), the question is whether the investment strategy is naturally convex or if the convexity occurs because of manager skill. With the former, consider an example of a hedging strategy that involves buying a series of out-of-the-money puts prior to severe market downturns. The result is positive asymmetry with many small losses (low DC ratio) due to the puts expiring worthless with far fewer large gains in this scenario (high UC ratio). With the latter, consider an example of a long-only equity strategy requiring active management to minimize losses and maximize gains. That requires manager skill, but may not result in consistent positive asymmetry.

When betas are increasing (decreasing), momentum-driven strategies should have higher (lower) UC than value-driven strategies. A low-beta (high-beta) strategy will have lower (higher) UC and DC. Therefore, CRs can be used to confirm the investment strategy.

Drawdown

Drawdown is the total peak-to-trough loss for a specified time period; maximum drawdown is the largest peak-to-trough loss during that time period. Large drawdowns are not appropriate for investors approaching the end of their investment horizon.

Drawdown duration is the total time from when the drawdown begins to when the total drawdown recovers to zero (the latter achieved with offsetting gains).

In comparing a long-only strategy (100% invested in S&P TR Index) versus a low-beta strategy (50% in S&P TR Index, 50% in 90-day T-bills), it is quite possible for the low-beta strategy to outperform the long-only strategy on a risk-adjusted returns basis. In other words, a low-beta strategy may have lower absolute returns but the lower risk in the form of lower drawdowns may result in better risk-adjusted returns.

Drawdowns are useful for identifying poor or poorly executed investment strategies, weak internal controls, and operational problems. Significant or extended drawdowns could cause a manager to utilize self-preservationist tactics that could harm the investors.

There is a fine line between risk management versus self-preservation. For example, it may be prudent to immediately sell assets with unrealized losses in a market downturn, because those losses may become worse later due to a fundamental change in the asset. It might be risky to sell assets in a market downturn should there be a subsequent reversal. The question is whether the manager acted properly in accordance with the IPS, acted for self-preservation reasons, or had a sudden overreaction.

In applying the concept of drawdown to the IPS, those investors with shorter time horizons and lower risk tolerance with less time to recover from losses should invest with managers with smaller and less extended drawdowns.



MODULE QUIZ 27.2

To best evaluate your performance, enter your quiz answers online.

1. Which of the following statements is *least likely* an advantage of HBSA over RBSA?
 - A. HBSA is a more precise tool.
 - B. HBSA is generally easier for equity strategies.
 - C. The data required for HBSA is generally easier to obtain.
2. A manager whose relative performance is better during market upturns *most likely* has a capture ratio that is:
 - A. equal to one.
 - B. less than one.
 - C. greater than one.

MODULE 27.3: EVALUATING MANAGERS



LOS 27.e: Evaluate a manager's investment philosophy and investment decision-making process.

Video covering this content is available online.

CFA® Program Curriculum, Volume 5, page 279

Investment Philosophy

The entire investment process should be driven by a succinct and precise investment philosophy. Some managers believe that markets are very efficient and that active management will underperform after considering all related costs. Therefore, those managers will execute passive strategies and attempt to earn risk premiums instead. These **risk premiums** are the returns that are earned above the risk-free rate for bearing undiversifiable risks, also referred to as systematic or market risk. To earn risk premiums, passive strategies will target one or more specific systematic risk factors including equity risk, credit risk, liquidity risk, and volatility risk.

In contrast, active strategies take the position that markets are inefficient and can allow for those inefficiencies to be exploited when market prices of securities deviate from their intrinsic values.

There are two broad types of inefficiencies to be considered: behavioral and structural. *Behavioral inefficiencies* are mispricings caused by other investors and their behavioral

biases (e.g., trend-following). The mispricings are very short-term in nature and therefore, must be quickly exploited (sometimes within seconds) prior to the market correction. *Structural inefficiencies* occur because of laws and regulations, which can make them long-term in nature. Active strategies often believe in the value of diversification for risk management purposes and believe in the notion of market prices converging to intrinsic value. With the latter, the idea is to exploit the incongruence prior to convergence.

Whatever the investment philosophy, it is necessary for the manager to be able to convey the underlying assumptions in a clear manner. Going deeper, do the assumptions make sense and are they congruent with the investment process? For example, the belief of inefficient markets would not be congruent with a passive approach. Furthermore, has the philosophy remained constant over time, thereby making it repeatable? If not, have the changes in philosophy been logical in view of market changes or have they merely been reactionary based on short-term performance? The former would support the repeatability of the process while the latter would not. Finally, is the inefficiency being exploited more of an informational advantage or more of a *structural inefficiency*? The former is more short-term in nature and likely less repeatable, while the latter is more long-term in nature and likely more repeatable.

Assuming there is a valid inefficiency to exploit, there is the related issue of capacity. Capacity refers to the amount, repeatability, and sustainability of the inefficiency. For example, the inefficiency must provide enough excess returns to cover transaction costs and fees. If leverage is required, then borrowing costs must be considered. Also, is the inefficiency repeatable or just a one-time opportunity? Finally, what minimum asset level is required in order to earn a sufficient return from the inefficiency? Therefore, sustainability depends on market depth and liquidity and the amount of capital that can be set aside to exploit the inefficiency.

Investment Decision-Making Process

Idea Generation

An investment signal may be a piece of information that can be used to establishing an investment position to exploit an inefficiency. To effectively exploit inefficiencies, investment strategies must utilize unique information to have an informational advantage over other market participants. Additionally, that information must be obtained and used on a very timely basis as it is frequently the case that the window of opportunity to exploit is very short. Finally, the investment manager must have superior cognitive or interpretive skills with regards to utilizing the information.

Idea Implementation

Here the investment idea is transformed into an investment position (i.e., signal capture). Two key concerns include the repeatability of process and its congruence with the investment philosophy plus the determination and approval of the investment position.

Portfolio Construction

A fundamental question is what kinds of securities are used to construct the portfolio. For example, if derivatives are used, then is the manager sufficiently knowledgeable and experienced with derivatives to adapt to changing markets?

The portfolio allocations may be done quantitatively or qualitatively. Either way, the allocations must make sense in view of the investment philosophy. For example, a passively managed portfolio should not have excessive turnover. The allocations should also account for the manager's views, therefore, performance maximization would occur by overweighting the expected outperformers and underweighting the expected underperformers. A related issue is the allocation of long and short positions—they may be paired or determined separately. If they are paired, then proper position sizing will eliminate market risk. At the same time, it will allow for the exploitation of inefficiencies prior to the convergence of market prices with intrinsic values.

Assets under management (AUM) will likely increase over time, therefore, the underlying positions may need to be adjusted (e.g., liquidity constraints) to allow for greater AUM.

Stop losses are orders to sell a security once it reaches a certain price and can be an important risk management tool. Hard or soft stop losses may be used. The former involve automatic dispositions when a specific loss threshold is met and the latter involve subjective evaluations when a specified loss threshold is met. As well, hedges are used to manage risk so information about how they are implemented, the financial instruments used to hedge, and the determination of hedge ratios, is necessary.

With liquidity, it should be determined whether the manager is a net supplier or demander of liquidity. Either way, care must be taken to ensure that the portfolio can react appropriately to changing market conditions or investor liquidity requirements. A portfolio that has too many illiquid securities may be faced with high exit costs in addition to the usual high transaction costs. There is also the risk of having to sell securities at depressed prices if funds are suddenly required by the investor. Therefore, in assessing liquidity, there should be an analysis of how much of the portfolio can be liquidated in five days or less (more liquid and therefore, greater flexibility) and well as how much needs more than 10 days to liquidate (less liquid and therefore, subject to higher transaction costs). A calculation of average daily volume (weighted by portfolio position size) is also necessary. Finally, there should be the determination of any security where the firm owns more than 5% of its total market capitalization as that would suggest some liquidity problems if the entire position needed to be disposed of suddenly.

Portfolio Monitoring

The monitoring process looks at external factors such as the general economy and financial markets and their impact on how the manager may exploit relevant inefficiencies. It also looks at internal factors such as historical returns, risk level, and allocations. There is a check for any significant deviations from the investment process (e.g., style drift) and to ensure that investment decisions are congruent with the most up-to-date client objectives.

LOS 27.f: Evaluate the costs and benefits of pooled investment vehicles and separate accounts.

CFA® Program Curriculum, Volume 5, page 286

Separately managed accounts (SMAs) and pooled investment vehicles are used to execute investment strategies. Pooled vehicles bring together the funds from all investors into one portfolio (e.g., mutual funds, ETFs, hedge funds) and there is no customization for any specific investor. SMAs hold the funds of one investor in a separate account so a key

analysis is the cost-benefit trade-off of holding investments in a SMA. As well, one must ensure the manager has the capability and resources to manage the SMA.

Compared to pooled investments, SMAs have higher transaction costs but provide control, customization, tax efficiency, separate reporting, and greater transparency. The *control* is in the form of direct and legal ownership of the underlying securities by the investor. Therefore, there is extra protection given to the investor in case of a liquidity event or bankruptcy of the manager. As well, unlike pooled investments, the investor is not impacted by the redemption demands of other investors. In terms of *customization*, SMAs allow for the tailoring of client-specific objectives and constraints. *Tax efficiency* could be higher in SMAs because there is only payment of realized capital gains required; for pooled investments, payment of accrued taxes on unrealized gains may be required. Investing strategies for SMAs can be tailored to minimize taxes paid by the individual investor. In terms of transparency, SMAs can provide an instantaneous snapshot or dashboard view of the investment holdings at any given point. Pooled investments may be able to do so but probably with a delay.

Customized SMAs require an extra layer of due diligence to evaluate security selection, portfolio construction, and operational issues. Cost-wise, SMAs have fixed costs that must be borne entirely by the one investor and cannot be spread amongst multiple investors in the case of pooled investments. For pooled investments, the incremental costs of adding additional investors are relatively low (e.g., custody, reporting) whereas SMAs require a separate account for each investor. Trading costs are relatively higher for SMAs because trades cannot be aggregated (e.g., buy and sell trades amongst multiple investors) to reduce trading volumes. A customized SMA will differ from the benchmark so it creates tracking risk due to investor constraints instead of manager actions. Customized SMAs are subject to micromanagement risk on the part of the investor and that makes it difficult to determine the true value added by the manager (if any). Investors may be subject to trend chasing, avoidance of unfamiliar investments, and not understanding the benefits of hedging (which often involve sacrificing some returns).



MODULE QUIZ 27.3

To best evaluate your performance, enter your quiz answers online.

1. Passive strategies earn risk premiums based on bearing:
 - A. systematic risk only.
 - B. unsystematic risk only.
 - C. both systematic and unsystematic risk.
2. Which step in the investment decision-making process focuses on the attributes of information in exploiting inefficiencies?
 - A. Signal capture.
 - B. Signal creation.
 - C. Portfolio construction.
3. One reason for an investor to choose a separately managed account over a pooled investment vehicle would *most likely* include the investor:
 - A. is tax exempt.
 - B. desires lower costs and fees.
 - C. desires real-time details on investment positions.

MODULE 27.4: MANAGER CONTRACTS AND FEES



LOS 27.g: Compare types of investment manager contracts, including their major provisions and advantages and disadvantages.

Video covering this content is available online.

CFA® Program Curriculum, Volume 5, page 291

Although investment contracts cover a wide variety of terms, the focus here will be on liquidity and management fees, in context of what is most suitable for the investor's needs.

Liquidity

Closed-end funds and ETFs have the highest liquidity because they are traded intra-day. Open-end funds offer almost as much liquidity in that they are traded based on end-of-day NAV only.

Investments held in limited partnership structures (e.g., hedge funds, private equity, and venture capital) usually involve investment capital that is tied up for more time. For example, hedge fund liquidity involves redemption frequency, lockup periods, notification periods, and gates. Redemption frequency refers to how often the investor may withdraw funds, and the notification period refers to the amount of advance notice required by the investor for a redemption. The lockup period refers to the period immediately following the initial investment, where funds may not be withdrawn. A hard lock does not permit redemptions, while a soft lock permits redemptions for a fee. Gates provide for a limit in the redemption amount for any given redemption.

Private equity and venture capital funds have the lowest liquidity because of capital calls; investors only receive returns after about five years into the 10-year average life of the funds. The manager may extend the life of the fund for up to two one-year periods, which further lowers liquidity.

Key advantages of limited partnership terms include ability to have a long investment horizon, thereby not allowing investors to overreact to short-term aberrations. As well, allowing for the earning of illiquidity premiums by investing in illiquid assets and not being forced to sell assets at depressed prices due to redemption requests.

Key disadvantages of limited partnership terms include the impaired ability to change portfolio allocations in response to changes in the market. As well, the impaired ability to meet sudden liquidity demands.

With SMAs, the liquidity is determined by the liquidity of the underlying assets, as the securities can be sold at any time

LOS 27.h: Describe the three basic forms of performance-based fees.

CFA® Program Curriculum, Volume 5, page 292

Management Fees

Managers charge fees to cover their fixed and variable costs as well as to earn a profit. The average asset-weighted expense ratio paid by mutual investors has declined substantially over the years as investors have increasingly allocated to no-load mutual funds and index funds which have lower fees.

Mutual fund fees are often based on AUM. In some cases, minimum balances are required. Fees can be structured as a fixed dollar amount or on the basis of a percentage of assets.

The fee structure (e.g., AUM, performance-based) is important to ensure that managers work to the advantage of the investors. It could be argued, however, that even in the absence of incentives, managers will still work to the advantage of the investors to retain them and potentially gain new investors. However, the fee structure may result in a misalignment of the principal and the agent's interests. For example, the investor does not always see the full extent of all the work the manager is doing; or the investor and manager may have different opinions on how to interpret time horizons or investment losses. Additionally, overall investment performance has a strong element of luck, so in theory, the manager should not be rewarded for it.

An advantage of the investor paying fees based on AUM is that it rewards based on the manager's skill and ability to grow the asset base. Many managers have declining percentage fees for larger accounts, so the AUM fee percentage is reduced with increased asset size, which reduces investors' fees. Unfortunately, luck may play a significant role in the short-term growth of assets. Another disadvantage is that once the assets are attained by the managers, there is more incentive to retain the assets and earn the AUM fees (e.g., engage in safe strategies, such as indexing) rather than take risks for the benefit of the investor.

Basic Forms

Performance-based fees are a form of risk sharing between the investor and the manager in order to align their interests. They are computed on the basis of total or relative return. The fees (using a sharing percentage) could be based on total performance or performance in excess of a base.

There are three basic forms of performance-based fees:

- Symmetrical structure with full upside and downside exposures.
 - Fee = base + performance sharing
 - The greatest alignment between investor and manager incentives but increased risk to manager due to the full downside exposure
- Bonus with full upside and limited downside exposures.
 - Fee = Greater of: (1) base, (2) base + sharing of positive performance
- Bonus with limited upside and downside exposures.
 - Fee = Greater of: (1) base, (2) base + sharing of positive performance (within limit)

Performance-based fee structures transform symmetrical gross active return distributions into asymmetrical net active return distributions. The result is lower relative variance on the upside versus the downside. Therefore, by using a symmetrical risk measure such as standard deviation, there could be an underestimation of downside risk.

Performance-based fees benefit investors since they will pay relatively lower performance-based fees (rather than relatively higher standard fixed fees) in the case of low active returns. Such fees benefit managers, as they may incentivize them to increase their efforts to benefit the investor's portfolio and to increase their own compensation. However, all three structures have in common the fact that base fees are paid even when the manager underperforms.

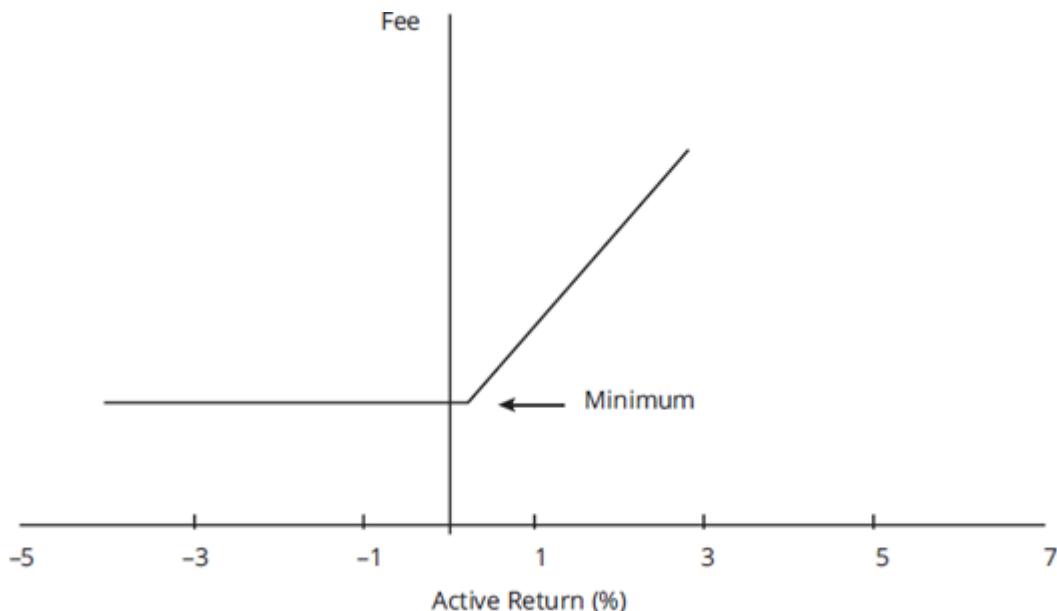
Some investments have no limits on performance fees. In some cases, performance fees could be tempered to include high-water or clawback provisions (e.g., hedge funds) that will offset prior period negative returns from current period positive returns, for example. For private equity partnerships, the investors are structured as limited partners and the manager as the general partner. A beneficial term for the investors is one that stipulates the repayment of principal and share of profits to the limited partners prior to any payment of performance fees to the general partner.

In negotiating fee agreements, only the most successful managers or the ones with limited capacity can command the highest base fees and/or the highest sharing percentages.

Call Option

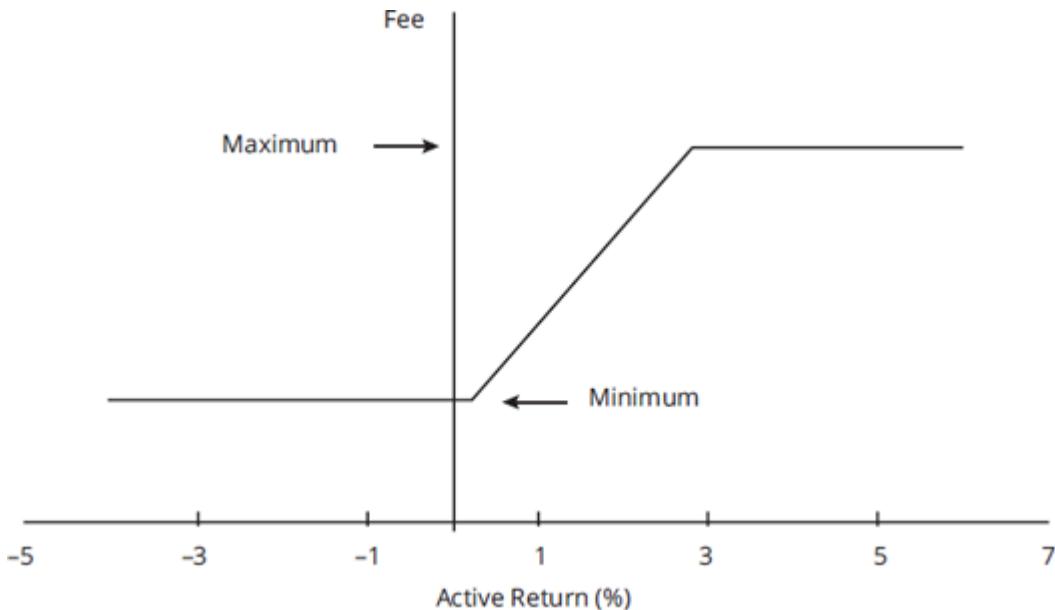
The previous bonus fee structures are analogous to a manager having a long position in a call option on the portfolio active return. The exercise price would be the base fee. See Figure 27.2 for a graphical representation. The payoff to the manager is theoretically unlimited.

Figure 27.2: Payoff Line of Sample Performance-Based Fee Schedule 1



In Figure 27.3, there is the addition of a short position in a less valuable call option with an exercise price equal to the maximum fee (assuming such a provision is applicable).

Figure 27.3: Payoff Line of Sample Performance-Based Fee Schedule 2



Based on this discussion, a net long position in a call option on portfolio active return, would cause a manager to take more risk since option pricing theory states that higher volatility increases option value. Therefore, it is recommended that managers be both penalized for taking too much risk and rewarded for earning higher risk-adjusted returns.

Other Issues

LOS 27.i: Analyze and interpret a sample performance-based fee schedule.

CFA® Program Curriculum, Volume 5, page 294

A sample performance-based fee schedule is illustrated in Figure 27.4.

Figure 27.4: Sample Performance-Based Fee Schedule

Panel A. Sample Fee Structure

Standard fee	0.50%
Base fee	0.25%
Sharing*	20%
Breakeven active return	1.50%
Maximum annual fee	0.75%

Panel B. Numerical Examples for Annual Periods

	Active Return		
	$\leq 0.25\%$	1.50%	$\geq 2.75\%$
Billed fee	0.25%	0.50%	0.75%
Net active return	$\leq 0.00\%$	1.00%	$\geq 2.00\%$

* On active return, beyond base fee.

Based on the details in Panel A and the summary calculations in Panel B of Figure 27.4, the fee is a bonus with limited upside (maximum billed fee) and downside (minimum billed fee) exposures. There is symmetry within the active return range of 0.25% and 2.75% and centered around a breakeven active return of 1.50%. In calculating the breakeven return, we have the following:

$$(1.50\% - 0.25\%) \times 20\% = 0.25\% \text{ performance fee}$$

Adding the performance fee to the base fee of 0.25% results in a total billed fee of 0.50%, which is the same as the standard fee of 0.50%.

At an active return of 0.25% or less, the performance fee is zero (the nonnegativity constraint frequently encountered in practice prevents the performance fee from being negative).

In that case, the billed fee is simply the base fee of 0.25%. At an active return of 2.75% or more, the performance fee is maximized at 0.50%, and so the billed fee is a maximum of 0.75%.



MODULE QUIZ 27.4

To best evaluate your performance, enter your quiz answers online.

1. Which investment fund generally has the *least* amount of liquidity?
 - A. Hedge fund.
 - B. Closed-end fund.
 - C. Private equity fund.
2. Which of the following fee structures *most likely* has no impact on the volatility of a portfolio's net returns?
 - A. Incentive fees only.
 - B. Management fees only.
 - C. Neither incentive fees nor management fees.
3. Fund X earns a -3% gross return for the year. The computed management fee is equal to a base fee of 2% plus a 20% sharing of both positive and negative performance. The sharing is based on return net of the base fee. What is Fund X's total management fee for the year?
 - A. 1.0%.
 - B. 1.4%.
 - C. 2.0%.
4. Fund Y earns a gross return of 12% for the year, while the relevant benchmark earns 3%. The computed management fee is equal to the higher of either a base fee of 0.4%, or base plus a 20% sharing of positive performance, up to a maximum annual fee of 2.9%. The sharing is based on active return. What is Fund Y's total management fee for the year?
 - A. 2.2%.
 - B. 2.8%.
 - C. 2.9%.

KEY CONCEPTS

LOS 27.a

In the context of investment manager selection, due diligence consists of manager universe, quantitative analysis, and qualitative analysis.

The manager universe consists of only those managers who are *suitable* for the portfolio in terms of the objectives and constraints of the IPS, invest in the relevant *style* (e.g., value, growth, mixed) desired by the client, and will manage the portfolio with the appropriate balance between *active versus passive* approaches.

Quantitative analysis focuses on performance attribution and appraisal as well as the analyses of CR and significant drawdowns.

Two important issues arise in qualitative analysis:

- What is the likelihood that the same level of returns will continue in the future?
- Does the manager's investment process account for all the relevant risks?

LOS 27.b

Type I errors occur when the null hypothesis is rejected, when in fact, there was no value added. In other words, the hired or kept manager did not demonstrate sufficient skill. Type II errors occur when the null hypothesis is not rejected, when in fact, there was value added. In other words, the manager who was not hired or the manager who was fired did demonstrate sufficient skill.

Type I errors receive much more attention than Type II errors since the former are errors of commission (more visible) while the latter are errors of omission (less visible). Also, Type I errors are easier to determine than Type II errors.

LOS 27.c

Style analysis examines the manager's risk exposures in relation to an appropriate benchmark and the changes in those exposures over time. The risk exposures allow for the classification of managers by style for selection purposes and to perform RBSA and HBSA.

RBSA is a top-down approach that estimates the portfolio's sensitivities to security market indexes for a set of key risk factors. HBSA is a bottom-up approach that looks at the actual securities included in the portfolio at one time. Many of the advantages of RBSA are the same as for HBSA (e.g., determine key risk factors and return drivers, comparability between managers and through time, performed on a timely basis).

LOS 27.d

The capture ratio (CR) = UC ratio / DC ratio. The CR is a measure of return asymmetry; > 1 = positive asymmetry (convex shape) and < 1 = negative asymmetry (concave shape).

Drawdown is the total peak-to-trough loss for a specified time period; maximum drawdown is the largest peak-to-trough loss during that time period. Drawdown duration is the total time from when the drawdown begins to when the total drawdown recovers to zero (the latter achieved with offsetting gains).

LOS 27.e

The entire investment process should be driven by a succinct and precise investment philosophy. Some managers believe markets are very efficient and will execute passive strategies. Other managers believe markets are inefficient and can allow for those inefficiencies to be exploited when market prices of securities deviate from their intrinsic values; they will execute active strategies. Active managers will look at behavioral inefficiencies (shorter-term; caused by other investors and their behavioral biases) and structural inefficiencies (longer-term; caused by laws and regulations).

The investment decision-making process consists of four steps:

1. Idea generation
2. Idea implementation
3. Portfolio construction
4. Portfolio monitoring

Within portfolio construction, the key issues to consider include allocation, risk management, and liquidity.

LOS 27.f

SMAs and pooled investment vehicles are used to execute investment strategies. Pooled vehicles bring together the funds from all investors into one portfolio and there is no customization for any specific investor. SMAs hold the funds of one investor in a separate account; the cost-benefit trade-off of holding investments in a SMA must be evaluated.

Compared to pooled investments, SMAs have higher transaction costs but provide control, customization, tax efficiency, separate reporting, and greater transparency. Customized SMAs require an extra layer of due diligence to evaluate security selection, portfolio construction, and operational issues.

LOS 27.g

Closed-end funds and ETFs have the highest liquidity because they are traded intra-day. Open-end funds offer almost as much liquidity in that they are traded based on end-of-day NAV only.

Investments held in limited partnership structures (e.g., hedge funds, private equity, venture capital) usually involve investment capital that is tied up for more time.

Private equity and venture capital funds have the lowest liquidity because of capital calls; investors only receive returns after about five years into the 10-year average life of the funds. There may be the possibility to extend by the manager for up to two one-year periods, which further lowers liquidity.

With SMAs, the liquidity is determined by the liquidity of the underlying assets.

LOS 27.h and 27.i

There are three basic forms of performance-based fees:

- Symmetrical structure with full upside and downside exposures
 - Fee = base + performance sharing
 - The greatest alignment between investor and manager incentives but increased risk to manager due to the full downside exposure
- Bonus with full upside and limited downside exposures
 - Fee = Greater of: 1) base, 2) base + sharing of positive performance
- Bonus with limited upside and downside exposures
 - Fee = Greater of: 1) base, 2) base + sharing of positive performance (within limit)

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 27.1

1. **B** Quantitative analysis includes attribution and appraisal (as well as an analysis of the capture ratio and drawdown). Defining the universe is a separate step in the manager selection process, and investment due diligence is a component of qualitative analysis. (LOS 27.a)

2. **C** The greater the difference in the distribution between skilled and unskilled managers, the greater the opportunity cost of retaining and cost of hiring an unskilled manager. (LOS 27.b)
3. **B** When two distributions are not distinct, the unskilled managers are not expected to significantly underperform the skilled managers, implying a low opportunity cost of not hiring skilled managers. Inefficient markets are likely to exhibit larger differences of returns between skilled and unskilled managers. (LOS 27.b)

Module Quiz 27.2

1. **C** The data required for HBSA is likely to be more difficult to find than the data required for RBSA.

HBSA is more precise than RBSA; RBSA is a relatively imprecise tool that does not require a thorough computational effort but that may sacrifice accuracy. HBSA is typically easier for equity strategies. (LOS 27.c)

2. **C** A capture ratio (upside capture divided by downside capture) greater than one indicates the upside capture is greater than downside capture and reflects greater participation in rising markets than in falling markets. (LOS 27.d)

Module Quiz 27.3

1. **A** Passive strategies assume markets are efficient enough that active management does not add value that exceeds its transaction costs and fees. Therefore, the risk premiums being sought are only for bearing risk that is not easily diversified away, which is systematic risk.

Unsystematic risk is relevant for active strategies only. (LOS 27.e)

2. **B** Signal creation (idea generation) focuses on how investment ideas are generated and information is viewed in context of the efficient market hypothesis to determine whether it can be used to exploit inefficiencies. (LOS 27.e)
3. **C** SMAs can provide an instantaneous snapshot or “dashboard view” of the investment holdings at any given point. Pooled investments may be able to do so, but probably with a delay.

The tax benefits of a SMA would only accrue to investors who are taxable and would not benefit those who are tax exempt. SMAs generally have higher costs and fees than pooled investment vehicles. (LOS 27.f)

Module Quiz 27.4

1. **C** Private equity funds have the lowest liquidity because of capital calls. Closed-end funds have the highest liquidity because they are traded intra-day. (LOS 27.g)
2. **B** Management fees are charged as a fixed percentage based on assets, which results in a lower net return but no impact on the standard deviation of the returns.

Because incentive fees are charged as a percentage of returns (reducing net gains or reducing net losses), incentive fees lower the standard deviation of returns. (LOS 27.h)

3. A $2\% + [20\% \times (-3\% - 2\%)] = 1\%$.

(LOS 27.i)

4. A Higher of: (1) 0.4%, or (2) $0.4\% + [20\% \times (12\% - 3\%)] = 2.2\%$

(LOS 27.i)

The following is a review of the Cases in Portfolio Management and Risk Management principles designed to address the learning outcome statements set forth by CFA Institute. Cross-Reference to CFA Institute Assigned Reading #28.

READING 28: CASE STUDY IN PORTFOLIO MANAGEMENT: INSTITUTIONAL

Study Session 14

EXAM FOCUS

This case study covers the following issues: capturing the illiquidity premium, managing liquidity, asset allocation, using derivatives or cash for tactical asset allocation, and portfolio rebalancing. There is also some coverage of potential ethical violations in the process of manager selection. Some of the material covered in this reading assumes prior knowledge of alternative investments and other basic portfolio management concepts.

MODULE 28.1: MANAGING LIQUIDITY RISK



LOS 28.a: Discuss tools for managing portfolio liquidity risk.

Video covering this content is available online.

CFA® Program Curriculum, Volume 5, page 332

Liquidity risk refers to a portfolio having to dispose of illiquid securities at a deep discount during troubled markets. Four key methods to manage liquidity risk include (1) liquidity profiling and time-to-cash tables, (2) rebalancing and commitments, (3) stress testing, and (4) derivatives.

Liquidity Profiling and Time-to-Cash Tables

For an endowment, the potential cash inflows and outflows must be determined. Taking the example of a university endowment with sizable holdings of illiquid assets, cash outflows would have to account for distributions to the university as well as capital call requests for certain types of investments such as hedge funds or private equity. Cash inflows would typically include donations and investment income earned from the portfolio.

The next step is to establish a timeline that involves constructing a liquidity classification schedule (time-to-cash table). That schedule would have three distinct components: (1) amount of time needed to convert assets to cash, (2) liquidity classification level, and (3) liquidity budget. An example is provided in Figure 28.1.

Figure 28.1: Time-to-Cash Table

Time to Cash	Liquidity Classification	Liquidity Budget (% of portfolio)
< 1 week	Highly liquid	At least 5%
< 1 quarter	Liquid	At least 25%
< 1 year	Semi-liquid	At least 40%
> 1 year	Illiquid	Up to 40%

The liquidity classification is closely linked to the amount of time it takes to liquidate an investment without having a major impact on markets. The latter would be demonstrated by a minimal differential in the expected market price immediately before and after a sell transaction. In addition, an investment that takes over one year to exit would likely be considered illiquid.

The time to cash may include a full range of periods beyond those illustrated in Figure 28.1, depending on whether they correspond to the investor's cash outflows. The liquidity budget will then provide minimum or maximum percentage allocations for the different time periods. For example, the three more liquid groups state minimum allocations, while the illiquid group states a maximum. Those requirements apply in all market situations, including times when liquidity is constrained; hence, the results of any stress tests are useful in determining the requirements.

To develop the liquidity budget, there must be preliminary work performed in observing the liquidity traits of the investments over a reasonable time period. Within a specific asset class, the various investments could have very diverse liquidity characteristics [e.g., exchange-traded funds (ETFs) may be more liquid than commingled funds]. Additionally, the same type of investment (e.g., commingled fund) may offer different levels of liquidity; one may offer semiannual liquidity because it is focused on small-cap foreign stocks, while the other may offer monthly liquidity because it is focused on large-cap foreign stocks. That is why it is important to analyze the investments in greater detail. An excerpt of a liquidity profile is provided in Figure 28.2.

Figure 28.2: Time-to-Cash Table

Asset Class	Asset Class Allocation (% of portfolio)	Investment Allocation (% of overall portfolio)	Investment Vehicle	Liquidity Classification			
				Highly Liquid	Liquid	Semi-Liquid	Illiquid
Fixed income	12%	4%	Separate account	100%	0%	0%	0%
		6%	Commingled fund	100%	0%	0%	0%
		2%	Futures	100%	0%	0%	0%
	20%	9%	Commingled fund	0%	50%	50%	0%
		9%	Separate account	0%	100%	0%	0%
		2%	ETF	100%	0%	0%	0%

Rebalancing and Commitments

Rebalancing

In addition to managing liquidity, it is necessary to maintain the overall risk profile within a desired (quantitative) range because over time and during times of market stress, asset values will change—sometimes very dramatically—thus greatly altering the desired balances in each asset class. With rebalancing costs for illiquid investments being very high, it is therefore crucial to maintain enough liquid assets to execute any necessary rebalancing transactions.

Systematic rebalancing policies are designed to maintain the long-term (strategic) asset allocation as much as possible. Examples include calendar and percent-range rebalancing with predetermined acceptable ranges for various asset classes. In attempting to reduce transaction costs, a wider range would be required for more volatile investments. In contrast, a narrow range would incur frequent transaction costs each time the allocation percentage for a given asset class falls outside of its (narrow) range.

Automatic adjustment mechanisms assist in keeping the portfolio risk profile relatively constant if there is a change from the target. For example, assume the portfolio has exposure to market risk relating to private companies and public companies, and that we can use public companies as a proxy for private companies. If the private equity has a beta of 1, and if the private equity allocation falls by 2% relative to the target, then there would be an automatic adjustment to increase the public equity allocation by 2%. That is intended to maintain the level of systematic risk, but of course, it means the level of unsystematic risk (which we can also think of as illiquidity risk) has decreased. The same methodology can be extended to other illiquid asset classes, where the public market can be a reasonable proxy for the private market.

Commitments

Investing in private market funds makes it more difficult for the portfolio to keep a stable or specific allocation level in the long term because within a given fund, the timing and frequency of when the committed capital is drawn and the return of capital distributions are beyond the control of the investor. By investing in multiple funds, however, the timing and frequency becomes more stable.

A multiyear funding strategy tries to determine the right level of annual commitments (investments) from the portfolio to arrive at a long-term optimal exposure to the asset class. That annual amount is derived from extensive quantitative analysis that considers, amongst other things, the estimated rate in which committed capital is drawn, the rate in which distributions are made, and the rate of change of asset size. In the end, there should be a determination of the asset class exposure as a percentage of the total portfolio for several hypothetical commitment levels. Additionally, the use of scenario analysis can take the analysis further to account for various market conditions (e.g., regular vs. stressed). Over time, the level of annual commitments will need to be adjusted as needed.

Stress Testing

Stress testing explicitly considers how the liquidity needs of a portfolio will change during a period of market stress. The idea is to conduct analysis to assume “worst case” or very extreme market conditions and the impact on both assets and liabilities at the same time. For example, for assets, one could make extreme assumptions on volatility (high), returns (low), correlation of returns between assets (high), and liquidity (low). For

liabilities, one could assume that the distributions suddenly increase significantly during a period of market stress.

The stress tests can be based on any combination of the following: history, statistical models, and scenario analysis.

Derivatives

Derivatives require far less cash than investing in underlying assets, which makes derivatives an ideal method for rebalancing. In addition, a futures overlay allows for rebalancing of many (but not all) asset classes without altering any of the asset allocations determined by the external active managers.

With leverage, taking a long futures position requires only minimal cash requirements for margin, for example. Therefore, any cash not required for margin can be used to invest in other assets with differing levels of liquidity, or to meet other liquidity requirements. Options can be purchased at premiums that are often only a fraction of the cost of the underlying asset, thereby serving as a form of leverage. Or, options can be sold to earn premium income that helps to generate liquidity.

LOS 28.b: Discuss capture of the illiquidity premium as an investment objective.

CFA® Program Curriculum, Volume 5, page 337

It is often the case that relatively illiquid investments such as private equity and real estate will earn an additional return (over the market return) for taking on the risk of holding up capital for an unknown amount of time. This is known as the illiquidity (or liquidity) premium earned. Studies have shown that the illiquidity premium increases with the amount of time (think of an upward-sloping yield curve, for example).

A different way to model the illiquidity premium is to think of it as the value of a put option where the strike price is the marketable price (a theoretically estimated price, as if it were freely traded) of the illiquid asset when it was purchased. That leads to the computation of the price of the illiquid asset as follows:

$$\text{illiquid asset price} = \text{marketable asset price} - \text{put price}$$

Using the marketable and the illiquid prices, we can derive the expected returns for both, and the difference in expected returns would be the illiquidity premium in percentage terms as follows:

$$\text{illiquidity premium (\%)} = \text{expected return on illiquid asset (\%)} - \text{expected return on marketable asset (\%)}$$

There are a substantial number of studies to support the positive correlation between illiquidity and expected returns for publicly traded stocks.

In practice, the illiquidity premium is challenging to accurately determine given all the other factors that interact in determining equity returns. In addition, broad market indexes are used to estimate illiquidity premiums, even though the typical investor is not likely to have such a breadth of investment exposure. As a result, the typical investor faces exposure to more unsystematic risk, which means that liquidity budgeting is essential in the balancing act of simultaneously earning excess returns through the illiquidity premium and managing risk.

MODULE QUIZ 28.1



To best evaluate your performance, enter your quiz answers online.

1. A portfolio analyst makes the following two statements:

Statement 1: The illiquidity premium is relatively easy to determine accurately.

Statement 2: Calendar and percent-range rebalancing are examples of automatic adjustment mechanisms.

How many of the analyst's statements are correct?

- A. Zero.
- B. One.
- C. Two.

2. Describe how futures and options can be used for leverage and liquidity purposes.

MODULE 28.2: ADDRESSING LIQUIDITY NEEDS



Video covering this content is available online.

LOS 28.c: Analyze asset allocation and portfolio construction in relation to liquidity needs and risk and return requirements and recommend actions to address identified needs.

CFA® Program Curriculum, Volume 5, page 338

Quadrivium University (QU) Endowment¹

The Quadrivium University (QU) endowment was set up many years ago with the purpose of offering financial assistance to undergraduate students. The current value of the endowment is \$8 billion, and about 75% of that amount has unrestricted use, with the other 25% being subject to donor-specified use restrictions.

QU's annual operating budget is \$583 million, and more than two-thirds of that amount covers the remuneration of faculty and administrative staff. The remainder is to cover debt payments, maintenance costs, and provide funds related to research and financial aid. The endowment makes annual distributions to fund about 60% of QU's operating budget, and the dollar amounts have been increasing for each of the past five years. Greater stability in the distributions has been requested by the board of the university, so in that regard, the spending rule was changed after the financial crisis over 10 years ago. Formerly, a simple spending rule existed based on 5% of the market value of the endowment at the beginning of the year. Now, the spending rule incorporates geometric smoothing and is expressed as follows:

$$(66\% \times \text{spending for the previous fiscal year}) + 34\% \times (5\% \times \text{endowment value at the end of the previous fiscal year})$$

To compute the QU endowment's spending for the current year, the previous year's spending was \$358.1 million and the endowment's market value at the end of the previous fiscal year was \$7,002.3 million.

$$(66\% \times \$358.1 \text{ million}) + 34\% \times (5\% \times \$7,002.3 \text{ million}) = \$355.4 \text{ million}$$

The QU endowment's investment objective is to earn a sufficient return over the long term to cover the annual spending and to maintain the real value of the endowment. At an annual 5% spending rate and 2%-3% annual inflation applicable to universities, the

endowment has an annual nominal return requirement of 7%–8%. The risk objective is between a 12% and 14% annual standard deviation of portfolio returns.

Quadrivium University Investment Company (QUINCO)

A board of trustees (“the Trustees”) oversees the activities of QU. The Quadrivium University Investment Company (QUINCO) is the university investment office and is responsible for managing the QU endowment. Aaron Winter is the president of QUINCO, and he reports to the university president and to the QUINCO board of directors (“the Board”). The Board consists of 11 individuals appointed by the Trustees, and the Board deals with approving investment policy and guidelines. QUINCO staff are charged with implementing the investment policy.

QUINCO’s 13 investment professionals are officially employed by QU. QUINCO’s investment model involves implementation of investment strategy by external managers instead of having in-house investment management. Instead, internal staff deal with asset allocation, risk management, manager selection, and continuation decisions regarding the external managers.

Assets are invested in (1) fixed income, (2) public equity, (3) private equity, (4) real assets (e.g., private real estate, natural resources), and (5) diversifying strategies (e.g., hedge funds). The last three categories comprise alternative investments. Each of the five categories is managed by a senior portfolio manager and an analyst. The other three investment professionals are a portfolio strategist and analyst, who are responsible for asset allocation and risk management, and the president, who serves as the chief investment officer (CIO). The portfolio strategist has ongoing duties involving rebalancing, overlays, and tactical asset allocation (TAA) tilts. Any decisions made by external investment managers and TAA deviations require the approval of the internal investment committee. Winter leads that committee, which includes all senior portfolio managers and the portfolio strategist. Finally, the Board must provide final approval for the hiring of any external managers.

QUINCO Investment Strategy

QUINCO’s investment strategy is concerned primarily with the long term. Its connections with QU alumni networks in the industry has allowed the endowment to benefit from the knowledge of the best-in-class managers.

Initially, its investment universe was confined to traditional publicly traded stocks and bonds. With growth of the endowment, the long-term strategy began to include alternative investments (e.g., private equity, real estate, commodities, hedge funds), which may allow for greater diversification and higher risk-adjusted returns. Alternative investments have helped to boost the endowment’s returns over the past 20 years, although QU’s allocation to alternative investments is still below average compared to other comparable endowments. Over a long time span, the alternative investments portion of the portfolio has become more established and diversified with respect to managers and strategies, for example.

Spanning over a 20-year period from 1996 to 2017, the QU endowment asset allocation has changed as follows:

- Cash allocation has remained constant at 1%.

- Traditional stocks (domestic) and bonds initially accounted for almost 70% of assets but have been reduced to about 30%.
- International equity (developed markets) initially accounted for almost 25% of assets but have been reduced to 10%.
- Emerging market equity initially accounted for 0% and has increased to 10%-15%.
- Private equity initially accounted for less than 5% and has increased to 15%-20%.
- Real assets (e.g., real estate, commodities) initially accounted for less than 5% and have increased to 10%-15%.
- Diversifying strategies (e.g., hedge funds) initially accounted for 0% and have increased to 10%-15%.

During the most recent strategic asset allocation (SAA) review by the QUINCO Board two years ago, they resolved to increase the allocation to alternative investments and decrease the allocation to developed market equities (domestic and international).

Winter has worked at QUINCO for five years and became the president and CIO one year ago. He will be performing his first asset allocation review. Winter has a portfolio strategy team to assist him with the review. The team includes Julia Thompson, the team lead, as well as her asset allocation analysis plus the senior portfolio managers for fixed income and public equities. After consulting with the Board, Winter advises the team to deal with the following matters pertaining to the review:

- An optimal liquidity profile and liquidity management plan for the endowment.
- The SAA in context of the investment outlook; there is an expectation of lower future returns in most traditional asset classes.
- The use of TAA as a complement to SAA to improve risk-adjusted returns.
- The QU endowment's underperformance compared to its peers.

Strategic Asset Allocation (SAA)

The strategy team have finished the work requested and will be making a presentation to the Board. As part of their economic analysis, they used unsmoothing methods for private equity (a relatively illiquid asset class) due to the smoother reported returns resulting from the lack of frequency of pricing data, for example. The unsmoothing methods resulted in an upward adjustment to the reported volatility of private equity. Figure 28.3 summarizes the results of the team's analysis.

Figure 28.3: Risk/Return Analysis²

Asset Class	Expected Real Return (annual geometric mean, next 10 years)	Expected Nominal Return (annual geometric mean, next 10 years)	Standard Deviation of Returns (annual)	Sharpe Ratio
Cash	0.9%	3.4%	1.7%	
Fixed income	1.8%	4.3%	6.3%	0.14
Domestic equity	5.0%	7.6%	18.1%	0.23
International developed equity	4.8%	7.4%	19.7%	0.20
Emerging market equity	6.0%	8.7%	26.6%	0.19
Private equity	8.5%	11.2%	24.0%	0.32
Real assets	4.5%	7.1%	13.3%	0.27
Diversifying strategies	4.0%	6.6%	10.0%	0.31

Note: Inflation assumed to be 2.5% p.a.

With some research, it was determined that the primary reasons for the QU endowment's underperformance relative to its peers was the lower amount of risk taken and the lower allocation to illiquid investments, especially private equity. Therefore, the current and proposed allocations are as follows:

	Current	Proposed
Cash	1%	1%
Fixed income	14%	9%
Domestic equity	17%	15%
International developed equity	10%	9%
Emerging market equity	12%	12%
Private equity	18%	23%
Real assets	13%	16%
Diversifying strategies	15%	15%

Some metrics are provided in Figure 28.4 that suggest increasing the allocation to private equity and real assets would raise the Sharpe ratio. Thompson realizes that there are higher investment management and performance fees for private equity and real assets compared to public equity and fixed income, so the returns in Figure 28.4 are on a net-of-fees basis. There is also some reporting of Monte Carlo simulation results to bring attention to the potential erosion in purchasing power. The Board is willing to accept an annualized standard deviation of returns between 12% and 14%.

Figure 28.4: Current and Proposed Risk/Return Data³

Portfolio Characteristic	Current SAA	Proposed SAA
Expected nominal return (annual average, geometric, next 10 years)	7.5%	7.8%
Expected real return (annual average, geometric, next 10 years)	5.0%	5.3%
Standard deviation of returns (annual)	12.5%	13.2%
Sharpe ratio	0.33	0.34
Probability of 25% erosion in purchasing power over 20 years with 5% spending rate	35%	30%

Note: The probability of erosion in purchasing power was derived based on a Monte Carlo simulation with a 20-year investment horizon, assuming expected return and volatility characteristics will be the same as for the next 10 years.

Thompson argues that the higher Sharpe ratio is sufficient reason to amend the SAA. She knows that the standard deviation of returns increases by 0.7% if the proposed asset allocation is accepted. Her reasons for taking on more stand-alone risk include the following:

- Lower future returns expected for all asset classes will necessitate taking on more risk to maintain the same level of returns.
- QU's endowment takes on less risk than its peers.
- The estimated Sharpe ratio for fixed-income investments (less risky) means that there should not be as much allocation to less risky assets.
- Monte Carlo simulations have indicated that in the long term, the proposed asset allocation has a better chance of earning the desired real return and preserving purchasing power.

Liquidity Management

Managing liquidity is paramount for the endowment given QU's need for cash flows from the endowment. As part of their management duties, Thompson's team performs cash flow modeling over several time horizons and under normal and stressed market conditions. Thompson is worried that liquidity may deteriorate significantly during stressed market conditions. Three reasons why deterioration may occur include the following:

- For private equity, capital calls are greater than capital distributions, resulting in a greater concentration of private equity (a more illiquid investment) in the portfolio.
- Certain investments made by portfolio managers may restrict investors from withdrawing their funds during stressed market conditions, which decreases the portfolio's overall liquidity.
- Private equity investments are not valued as frequently as public equity, for example. The resulting lagged valuations mean there is a relative increase as a percentage of the portfolio and a relative decrease in liquid assets as a percentage of the portfolio during stressed market conditions (e.g., the liquid assets fall in value "faster" because they are valued more frequently). The percentage of assets available for meeting liquidity needs is reduced when it could be needed most during periods of market stress.

Accordingly, Thompson's team has prepared a summary of liquidity profiles as follows:

- Existing portfolio liquidity profile:
 - Normal conditions: highly liquid (19%), liquid (26%), semi-liquid (22%), illiquid (33%)
 - Stress conditions: highly liquid (15%), liquid (26%), semi-liquid (20%), illiquid (39%)
- Proposed portfolio liquidity profile:
 - Normal conditions: highly liquid (14%), liquid (24%), semi-liquid (23%), illiquid (39%)
 - Stress conditions: highly liquid (11%), liquid (25%), semi-liquid (21%), illiquid (43%)



MODULE QUIZ 28.2

To best evaluate your performance, enter your quiz answers online.

1. A. Discuss three reasons why the QU endowment should increase its allocation to illiquid investments.
- B. Discuss one concern with increasing the allocation to illiquid assets and describe how that concern can be mitigated.
2. A. Using the information in Figure 28.4, discuss two reasons that support Thompson's proposed asset allocation.
- B. Discuss two tradeoffs involved with implementing the proposed asset allocation.
- C. State two items that Thompson should confirm before implementing the proposed asset allocation.
3. Discuss how a current spending policy, based on a combination of prior year spending and prior year market value, could impact liquidity needs when market conditions deteriorate.
4. Discuss three tools for QUINCO to use for liquidity management—specifically, (1) cash flow forecasting and commitment pacing models, (2) liquidity budgets, and (3) stress tests.
5. Describe the impact on QU's liquidity resulting from the proposed asset allocation. Describe any follow-up actions Thompson needs to take with respect to the proposed asset allocation.

MODULE 28.3: MODIFYING ASSET ALLOCATION



Video covering this content is available online.

LOS 28.d: Analyze actions in asset manager selection with respect to the Code of Ethics and Standards of Professional Conduct.

CFA® Program Curriculum, Volume 5, page 352

Asset Manager Selection

Several months later, the process of hiring more external managers to implement the proposed asset allocation changes has begun. A request for proposal (RFP) for a private equity manager was issued, and one of the responses came from Genex Venture Capital (GVC) with a proposal to invest in its venture capital fund called "GVC Fund II." GVC is owned and operated by Virginia Hall, CFA, who is on the QU endowment board and has

been a long-time and highly supportive donor to the university. Therefore, both the university treasurer and president are strongly in support of GVC's proposal and have indicated so to Winter. Winter, on the other hand, believes that Hall asked the two individuals in advance to support her proposal. Through the process of elimination, the two finalists are GVC and another venture capital fund that is a direct competitor of GVC, called Beacher Venture Investments (Beacher).

GVC and Beacher are requested to present to QUINCO's investment committee. Jason Allen, a former colleague of Winter, is GVC's managing director, and he gives the GVC presentation. However, Winter knows that the presentation contains confidential information that is not publicly available, which was possibly obtained from the university treasurer. In addition, GVC's historical returns are presented with amounts materially greater than those reported elsewhere by third parties. Beacher is the more established pick of the two firms, despite some problems with the performance of its previous fund. But some concerns were raised about GVC's short existence to date. Ultimately, Bud Davis, one of QUINCO's top portfolio managers in private equity, is asked to make a recommendation on which firm to go with.

Davis states that GVC is finding it difficult to raise the targeted \$300 million for Fund II since Fund I only raised \$100 million. Investors are worried about the threefold expansion and the uncertainty whether GVC can achieve its goal. However, Davis tempers that point with strong, positive comments about GVC's manager and GVC's investment approach. In addition, Davis confirms that GVC's investment management fee will be lowered. Based on Davis's comments, the investment committee agrees with Davis's recommendation to go with GVC.

Afterward, Winter speaks with Allen to convey the news. During the conversation, Allen states that Davis's spouse, Andrea, is Hall's daughter. When Winter confronted Davis with that knowledge, Davis simply stated that it was well known and assumed that everyone on the investment committee already knew of the relationship.

LOS 28.e: Analyze the costs and benefits of derivatives versus cash market techniques for establishing or modifying asset class or risk exposures.

LOS 28.f: Demonstrate the use of derivatives overlays in tactical asset allocation and rebalancing.

CFA® Program Curriculum, Volume 5, page 355

The Board has approved a much larger active risk budget for QUINCO's proposed TAA plan. The annual tracking error limit was specifically increased from 100 bps to 250 bps to try to increase overall portfolio returns. Winter and his staff are completely responsible for implementing the new TAA plan, and they have the authority to use 150 bps of the 250 bps budget to do so. Additionally, because the use of derivatives in the implementation would result in increased leverage, the Board approved a maximum leverage position of 5% of the portfolio value.

Winter thinks that the TAA plan will allow for overweight and underweight positions in acceptable asset classes and allow for investing in assets beyond the policy portfolio benchmark universe that are still consistent with the investment policy. In implementing the plan, Winter began with fair value and mean reversion by creating fair value models for the portfolio assets. Relevant economic and financial data known to have predictive power were gathered and used to estimate future risk and return for periods ranging

from one to three years. The output from the models (i.e., theoretically correct fair value) is then compared to actual prices to assess whether any variances are significant enough to be exploited, after considering the costs involved in doing so. Subsequent and thorough backtesting revealed that the models worked well.

Specifically, large-cap U.S. equities were priced far below their fair value and mean reversion would occur in about a year. Thompson uses that information and proposes to overweight U.S. equities by 1% using either a total return swap, equity futures, or ETFs. The objective is to minimize use of cash and transaction costs.

Her team comes up with the following summary, shown in Figure 28.5.

Figure 28.5: Comparing Investment Costs⁴

Cost Component	ETF	Futures	Total Return Swap
Commission (round trip)	4.00	2.00	5.00
Management fee (annual)	9.50	0.00	0.00
Bid/offer spread (round trip)	2.50	2.00	6.00
Price impact (round trip)	15.00	10.00	0.00
Mispricing (tracking error, annual)	4.00	8.00	0.00
Cost to roll the futures contract	0.00	20.00	0.00
Funding cost	0.00	0.00	40.00
Total cost	35.00	42.00	51.00

Notes: The exhibit shows the team's cost comparison for the three implementation options—ETFs, futures, and total return swaps—for an \$80 million notional exposure to the S&P 500 Index (assuming a fully funded mandate) over a one-year investment horizon. All numbers are in basis points (bps) unless otherwise indicated.

Thompson feels that ETFs require too much up-front cash (100% of the value) or that the 50% permitted margin would provide only limited leverage opportunities (\$80 million investment with \$40 million provided in cash and \$40 million borrowed). She realizes that using futures and total return swaps to obtain \$80 million exposure would require far less cash than the \$40 million required if using ETFs.

On the other hand, ETFs and futures are more liquid—they are widely traded and have low transaction costs. Both instruments allow for early termination, should market conditions warrant it, and Thompson has made it known that the flexibility is important to her. Total return swaps are traded over the counter (OTC) in that the terms are negotiated and features are customized between the counterparties. However, with futures, Thompson does not like the daily margin monitoring tasks. Additionally, she has concerns over interest rate and counterparty credit risk.

The overlay will be performed on the assumption of a leverage level of 4, meaning 25% of the investment is provided in cash and 75% borrowed. Financing costs are based on a 2% 3-month LIBOR rate for futures and swaps, with an additional 0.5% financing cost for ETFs.

Asset Allocation Rebalancing

It is now three months after the overweight position in U.S. equities, and the position has done well. Fixed income has not performed well due to a large rise in interest rates. As a result, there has been noticeable drift in the QU endowment asset allocation. Rebalancing of the portfolio is performed quarterly for cost control reasons; however, the portfolio

drift from the SAA is checked on a monthly basis. At the end of each quarter, if a relatively liquid asset class moves outside the rebalancing corridor, then it is systematically rebalanced back to either the target allocation or to the edge of the corridor. For more illiquid asset classes, high transaction costs mean that rebalancing is done more implicitly by altering the commitments and reinvestments when allocations drift to the either end of the corridor.

Pertinent asset allocation information on the QU endowment is presented in Figure 28.6.

Figure 28.6: Asset Allocation Information⁵

	Target Allocation (SAA)	Corridor	Min/Max Target	Current Allocation
Cash	1%	±1%	0%–2%	0.8%
Fixed income	9%	±3	6%–12%	6.5%
Domestic equity	15%	±2.5	12.5%–17.5%	17.3%
International developed equity	9%	±2%	7%–11%	11.5%
Emerging market equity	12%	±2%	10%–14%	13.9%
Private equity	23%	±5%	18%–28%	19.2%
Real assets	16%	±3%	13%–19%	13.8%
Diversifying strategies	15%	±3%	12%–18%	17.1%
Total	100.0%			100.0%

Based on her analysis of Figure 28.6, Thompson notices the following:

- International developed equity at a current allocation of 11.5% has exceeded the top end of the corridor (11%) by 0.5%.
- Fixed income at a current allocation of 6.5% is off significantly from the target of 9% but still within the acceptable range of 6%–12%.
- Private equity at a current allocation of 19.2% is near the low end of the corridor (18%).
- Real assets at a current allocation of 13.8% is near the low end of the corridor (13%).

As an immediate action, Thompson wishes to reduce the international developed equity allocation and increase the fixed income allocation by 0.5%. That will take the former back to the top edge of its corridor. The question is whether to perform the transaction through the cash market or the derivatives market. She is aware that implementation will take more time in the cash market but is necessary for larger or more important adjustments.

Upon further research, Thompson finds out that the 0.5% rebalancing transaction over a three-month investment horizon will incur 30 bps of transaction costs in the cash market (bid/offer spread of 5 bps, price impact of 5 bps, and cash drag of 20 bps). The cash drag includes the impact of timing delays and disruptions to active manager portfolios. The same rebalancing transaction will incur 24 bps of transaction costs in the futures market (bid/offer spread of 3 bps, price impact of 4 bps, and mispricing of 17 bps).

With additional consultations within the team, Thompson then opts to rebalance international developed equity back to the 9% allocation, so that involves a 2.5% decrease to equity as well as a 2.5% increase to fixed income. Now, the investment horizon is one year and will incur 60 bps of transaction costs in the cash market (bid/offer spread of 5 bps, price impact of 5 bps, and cash drag of 50 bps). For the futures market, there will be 82 bps of transaction costs (bid/offer spread of 4 bps, price impact of 4 bps, cash drag of 68 bps, and cost of rolling futures contracts of 6 bps).



MODULE QUIZ 28.3

To best evaluate your performance, enter your quiz answers online.

1. Discuss ethical issues and potential violations of the Code and Standards by Winter, Hall, the QU president and QU treasurer, Allen, and Davis. (Note: The citation of specific standard numbers and names is not necessary.)
2. On the assumption of no leverage employed, identify the most appropriate method for Thompson to use to implement the overweight to U.S. equities. Justify your response with three reasons, including cost, logistical, and risk considerations.
3. Assuming a leverage level of 4, determine whether Thompson would change her mind in terms of investment vehicle for implementation purposes. Identify one issue unrelated to cost. (Note: Ignore any additional return that could be earned by investing the 75% of cash that is not required for the investment.)
4. Discuss the issues of cash drag in rebalancing in the cash market and tracking error in rebalancing in the derivatives market.
5. Discuss how implementation speed and rebalancing size would impact the method of implementation.
6. Assuming the 2.5% reallocation is performed, evaluate the implementation options and select the most appropriate one for Thompson to use.

KEY CONCEPTS

LOS 28.a

Four key methods to manage liquidity risk include (1) liquidity profiling and time-to-cash tables, (2) rebalancing and commitments, (3) stress testing, and (4) derivatives.

A liquidity classification schedule (time-to-cash table) has three distinct components: (1) amount of time needed to convert assets to cash, (2) liquidity classification level, and (3) liquidity budget.

To maintain the overall risk profile within a desired (quantitative) range, both systematic rebalancing policies and automatic adjustment mechanisms are used.

A multiyear funding strategy tries to determine the right level of annual commitments (investments) from the portfolio to arrive at a long-term optimal exposure to the asset class. Over time, the level of annual commitments will need to be adjusted as needed.

Stress testing explicitly considers how the liquidity needs of a portfolio will change during a period of market stress. The idea is to conduct analysis to assume “worst case” or very extreme market conditions and the impact on both assets and liabilities at the same time.

Derivatives require far less cash than investing in underlying assets, which makes derivatives an ideal method of rebalancing (e.g., by their nature, derivatives have significant leverage possibilities).

LOS 28.b

The illiquidity (or liquidity) premium refers to the additional return (over the market return) for taking on the risk of holding up capital for an unknown amount of time. Studies have shown that the illiquidity premium increases with the amount of time.

$$\text{illiquidity premium (\%)} = \text{expected return on illiquid asset (\%)} - \text{expected return on marketable asset (\%)}$$

In practice, the illiquidity premium is challenging to accurately determine given all the other factors that interact in determining equity returns.

LOS 28.c

With some research, it was determined that the primary reasons for the QU endowment's underperformance relative to its peers was the lower amount of risk taken and the lower allocation to illiquid investments, especially private equity. Therefore, the current and proposed allocations are as follows:

	Current	Proposed
Cash	1%	1%
Fixed income	14%	9%
Domestic equity	17%	15%
International developed equity	10%	9%
Emerging market equity	12%	12%
Private equity	18%	23%
Real assets	13%	16%
Diversifying strategies	15%	15%

Managing liquidity is paramount for the endowment given QU's need for cash flows from the endowment. There should be cash flow modeling over several time horizons and under normal and stressed market conditions. Liquidity may deteriorate significantly during a stressed market condition.

- For private equity, capital calls are greater than capital distributions, resulting in a greater concentration of private equity in the portfolio.
- Certain investments made by portfolio may restrict investors from withdrawing their funds during stressed market conditions, which decreases the portfolio's overall liquidity.
- Private equity investments are not valued as frequently as public equity. The resulting lagged valuations mean there is a relative increase as a percentage of the portfolio and a relative decrease in liquid assets as a percentage of the portfolio during stressed market conditions.

LOS 28.d

Potential violations of the Code and Standards with respect to the process of asset manager selection include:

- Standard I(B): Independence and Objectivity.
- Standard I(C): Misrepresentation.
- Standard III(D): Performance Presentation.
- Standard III(E): Preservation of Confidentiality.

- Standard IV(A): Loyalty.
- Standard V(A): Diligence and Reasonable Basis.
- Standard VI(A): Disclosure of Conflicts.

LOS 28.e

Because changes in the market will often result in asset allocation drifts, the endowment portfolio will need to be periodically rebalanced. Derivatives are both cash efficient and quite liquid, so their role is threefold: (1) rebalancing, (2) changes in TAA, and (3) meeting short-term liquidity requirements.

Rebalancing with derivatives is most likely to be implemented more quickly, and with no impact on the active managers. That is on the assumption of reasonably high levels of liquidity in the equity futures market, for example.

If the rebalancing transaction is larger, then the transaction is likely to be more permanent or long term in nature. That makes rebalancing with cash more desirable despite the associated cash drag.

LOS 28.f

Derivatives overlays would allow the endowment to periodically rebalance exposures to asset classes without impacting the existing allocations to external active managers. That makes overlays more desirable for making smaller, short-term adjustments that could easily be reversed later.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 28.1

1. A Statement 1 is incorrect. In practice, the illiquidity premium is challenging to accurately determine given all the other factors that interact in determining equity returns. In addition, broad market indexes are used to estimate illiquidity premiums, even though the typical investor is not likely to have such a breadth of investment exposure.

Statement 2 is incorrect. Calendar and percent-range rebalancing are examples of systematic rebalancing policies.

(LOS 28.a, LOS 28.b)

2. Taking a long futures position requires only minimal cash requirements for margin, which is a form of a leveraged investment. Therefore, any cash not required for margin can be used to invest in other assets with differing levels of liquidity, or to meet other liquidity requirements.

Options can be purchased at premiums that are often only a fraction of the cost of the underlying asset, thereby serving as a form of leverage. Or, options can be sold to earn premium income that helps to generate liquidity.

(LOS 28.a)

Module Quiz 28.2

1. A. The QU endowment has a long-term investment focus, which increases its ability to invest in illiquid investments. Therefore, the addition of such assets to the QU endowment's investment opportunities may allow the efficient frontier to be shifted upward so that it achieves a higher return for a stated level of risk.

The QU endowment has consistently earned positive returns with its illiquid (alternative) investments over the past 20 years. After such a long time period, the illiquid investments portion of the portfolio is clearly established and diversified. With a team of industry experts at their disposal, including best-in-class managers, the endowment should expect to continue earning strong returns in the future, which justifies increasing the allocation to illiquid investments.

Compared to its peers, the QU endowment is underinvested in illiquid investments. Therefore, an increased allocation is justified to overcome its past underperformance compared to its peers.

1. B. The increased allocation to illiquid assets (especially private equity and real assets) introduces more unsystematic risk. Therefore, placing smaller amounts in a larger number of investments will reduce much of that unsystematic risk.

(LOS 28.c)

2. A. The proposed asset allocation has a better risk-return relationship than the existing SAA, as illustrated in Figure 28.4 by the increase in Sharpe ratio from 0.33 to 0.34.

The proposed asset allocation has a higher chance of earning the target return in the long term. Using the Monte Carlo simulation results, there is a 70% probability of having at least 75% of the purchasing power for the next 20 years; the result in Figure 28.4 explicitly states 30% probability of a 25% erosion. Under the existing SAA, there is only a 65% probability of having at least 75% of the purchasing power.

B. One tradeoff of the proposed asset allocation is the increase in portfolio volatility —annual standard deviation rises 0.7% to 13.2%. However, given the expectation of lower returns for all asset classes, greater risk must be taken to earn the same level of returns.

Another tradeoff is the transaction costs, since private equity and real assets are most likely to have higher investment management and performance fees than traditional public stock and bond investments. However, the return amounts in Figure 28.4 are on a net-of-fees basis, so they account for the increased fees.

C. She should confirm that the metrics in Figure 28.4 such as the standard deviation of returns (increased from 12.5% to 13.2%) and the 30% probability of a 25% erosion in purchasing power are acceptable within the endowment's risk appetite.

She should confirm that after increasing the illiquid assets allocation, the new asset allocation continues to meet all the portfolio liquidity requirements.

(LOS 28.c)

3. Spending policies have a built-in countercyclical impact, so spending rates end up being less than 5% during stronger market conditions and more than 5% during weaker market conditions. As a result, the endowment's liquidity needs are amplified during stressed market conditions.

(LOS 28.c)

4. Cash flow forecasting and commitment pacing models can be used to estimate the increased allocation to private equity and real assets. For example, cash outflows need to be estimated for future commitments in private equity; capital calls are legal obligations. Also, during market downturns, such cash outflows may become more onerous as inflows from prior investments could be curtailed or completely stopped due to a lack of cash as investments may not be liquidated due to low valuations.

Liquidity budgets can be created after accounting for the endowment's cash inflows and outflows.

Stress tests can be performed using both historical information and hypothetical assumptions within the framework of sensitivity analysis to determine how much variance in liquidity may occur and still be within the liquidity budget constraints.

(LOS 28.c)

5. There will be a noticeable increase in more illiquid investments and a noticeable decrease in highly liquid investments. For example, in normal conditions, highly liquid assets will decrease by 5% (from 19% to 14%) and illiquid assets will increase by 6% (from 33% to 39%). In stressed conditions, highly liquid assets will decrease by 4% (from 15% to 11%) and illiquid assets will increase by 4% (from 39% to 43%). QU's overall liquidity profile will become more illiquid due to the increased investment in private equity and real assets, both of which are the most illiquid asset classes.

Thompson must be certain that the endowment will be able to meet all its liquidity needs (e.g., distributions and rebalancing) for the proposed allocation and do so in stressed market conditions. Monitoring at key times when there is increased risk of not being able to meet its liquidity needs, as well as regular stress tests, would be suitable follow-up items to perform.

(LOS 28.c)

Module Quiz 28.3

1. Aaron Winter, QUINCO CIO

- Standard VI(A): Disclosure of Conflicts. Winter should have disclosed to the Board that the owner of GVC is already very closely associated with the university.
- Standard I(B): Independence and Objectivity. Winter is under pressure from some members of the university to award the position to GVC, which would impact his independence and objectivity. Winter should have disclosed that

GVC's managing director is a former colleague as that it could potentially impair Winter's independence and objectivity.

- Standard III(E): Preservation of Confidentiality. Winter suspected that GVC used confidential information in its presentation, and he should have disclosed his concerns to the university.
- Standard I(C): Misrepresentation and Standard III(D): Performance Presentation. Winter is suspicious as to the precision of the historical results provided.
- Standard V(A): Diligence and Reasonable Basis. Winter did not confirm or dispel his suspicions by doing any subsequent research or probing with GVC.

Virginia Hall, QU trustee, owner of GVC

- Standard VI(A): Disclosure of Conflicts. If Hall is trying to influence the hiring decision in favor of her company, then there is a conflict of interest. Hall's position as a QU trustee and her ownership of GVC is also a conflict as GVC is one of the finalists to be considered for hiring as an external portfolio manager for the QU endowment.
- Standard IV(A): Loyalty. By potentially putting her own business interests ahead of the best interests of the university (she is a QU trustee), Hall would be in violation of her duty of loyalty.
- Standard III(E): Preservation of Confidentiality. Hall may have obtained confidential information and used it in GVC's presentation to improve GVC's chances of being hired.

QU president and QU treasurer (both are members of the QU Board)

- Standard IV(A): Loyalty. Both the president and treasurer must act in the university's best interests by hiring only the best portfolio manager. They are violating Standard IV(A) by pressuring Winter to hire GVC given Hall's close association with the university.
- Standard III(E): Preservation of Confidentiality. They may also be in violation of Standard III(E) if they were the culprits who provided the confidential information in the GVC presentation.
- Standard VI(A): Disclosure of Conflicts and Standard I(B): Independence and Objectivity. For example, they should have disclosed their bias toward Hall given her past generosity to the university. Furthermore, they should have abstained from any voting decisions on the external manager given their lack of independence and objectivity.

Jason Allen, GVC's managing director

- Standard I(C): Misrepresentation and Standard III(D): Performance Presentation. Allen may have used incorrect information, unknowingly or knowingly, in his presentation.

Bud Davis, QUINCO senior portfolio manager

- Standard VI(A): Disclosure of Conflicts and Standard I(B): Independence and Objectivity. Davis needs to make an objective evaluation of GVC in context of a

hiring decision. The fact that his spouse is the daughter of GVC's owner presents a serious impairment to his independence and objectivity, and he should have disclosed the relationship.

(LOS 28.d)

2. With respect to costs, the ETF is the lowest at 35 bps, with 70% of it due to price impact (buying and selling the position) and the management fee. Futures are more costly at 42 bps, with rolling costs (due to upward-sloping yield curve) constituting about half of the costs. Price impact and tracking error constitute most of the remaining costs. The total return swap is the highest at 51 bps. On cost considerations alone, the ETF should be chosen.

Logistically, futures require quarterly rollover and daily monitoring of margin, so in that regard, futures are less appealing for Thompson. ETFs are managed by the ETF manager. There are no real logistical issues for total return swaps. On logistical considerations, either the ETF or the total return swap should be chosen.

From a tracking error (risk) perspective, ETFs face tracking error for reasons such as cash drag and mandatory diversification. Futures face tracking error for reasons such as liquidity and interest rate differentials. Total return swaps have no tracking error since the receipt is the S&P 500 Index return. On tracking error considerations, the total return swap should be chosen.

Furthermore, Thompson worries about interest rate risk, which would be prevalent with futures and the total return swap. She also worries about counterparty credit risk, which would occur with swaps. On risk considerations, the ETF should be chosen.

Overall, the best choice is the ETF because it has the lowest cost, no logistical issues, and no exposure to interest rate and counterparty credit risks.

(LOS 28.e)

$$3. \text{ ETF financing cost} = \$80 \text{ million} \times 75\% \times 2.5\% = \$1.5 \text{ million} = 1.875\%$$

$$\text{futures financing cost} = \$80 \text{ million} \times 75\% \times 2\% = \$1.2 \text{ million} = 1.5\%$$

$$\text{swaps financing cost} = \$80 \text{ million} \times 75\% \times 2\% = \$1.2 \text{ million} = 1.5\%$$

Taking into account the costs from Figure 28.5:

$$\text{ETF total cost} = 0.35\% + 1.875\% = 2.225\%$$

$$\text{futures total cost} = 0.42\% + 1.5\% = 1.92\%$$

$$\text{swaps total cost} = 0.51\% + 1.5\% = 2.01\%$$

On the basis of costs with the assumption of a leverage level of 4, Thompson may change her mind and elect to implement using futures because it is the lowest-cost option by 9 bps.

However, Thompson must consider the incremental work to be performed with monitoring the futures (e.g., margin) and rolling over the contracts every quarter.

(LOS 28.f)

4. In the cash market, cash drag (in the form of timing delays and disruptions to active manager portfolios) comprises two-thirds of the total costs. A sufficient amount of investments from international developed equity managers would need to be liquidated, and the cash would be taken from those managers and transferred to existing or new fixed income managers. Doing so results in transaction costs as well as cash drag, since there will be some delay in getting the funds to the fixed income managers and having the funds invested.

In the derivatives market, tracking error comprises more than 70% of the total costs. The transaction would involve a short position in equity futures to reduce exposure and a long position in fixed-income futures to increase exposure. The use of multiple futures contracts will increase tracking error; it is 17 bps for two contracts compared to 8 bps for one contract, as noted earlier in Figure 28.5.

(LOS 28.e)

5. Rebalancing with derivatives is most likely to be implemented more quickly, and with no impact on the active managers. That is on the assumption of reasonably high levels of liquidity in the equity futures market, for example.

If the rebalancing transaction is larger, then the transaction is likely to be more permanent in nature rather than merely a short-term adjustment that could easily be reversed later.

(LOS 28.f)

6. From a cost perspective, transacting in the cash markets is preferable given the savings of 22 bps compared to transacting in the derivatives markets.

Should a faster implementation time be required, transacting in the derivatives market is preferable.

Given the larger size of the rebalancing (2.5% now vs. 0.5%, discussed earlier), there is an implied longer time horizon that supports transacting in the cash markets.

Overall, with a 2.5% reallocation, the most appropriate option would be to transact in the cash markets.

(LOS 28.e)

¹ Reprinted from Level III CFA Volume 5, page 338.

² Reprinted from Level III CFA Volume 5, page 343, Exhibit 7.

³ Reprinted from Level III CFA Volume 5, page 345, Exhibit 10.

⁴ Reprinted from Level III CFA Volume 5, page 356, Exhibit 13.

⁵ Reprinted from Level III CFA Volume 5, page 360, Exhibit 15.

The following is a review of the Cases in Portfolio Management and Risk Management principles designed to address the learning outcome statements set forth by CFA Institute. Cross-Reference to CFA Institute Assigned Reading #29.

READING 29: CASE STUDY IN RISK MANAGEMENT: PRIVATE WEALTH

Study Session 14

EXAM FOCUS

Risk management is a vital piece of putting together a personal financial plan. By understanding a client's full situation, and taking a holistic view of their circumstances, we have the best opportunity to offer advice tailored to their goals and needs.

This reading will focus on identifying a family's risk exposures throughout different stages of their lives. We will be following the same family members through four stages of their careers: early career, career development, peak accumulation, and early retirement. Each stage comes with new variables and new challenges. We must find ways to help mitigate or remove any risks the family might face.

Keep in mind, each stage provides a snapshot in time, with multiple variables. Focus on the information that is being presented for that stage; resist the temptation to use external variables to justify a risk management recommendation.



PROFESSOR'S NOTE

For the purposes of this reading, we will focus on the Learning Outcome Statements. The original reading provides further detail regarding local regulations, current economic conditions, and tax laws. While this provides a more holistic view, it is very likely that a case on the exam will forgo multiple pages of background information and will instead provide a narrower list of things you need to consider.

MODULE 29.1: EARLY CAREER STAGE¹



Jessica and Paul Schmitt, both age 28, were recently married. They are in the early phase of their careers. Both Jessica and Paul graduated with master's degrees three years ago in computer science and mathematics, respectively.

Video covering this content is available online.

Paul took a teaching position at a local school upon graduation. He earns a gross annual salary of €45,600, which translates to a take-home pay of €33,670, after social security and tax deductions.

After graduating university, Jessica joined an IT startup. Jessica's gross annual salary is €24,000, which after taxes and social security contributions becomes €20,490. Though Jessica's current salary is low, the potential exists for a significant increase. She also expects to receive a bonus if the startup becomes successful; this bonus is likely to represent a significant share of her compensation. Were she to move to a different employer, Jessica could earn a much better salary; however, she believes strongly that the startup will succeed and prefers this potential upside that her current position offers.

The couple combined have savings of €15,000. Aside from their participation in their government's pension scheme (to which they have contributed since beginning work three years ago), the Schmitts have no other financial assets. Their only other asset of note is their car (which they use only occasionally). The Schmitts have an automobile insurance policy in place, protecting them from liability for other parties' repair costs or injury compensation.

The Schmitts are debt-free because their parents covered their expenses when they were students, and tuition costs were relatively low at the university they attended. The Schmitts' monthly expenses are €2,900, which includes rent of €1,000.

The following table is a summary of the Schmitts' finances:

Figure 29.1: Summary of the Schmitts' Circumstances in the Early Career Stage (€)²

	Jessica	Paul	Combined
Annual Gross Income	24,000	45,600	69,600
Annual Net Income	20,490	33,670	54,160
Source of income	IT Startup	Teacher	
Annual living expenses			34,800
Financial assets			15,000
Debt			0
Car			7,000

After further discussion, you identify the following objectives for the couple:

- Ensure long-term financial security
- Ensure a comfortable retirement
- Start a family soon
- Purchase a condominium

The Schmitts have toured a home that costs €270,000 located in a popular neighborhood that has seen considerable property value appreciation recently. A 25-year mortgage would be 3.6% per year, fixed for five years, and floating thereafter.

LOS 29.a: Identify and analyze a family's risk exposures during the early career stage.

CFA® Program Curriculum, Volume 5, page 383

Identify the Risks

At this point, we have identified the Schmitts' financial objectives as well as their financial assets and liabilities. Because the couple are early on in their career, the majority of their economic balance sheet consists of their **human capital**. Notice that Paul and Jessica's human capital differs in the following ways:

- **Paul's human capital** is very bond-like as long as he continues his career as a teacher. This is because (1) he has high job security, which limits earnings risk, (2) Paul's job may not be portable to other countries due to licensing requirements,

and (3) his income is expected to increase as he gains seniority but otherwise has very limited upside potential.

- **Jessica's human capital** is very equity-like in her current industry role. This is because (1) there are significant unknowns related to her future employment cash flows, though she can also earn considerable rewards if she excels at her job and the firm performs well, (2) unemployment is a much greater worry for Jessica because, unlike Paul, Jessica's job does not have significant job security, (3) her discretionary bonus payments are uncertain, and (4) Jessica's human capital is portable across countries.

As a result, Jessica and Paul's marriage creates a diversified mix of human capital.

Next, we must turn to actually identifying and analyzing the couple's risk exposures. Despite being young and in good health, they still face the following risks:

Earnings Risk

The couple face earnings risk from either unemployment or disability. Because both are young and have little in the way of financial capital, their largest asset on their economic balance sheet is their human capital.

The two big drivers of earnings risk at this career stage are the risk of unemployment and risk of a health event or disability.

Unemployment: Jessica, more than Paul, faces a significant risk of unemployment because the firm where she works is a startup, while Paul's career has more job security. The probability of Jessica losing her job is difficult to estimate, but we can be confident it is higher than the likelihood of Paul becoming unemployed. Because they have been paying into the social security system for a few years, they would be entitled to an unemployment benefit, which would partially replace each of their salaries.

Disability: Despite the fact that Jessica and Paul are young and fit, the risk of a health event or disability is still present. Again, the couple would be entitled to disability payments from the state social security system, but the monthly income from that source would not be enough to cover their current salary.

Premature Death Risk

The case suggests the likelihood of a premature death is low, as both Paul and Jessica are in good health. In the unlikely event of premature death, there would be a few implications for the surviving spouse at this stage of life:

- One-time costs such as the funeral expenses would need to be paid. Additionally, the surviving spouse would need to establish a fund to deal with emergencies alone.
- The surviving spouse's lifestyle would be affected because of the need to assume sole responsibility for household costs, such as rent.

Car Accident and/or Repair Costs

The Schmitts own an older car. They have an insurance policy in place that should protect them in case they need to pay compensation or repair costs to other motorists. However, they are not covered for repair or replacement of their own car.

Home Purchase

At this stage of their lives, the Schmitts do not have a lot of cash flow to support short-term expenditures. While they would be able to finance a house purchase through a mortgage, making a substantial down payment would leave them with little liquid assets. This could become an issue if some of the previously mentioned risks were to arise (e.g., their old car needs to be replaced, one or both of them suddenly lose their job, etc.).

Other Liabilities

Most of the couple's assets are covered by insurance at this point. There are not any other apparent major liability risks.

LOS 29.b: Recommend and justify methods to manage a family's risk exposures during the early career stage.

CFA® Program Curriculum, Volume 5, page 388

Earnings Risk

We previously identified two drivers of earnings risk: sudden unemployment and a health/disability event. Methods of mitigating these risks are different.

Unemployment: Earnings risk resulting from unemployment can be problematic to insure against. In some countries, supplemental income provided by government assistance is available to aid the unemployed, but one of the best ways to protect against sudden job loss is to accumulate a savings "buffer" of several months of normal expenditures. Six months is generally an appropriate recommendation.

Disability: **Disability insurance** can address earnings risk from serious illness or disability. We should recommend that each of them purchase a policy that would supplement their net income from disability benefits provided by the state. Because the Schmitts' salaries are expected to increase over time, we should recommend they choose a policy that allows them to purchase additional coverage going forward.

To determine the amount of disability insurance needed, we calculate the present value (PV) of net earnings that would need to be replaced. For the Schmitts, inputs required for this calculation are shown in Figure 29.2.

Figure 29.2: Disability Insurance Calculation (€)³

	Jessica	Paul
Net income to be replaced	20,490	33,670
Annual disability coverage by the social security system	18,000	18,000
Shortfall	2,490	15,670
Benefit period (until retirement)	37 years	37 years
Assumed annual benefit adjustment	2%	2%
Discount rate	3%	3%
PV of future earnings replacement required (annuity due)	77,700	489,000

The future earnings replacement required is a *growing annuity due*. While the TVM keys of the calculator are usually used to calculate the present value of a *constant annuity due*, they can also be used for a growing annuity due if we make an adjustment to the discount

rate to reflect the growth in the payments. This can be done by using a “growth-adjusted discount rate” defined as follows:

$$\text{growth-adjusted discount rate} = \frac{(1+r)}{(1+g)} - 1$$

where:

r = annual discount rate

g = annual growth rate

In this case, the growth-adjusted discount rate of the payment = $(1.03/1.02) - 1 = 0.0098$ or 0.98%.

We can now use the growth-adjusted discount rate to calculate the present value of an annuity due in the usual manner, as follows:

- Set the calculator to annuity due mode (BGN) using the keystrokes 2nd PMT 2nd ENTER.
- The PV of future earnings replacement for Jessica is calculated using the TVM keys: 37 N; 0.98 I/Y; 2490 PMT, CPT PV = -77,717.
- The PV of future earnings replacement for Paul is calculated using the TVM keys: 37 N; 0.98 I/Y; 15,670 PMT; CPT PV = -489,087.
- Note that numbers in the table are rounded to the nearest €100.



PROFESSOR'S NOTE

To see how the growth-adjusted discount rate works, consider a single future cash flow at time n (CF_N) which has grown by a growth rate g in every period from the cash flow today at time zero (CF_0). The present value of this cash flow can be written as:

$$PV(CF_N) = \frac{CF_0(1+g)^n}{(1+r)^n}$$

Dividing both the numerator and denominator by a factor of $(1+g)^n$ gives:

$$PV(CF_N) = \frac{CF_0}{(1+r)^n / (1+g)^n}$$

From here we could view the denominator simply as $[(1+r) / (1+g)]^n$.

Writing $(1+r) / (1+g) = 1 + r^*$ this expression becomes:

$$PV(CF_N) = \frac{CF_0}{(1+r^*)^n}$$

Now we can see that we can view the present value of a growing cash flow (CF_n) as the present value of a constant cash flow (i.e., the same as CF_0 today) discounted at a growth-adjusted discount rate r^* where:

$$(1+r^*) = \frac{(1+r)}{(1+g)}$$

The expression for the growth-adjusted discount rate, r^* , follows:

$$r^* = \frac{(1+r)}{(1+g)} - 1$$

Premature Death Risk

To protect against premature death risk, the couple should take on **life insurance**. If one of the Schmitts were to die prematurely, life insurance would help support the other's loss of future income. As a reminder, there are two methods for calculating the amount of coverage necessary.

- **Human life value:** estimates the amount of future earnings that must be replaced
- **Needs analysis:** estimates the amount needed to cover living expenses for the surviving spouse



PROFESSOR'S NOTE

Both of these methods were introduced in the reading on Risk Management for Individuals in the Private Wealth Management section of the curriculum.

At this stage of the couple's lives, we determine the amount of coverage using the needs analysis method because of uncertainty about the level of future earnings life insurance would need to replace.

Figure 29.3: Life Insurance Calculation (€)⁴

	Paul	Jessica
Total cash needs (funeral, emergency fund, debts)	30,000	30,000
Capital needs (PV of surviving spouse's 25,000 annual living expenses – PV of survivor's income until retirement)	411,000	-77,000
Total financial needs	441,000	-47,000
Less capital available (savings)	15,000	15,000
Less PV of vested retirement accounts (attributable to surviving)	27,000	21,000
Additional life insurance needs	414,000	-83,000

The capital needs figures in the above table warrant some discussion. In the event of the death of either spouse, it is assumed that the surviving spouse has ongoing expenses of €25,000 per year until death, assumed to be at age 90. Note that, given a current age of 28 for both spouses, this implies a time horizon of $90 - 28 = 62$ years. These expenses are assumed to grow at 2% and are discounted at a rate of 3%, implying a growth-adjusted discount rate of $1.03/1.02 - 1 = 0.98\%$. We can then calculate the present value of this growing annuity due using the TVM keys (with the calculator in BGN mode): 62 N; 0.98 I/Y; 25,000 PMT; CPT PV = -1,168,818 rounded to a value of €1,169,000.

Now, recall from earlier in the reading Jessica's net salary is currently €20,490. If we assume this will grow at 6% and use a risk-adjusted discount rate of 6%, then the growth-adjusted discount rate becomes $1.06/1.06 - 1 = 0\%$. This means that the task of calculating the present value of her income until she is 65 becomes the simple calculation of $(65 - 28) \times €20,490 = €758,130$, rounded to €758,000. Then the capital

needs should Paul die are €1,169,000 (PV of Jessica's expenses) – €758,000 (PV of Jessica's income) = €411,000.

An analogous calculation can be done for capital needs should Jessica die. We assume the same expenses, but the present value of Paul's income is assumed to grow at 3% and is discounted at 3% (recall Paul's income is less risky than Jessica's income). This means that the risk-adjusted discount rate is once again 0% ($1.03/1.03 - 1$) and the present value of Paul's income can be easily calculated to be $(65 - 28) \times €33,666 = €1,245,642$, rounded to €1,246,000. Hence the capital needs should Jessica die are €1,169,000 – €1,246,000 = –€77,000. The message here is that should Jessica die, Paul can still fund his expected future expenses through his expected future income.

Note that Paul's life insurance coverage needs are much higher than Jessica's. We should recommend purchasing a life insurance policy covering Paul's life. We should also mention to the couple that this will need to be reevaluated once the couple decides to start a family.

Car Accident and/or Repair Costs

The Schmitts' existing car insurance plan covers costs associated with other parties in the case of an accident, but it does not cover the Schmitts. The couple has mentioned they rarely use the car, so we should advise them to self-insure by means of a sufficient savings buffer, rather than spending money on additional coverage.

Liability Risk

Because the couple has minimal liability risk, there is nothing to recommend at this stage.

House Purchase

Because the couple has little financial capital, we should advise them against purchasing the home at this time. While there are many long-term benefits of home ownership, they can decrease their risk exposures by delaying the house purchase.

Instead of the house purchase, we should recommend that the Schmitts develop a plan to increase their savings and other financial assets. Should they purchase a home in the near future, they would be left virtually without other financial assets.

The Schmitts should create a substantial savings buffer, at least six months of expenses in total. Furthermore, once the savings buffer is in place, the couple should draw up an investment plan.



PROFESSOR'S NOTE

In the original reading, the couple purchases the home against the advisor's recommendation. This slightly changes the couple's risk exposures in a few ways:

- It would require that their life insurance coverage be reevaluated, because any mortgages or loans taken on would still need to be paid in the event of premature death.
- While the couple currently has very little liability risk, purchasing a home would introduce this risk into their situation. Upon purchase of a home, taking on homeowner's insurance would be prudent.

MODULE QUIZ 29.1



To best evaluate your performance, enter your quiz answers online.

1. For a family that is in the early career stage, the largest asset on their economic balance sheet is *most likely* to be:
 - A. a mortgage.
 - B. human capital.
 - C. their savings account.
2. One reason that supports investors in their early career stage investing in their portfolio aggressively is that:
 - A. human capital is equity-like.
 - B. they have time to recoup losses.
 - C. they still need to build up a sufficient safety net.
3. Which of the following is the *most appropriate* argument against purchasing new home while in the early career stage of life?
 - A. Local real estate prices have been on the decline for two consecutive years and don't appear to be turning around any time soon.
 - B. Families in the early career stage have little experience with real estate and should wait until they observe a full market cycle.
 - C. The family has little financial capital available to cover short-term expenses, and purchasing a new property could present unexpected expenses.

MODULE 29.2: CAREER DEVELOPMENT STAGE



Video covering this content is available online.

We continue the Schmitts' case 17 years later. They have developed significantly in their careers and remain healthy. Both of their incomes are greater now, Jessica's significantly so. With their increased incomes, they have repaid the entire loan from Jessica's parents and most of their mortgage, while accumulating a liquidity buffer of just under €80,000.

Based on their understanding of the IT industry, the Schmitts have assembled a portfolio of shares in 10 local IT companies. They now own residential property in the area where these companies are located and are considering investing in additional residential property there.

Jessica and her employer each contribute €3,000 annually to a defined-contribution pension plan. Paul's employment benefits as a teacher include life insurance coverage equal to three times his salary, as well as disability benefits that would equal €2,520 per month.

The couple has two children: Roxane, age 12, and Peter, age 7. Peter requires extra support at school to accommodate mental development issues. The family's annual living expenses have increased to €65,000. After Roxane was born, the Schmitts increased their life insurance coverage, but they have not adjusted it since.

The two following tables provide a summary of the Schmitts' financial circumstances and annual budget.

Figure 29.4: Summary of the Schmitts' Circumstances in the Career Development Stage (€)⁵

	Jessica	Paul	Combined
Annual gross income	80,000	66,000	146,000
Annual net income	53,650	46,510	100,160
Source of income	Department head, IT	Teacher	
Annual living expenses			65,000
Pension provisions	Government pension as mandated by law <i>and</i> Employer's DC plan with a total annual contribution of 3,000 from Jessica + employer	Government pension as mandated by law; no separate private pension	
Employer-provided insurance		Life insurance coverage of $3 \times 66,000 = 198,000$	
Private life insurance	200,000 life policy taken out after birth of first child	Life policy of 440,000	
Disability insurance	Government insurance coverage of 25,200 per year Private coverage of a lump sum of 112,200 (the original 80,000 policy taken out at 28, plus 2% annual benefit adjustment)	Government insurance covering 30,245 per year producing a lump sum of 686,100 (the original 490,000 policy taken out at age 28, plus 2% annual benefit adjustment)	

Figure 29.5: Summary of the Schmitts' Annual Budget in the Career Development Stage (€)⁶

Combined annual gross salary	146,000
Less taxes and social security contributions	45,800
Net pay	100,200
Less living costs (including mortgage payments)	65,000
Less miscellaneous costs (house repair, maintenance, etc.)	3,500
Cash available for insurance and savings	31,700
Insurance premiums	3,500
Funds available to save or invest	28,200
Currently used primarily to:	
Fund investment portfolio	22,000
Add to savings accounts	3,200
Contribute to Jessica's employer's pension plan	3,000

LOS 29.c: Identify and analyze a family's risk exposures during the career development stage.

Earnings Risk

As in the early stage of the couple's careers, the same two earnings risks apply.

- *Unemployment:* Jessica continues to be at greater risk of unemployment than Paul does. Furthermore, because Jessica's salary is now substantially higher than it was before, the amount of income at stake is much greater.
- *Disability:* Should one of them become disabled, the rest of the family would suffer from lost earnings. The nondisabled spouse could be limited in their opportunity set, impacting income and costs.

Premature Death Risk

Having children increases the adverse financial consequences for the family of early death of one of the parents. Not only would the cost of raising the children no longer be met, the surviving spouse could suffer a reduction in income after becoming a single parent.

Investment Portfolio

The couple has built up their main investment vehicle, but the account is concentrated in a volatile sector. Additionally, because Jessica works in IT, the portfolio's performance is likely to be highly correlated with her human capital. If the IT sector underperforms, their investment portfolio and Jessica's career prospects are likely to suffer simultaneously.

The residential property in which the Schmitts are considering a speculative investment is located in the area where Jessica's offices and many other IT companies are located. It is comparable to their existing property.

Retirement Goals

The Schmitts' retirement funds could turn out to be inadequate for the lifestyle they desire if the couple's contributions to the retirement plans are inadequate or if the funds do not perform well. In addition to their state pension income in retirement, Jessica is participating in her employer's defined contribution company pension, which will help increase the probability of reaching their retirement goals.

By your calculations, if Paul and Jessica remain employed until their retirement age of 65, they will have a total gross retirement income of €76,000 (inclusive of pension and DC pension income), which is roughly half of their current income.

It is likely the couple's living expenses will be less than their current living expenses, but at this point there is a risk that their retirement income will be insufficient.

Other Risks

Other risks could include property risks or other liabilities.

LOS 29.d: Recommend and justify methods to manage a family's risk exposures during the career development stage.

Earnings Risk

Disability Insurance

Both Paul and Jessica already have disability insurance policies. However, the current level of coverage no longer matches the present value of future earnings, as demonstrated in the following table:

Figure 29.6: Disability Insurance Coverage Calculation in the Career Development Stage (€)⁷

	Jessica	Paul
Net income to be replaced	53,650	46,510
Annual disability coverage by the social security system	25,200	30,245
Shortfall	28,400	16,265
Benefit period (until retirement)	20 years	20 years
Assumed annual benefit adjustment	2%	2%
Discount rate	3%	3%
PV of future earnings replacement required (annuity due)	519,000	297,000

The PV of future earnings replacement can be calculated for both spouses using TVM keys and a growth-adjusted discount rate of $1.03/1.02 - 1 = 0.98\%$, as in same calculation in the earlier stage of life.

For Jessica, this would be: 20 N; 0.98 I/Y; 28,400 PMT; CPT PV: -518,560, rounded to €519,000, and a similar calculation with PMT set to 16,265 is required for Paul.

Remember the calculator needs to be in "BGN" mode for these calculations because the payments are an annuity due.

Over the course of 20 years, assuming an annual benefit adjustment of 2% and a discount rate of 3%, the present value of Jessica's required futures earnings replacement is €519,000. For Paul, the same calculation results in a value of €297,000.

Currently, Jessica's level of disability coverage is €112,200 and Paul's is €686,100. We should recommend that Paul and Jessica adjust the level of coverage to reflect their current present values of future earnings replacement. Jessica's coverage should be increased to €520,000, and Paul's reduced to €300,000.



PROFESSOR'S NOTE

You might be tempted to simply look at the total coverage between both parties. Remember, the purpose of this coverage is to help supplement income for the other party involved.

Life Insurance

To protect against the risk of Jessica or Paul's untimely death, each purchased life insurance at age 28. However, both of their salaries have increased and they now have children, so it is likely the amount of coverage needs to be changed. To determine the new coverage amount, we can use the *human life value* and *needs analysis* methods.

Human Life Value

The human life value method takes the view that should a spouse die, the resulting life insurance payout needs to replace the present value of the income lost, net of any reduction in expenses that would have been directly attributable to the deceased.

We will use the following information to apply this method. You should assume this information would be provided to you in the exam.

Figure 29.7: Inputs Required for Human Life Value Method at Age 45 (€)⁸

	Paul	Jessica
Annual after-tax income	46,510	53,650
Annual expenses directly attributable to individual	10,000	10,000
Annual employee benefits	10,000	4,000
Annual expected growth in income	2%	5%
Discount rate	3%	3%
Existing life insurance	638,000	200,000

This process can be summarized for Paul as follows:

- Start with the current after-tax income for Paul of €46,510.
- Subtract the €10,000 annual expenses attributable to Paul, which would not be incurred should he die: €46,510 – €10,000 = €36,510.
- Add the €10,000 employee benefits (such as contributions to pension plans) that would not be earned should Paul die: €36,510 + €10,000 = €46,510.
- Gross up to a required pretax payout to meet this shortfall in contribution to family finances. Assuming a tax rate of 30%, this is equal to €46,510/(1 – 0.3) = €66,443.
- Use the growth-adjusted discount rate of 0.98% ($1.03/1.02 - 1$) to calculate the present value of this pretax annuity due: 20 N; 0.98 I/Y; 66,443 PMT; CPT PV = -1,213,193, rounded to a value of €1,213,000.
- Subtracting the existing life insurance in place of €638,000 gives a life insurance requirement of €1,213,000 – €638,000 = €575,000.

A similar process can be carried out for Jessica to produce a life insurance requirement of €1,444,000.



PROFESSOR'S NOTE

This is the same process as that introduced in the reading on Risk Management for Individuals in the Private Wealth Management section of the curriculum.

Investment Portfolio

Concentrated Stock Positions

The couple should hold an investment portfolio that has low correlation to their human capital. They should also find a way to diversify the portfolio, rather than holding concentrated positions in only 10 companies.

In order for the couple to achieve better diversification, we should recommend that, at a minimum, no new contributions be made in shares of IT companies. Rather, contributions

should be directed into pooled investment vehicles—specifically funds that are well diversified by region, sector, and security selections.

Real Estate

Reasons that the couple should avoid investing in speculative real estate include the following:

- The local property's value is highly correlated to the strength of the local IT sector, which is highly correlated to the value of Jessica's human capital.
- Funding for the purchase would need to come from their investment portfolio and a loan because the couple has limited resources available.
- If they opt for funding the purchase with their investment portfolio, they would further decrease their diversification.
- An investment property would be a large, illiquid, and concentrated holding.
- They would incur ongoing costs to own and manage rental property.

Retirement Savings Plans

We can identify a substantial shortfall in the Schmitts' projected income in retirement relative to their retirement goals. To mitigate the risk of having inadequate funds to support their lifestyle in retirement, the Schmitts should consider dedicating a greater amount to their retirement needs.

According to their budget, the couple's after-tax monthly €8,350 income is greater than their monthly expenditures by approximately €2,700. Even after insurance premium payments, this should leave the couple with €2,350 per month (€28,200 per year) to invest. The Schmitts have built up a substantial liquidity buffer (€80,000) and should consider redirecting further contributions towards Jessica's pension or the investment portfolio to fund future retirement income.

Outcome

Suppose that the Schmitts accept your recommendations: they set aside the idea of buying a property near the IT district and they stop adding to their savings buffer, instead increasing their contributions to the pension plan from Jessica's employer. Furthermore, the Schmitts will continue their contributions to their investment portfolio but will begin moving away from investing in individual securities, instead putting funds into diversified equity funds.



MODULE QUIZ 29.2

To best evaluate your performance, enter your quiz answers online.

1. The risk of unemployment is *most likely* to be mitigated by:
 - A. life insurance.
 - B. savings buffers.
 - C. disability insurance.
2. In the career development stage of an investor's life, the *most appropriate* method of allocating an investment portfolio is to use:
 - A. a few securities from the same sector in which the investor currently works and is knowledgeable about.

- B. a mix of pooled investment vehicles that are low cost and diversified across region, sector, and securities.
 - C. a basket of 20–25 individual securities that are representative of the different sectors of the global stock market.
3. Which of the following is the *least appropriate* reason for a client to reevaluate their life insurance policy in the career development stage?
- A. The client's spouse gives birth to their first child.
 - B. The client's parents die in a car accident and the funeral costs came as a surprise.
 - C. The client has been promoted multiple times in last five years and now his earnings are twice what they were.

MODULE 29.3: PEAK ACCUMULATION STAGE



It is 10 years later, and Jessica and Paul are now in their peak accumulation phase at age 55 years old. Over the past decade, they have progressed in their careers and have seen their incomes continue to increase.

Video covering this content is available online.

Jessica's employer is now making significantly-increased contributions to the company pension plan. Jessica too has also been aggressively contributing to the firm's pension plan and to her new private pension, partly to benefit from tax breaks.

The segment of the technology sector that Jessica's company competes in is facing challenges arising from the ever-changing market environment. Paul's job remains steady. He too has been contributing consistently to a private pension plan.

The Schmitts' investment portfolio has grown substantially thanks to regular contributions and investment returns. Currently, the portfolio is invested in a number of diversified funds, and comprises 70% stocks (primarily global equity, plus some Eurolandian stocks) and 30% fixed income (divided approximately evenly between domestic government bonds and high-quality corporate bonds).

The value of the home has seen a decline in real terms, as a result of general softness in Eurolandia's real estate market, plus as a result of the local area losing its previous appeal.

Though the Schmitts have paid down their mortgage, they are still supporting Roxane, who only recently completed her undergraduate degree and is now pursuing graduate studies. The couple is also providing for the special needs of Peter, who is now age 17. Peter has made progress but will probably need assistance for his entire life. The Schmitts estimate that they spend €13,000 per year to support Peter.

The Schmitts recognize that retirement planning has become an important issue now that they plan to retire in 10 years (at age 65). They maintain a healthy lifestyle. Together, they compile a summary of their current financial circumstances, shown in the following table.

Figure 29.8: Summary of the Schmitts' Circumstances in the Peak Accumulation Stage (€)⁹

	Jessica	Paul	Combined
Annual gross income	120,000	80,000	200,000
Annual net income	77,888	53,888	131,776
Source of income	Department head, IT	Teacher	
Annual living expenses			75,000
Property			340,000

	Jessica	Paul	Combined
Bank accounts			80,900
Investment portfolio			611,400
Pension provisions	Government pension as mandated by law, <i>and</i> Employer's DC plan with a total annual contribution of 3,000 from Jessica + employer <i>and</i> Private pension savings of 15,000	Government pension as mandated by law <i>and</i> Private pension savings of 47,500	
Private life insurance	1 million private policy	900,000 private policy plus 3× salary insurance coverage of 240,000 provided by the employer	
Disability insurance	Government insurance coverage of 30,805 per year Private coverage that would provide a lump sum of 633,900 (the original 520,000 policy taken out at 45, plus 2% annual benefit adjustment)	Government insurance coverage of 36,966 per year Private coverage that would provide a lump sum of 365,700 (the original 300,000 policy taken out at age 45, reflecting 2% annual benefit adjustment)	

Financial Objectives

The couple develops the following financial objectives:

- Deliver financial security over the next decade while continuing in full-time employment.
- Have an agreeable retirement.
- Be able, both before and after they retire, to provide Peter with lifelong support and assistance.
- Leave a substantial inheritance for Roxane.

Once again, we analyze these objectives and assess where the couple may be exposed to risks.

LOS 29.e: Identify and analyze a family's risk exposures during the peak accumulation stage.

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Earnings Risks

- *Unemployment:* Profitability is volatile in Jessica's industry. Should she lose her job at her current age, it might be difficult for her to find equivalent employment (at her current well-above-average salary and level of seniority.)
- *Disability:* Despite the couple maintaining a healthy lifestyle, the risk of losing future earnings due to disability remains. We should examine their current earnings situation to identify how much would be covered by social security.

Figure 29.9: Disability Insurance Coverage Calculation in the Peak Accumulation Stage (€)

	Jessica	Paul
Net income to be replaced	77,900	53,900
Annual disability coverage by the social security system	30,720	36,870
Shortfall	47,180	17,030
Benefit period (until retirement)	10 years	10 years
Assumed annual benefit adjustment	2%	2%
Discount rate	3%	3%
PV of future earnings replacement required (annuity due)	452,000	163,000

Once again, there is a shortfall between the Schmitts' net income and what is covered by the social security system. However, the couple has more than adequate supplementary insurance coverage to handle this shortfall, with the adjustments they made to their coverage 10 years ago. Jessica and Paul have disability coverage of €633,900 and €365,700, respectively.



PROFESSOR'S NOTE

Keep in mind, the period over which the Schmitts would rely on such benefit payments has decreased to 10 years instead of 20. This means that a lower present value of the disability protection will now be adequate.

Premature Death Risk

One of the couple's objectives is providing financial security for the family over the next 10 years, and an early death could easily derail this objective. Both Jessica and Paul have life insurance, so we will consider the current coverage to see if adjustments need to be made.

Figure 29.10: Life Insurance Coverage Calculation in the Peak Accumulation Stage (€)

	Jessica	Paul
Recommended additional life insurance using the human life value method	-17,000	-403,000
Recommended additional life insurance using the needs analysis method	-782,500	-1,000,500

Regardless of the method used, it is apparent that the couple's current life insurance coverage is more than enough to cover the surviving spouse's financial needs.



PROFESSOR'S NOTE

The calculations performed for the life insurance needs during the peak accumulation stage are the same as in the previous stages of life using updated inputs.

Retirement Lifestyle Goals

The couple has continued to contribute to the mandatory government pension. Upon their retirement in 10 years' time at age 65, the Schmitts expect to immediately purchase a fixed annuity (with an assumed 5.0% annuity yield). Further assumptions are in Figure 29.11.

Figure 29.11: Schmitts' Retirement Assets and Main Risks (Excluding their Investment Portfolio) (€)¹⁰

Assets	Type and Current Value	Expected Growth Rate	Expected Value at Age 65	Expected Annual Gross Pension Benefit	Risks
Paul's mandatory government pension plan	DB pension plan	-	-	48,950 (55% of estimated final salary)	Government may reduce retirement benefits due to fiscal pressures
Jessica's mandatory government pension plan	DB pension plan	-	-	28,191	As above
Jessica's company pension	DC plan, current value 113,500 in a balanced fund	14,000 annual contributions, increasing at 2% 4% annual investment returns	350,000	17,515	Investment risk and interest rate risk that could result in lower annuity income yield
Paul's private pension plan	DC plan currently valued at 47,500 in a balanced fund	6,000 annual contributions, increasing at 2%, 3% investment returns	135,900	6,795	As above
Jessica's private pension savings plan	DC plan opened recently Valued at 15,000 Uses aggressive, actively managed investment strategy with high risk	10,000 annual contributions, increasing at 2% 8% investment returns	201,600	10,080	As above
		Total income	111,531		

Excluding the investment portfolio, the couple's estimated total pension income will amount to approximately €111,500 before taxes, or approximately €84,000 after taxes. The couple believes they will need to live on approximately €75,000 (in real terms) in retirement. While this is encouraging news, risks to these assumptions are a loss of employment, solvency of the state pension systems, or poor returns in the DC plans in the years before the couple retires.

Investment Portfolio

The investment portfolio has two objectives: supporting Peter and leaving an inheritance for Roxane. According to the couple, the required probability of success for supporting Peter is 100%, while the required probability of success for leaving an inheritance to Roxane is 60%.

Goal #1: Support Peter. Based on average life expectancy, Peter is expected to survive his parents by 40 years (to age 90). The couple estimates it costs them €13,000 to care for Peter each year, and it would be €30,000 per year to care for Peter if outside help is used.

You find the present value of these costs to be €500,000, after considering the Schmitts' plan to assist their son up until their retirement. Fortunately, this amount is less than the current portfolio of €611,000.

Goal #2: Inheritance for Roxane. The Schmitts want to leave money to Roxane. The probability of success they require for this goal is lower than that of supporting Peter, with a much longer time horizon because this inheritance will be left upon the couple's death. When asked about a dollar amount, the couple said they want to leave "as much as possible."

Asset Allocation

The couple's asset allocation within the investment portfolio should first address the objective of supporting Peter, while leaving the remaining balance as an inheritance for Roxane. The Schmitts' multiple objectives span multiple time periods.

LOS 29.f: Recommend and justify methods to manage a family's risk exposures during the peak accumulation stage.

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Earnings Risk

- *Unemployment:* While it is almost impossible to formally insure against job loss, the Schmitts have continued to build up their savings and are effectively self-insuring against loss of employment.
- *Disability:* Earlier, we calculated the present value of earnings not covered by social security to be €452,000 for Jessica and €163,000 for Paul. Currently, the couple have more than sufficient coverage through their disability insurance (€633,900 and €365,700, respectively). We should recommend actually decreasing this coverage for both of them to lower the premiums being paid every month.

Premature Death

As in the case of disability insurance, the couple also has higher life insurance than what is necessary. We would recommend decreasing this coverage to lower the premiums paid.

Retirement Savings

The Schmitts are in a position to retire comfortably. The current projected income (assuming they continue to contribute the maximum amount) from their pension assets in retirement is in excess of their projected spending needs. The couple should continue to contribute the legal maximum to their pension plans.

Investment Portfolio Asset Allocation

Because the couple's first retirement goal, to live comfortably, is already covered through their retirement plans, we can focus on the other two objectives: supporting Peter and leaving an inheritance to Roxane.

The current balance of the investment portfolio is €611,000. We know the couple has been contributing €33,000 to this portfolio on an annual basis, and we should recommend that the Schmitts continue making these contributions. The higher the contributions, in addition to capital gains and dividends, the higher the probability of meeting the couple's objectives.

Because the couple has multiple objectives that span multiple time periods, we should follow a goals-based investing approach. Using this approach, we recommend creating

two sub-portfolios that correspond to supporting Peter and leaving an inheritance to Roxane.

- *Peter's sub-portfolio:* Assets devoted to the goal of Peter's care, currently €500,000 allocated 70% equity/30% fixed-income, should be reallocated gradually toward an increasing proportion of inflation-protected government bonds. Allocating to inflation-protected bonds will help make sure the portfolio maintains its real value over time. Because the portfolio will not be touched for almost 20 years, realized gains should be managed in a way that maximizes the benefit of any capital gain tax exemptions.
- *Roxane's sub-portfolio:* Most of the portfolio is allocated to Peter's long-term care objectives, leaving only €111,000 in investable assets available for Roxane's sub-portfolio. This objective has an even longer time horizon (30+ years), so this sub-portfolio should initially be 100% allocated to diversified global equity funds to benefit from the high expected returns from equities.

Bear in mind the importance of reviewing whether the allocation stays in line with these goals as the Schmitts continue to save and accumulate assets. The portfolio allocations should be monitored regularly.



MODULE QUIZ 29.3

To best evaluate your performance, enter your quiz answers online.

Brandon and his wife, Eileen, are 55 years old and are in the peak accumulation stage of their careers. They meet with John Davis, CFA, a family friend, to begin to prepare for retirement, which they expect will occur in 10 years. Eileen, who is chief marketing officer at a small marketing firm, makes an annual salary of \$100,000 per year and expects her compensation to increase at 4% annually, somewhat above the current inflation rate of 2%, for the next 10 years. Brandon, having just left his job as a computer programmer, recently took a part-time consulting position with a small technology firm and is making \$60,000 per year. He expects his compensation to rise with the current rate of inflation. Currently, the government provides disability assistance of 30% of gross income. Assume that the current tax rate is 20% and the discount rate is 3%.

1. Assuming that both Brandon and Eileen will qualify for government disability assistance, calculate the amount of additional disability insurance they should each take out individually, rounded to the nearest \$100.
2. Five years later, Eileen receives a large raise of \$50,000 per year. She believes her future compensation will continue to rise at 4% until retirement. Despite a large increase in salary, discuss why it may not be necessary to take out additional disability insurance. Note: There are no calculations necessary to answer this question.
3. Brandon and Eileen will have to fund their retirement income solely from their retirement accounts and investment portfolio. They also have three children, ages 30, 20, and 15, all three of whom, upon Brandon and Eileen's death, their parents would like to receive a substantial inheritance. The total value of their investment assets is currently valued at \$2.5 million. Which of the following is *least appropriate* justification for Davis to use a goals-based investment strategy when making recommendations to Brandon and Eileen?
 - A. Brandon and Eileen's goals have multiple time horizons associated with them.
 - B. Brandon and Eileen have multiple goals they are trying to accomplish upon retirement.
 - C. A strategy based on Brandon and Eileen's goals will maximize the portfolio's return for given measure of risk.

MODULE 29.4: EARLY RETIREMENT STAGE



We close the Schmitts' case study with the couple about to turn 65 and retire. They are generally in excellent health, though they infrequently make use of the government's medical system.

Video covering
this content is
available online.

They currently spend less than they did in previous stages of life, and their investments now amount to approximately €1.5 million. Even with the gradual transition from equity funds to fixed-income funds, equities still account for 50% of the total portfolio, as a result of vigorous returns from this asset class. The rest is divided evenly between inflation-protected government bonds and high-quality corporate bonds.

Jessica's earnings have diminished because she decided to withdraw from her management role and enter IT consulting. The Schmitts' expenditures have also decreased because Roxane is now living independently.

In a meeting, the couple describes some of their goals as they enter this new stage of their career:

- **Retire soon** with a comfortable income level for their lifetimes and avoid a scenario in which they live longer than their money. The Schmitts consider themselves to be in good physical shape and expect to live beyond the typical life expectancy. They also want to ensure that they preserve the purchasing power of their income in retirement.
- **Provide financial support for Peter.** The Schmitts estimate that in 10 years the cost of their son's care will be €35,000 per year before inflation.
- **Leave an inheritance to Roxane** in a still-undefined amount.
- **Help Roxane buy her first property** by providing her with up to €150,000.

The couple's financial circumstances and pension assets are summarized in Figures 29.12 and 29.13.

Figure 29.12: Summary of the Schmitts' Circumstances in the Early Retirement Stage (€)¹¹

	Jessica	Paul	Combined
Annual Gross Income	90,000	89,000	179,000
Source of income	Senior IT Consultant	Teacher	
Annual living expenses			70,000
Property			420,000
Investment portfolio			1,511,000

Figure 29.13: Summary of the Schmitts' Retirement Assets in the Early Retirement Stage (€)¹²

Paul's mandatory government pension plan	Annual pension of 48,950 (55% of final salary of 89,000)
Jessica's mandatory government pension plan	Annual pension of 28,190
Jessica's company pension	DC plan; Fund value of 350,000 corresponding to an annual pension of 17,500
Paul's private pension savings plan	135,000 corresponding to annual pension of 6,750
Jessica's private pension savings plan	175,000 corresponding to annual pension of 8,750

Note: The annual pension amounts assume that the fund value at retirement is used to purchase a fixed payment annuity at a 5% yield.

Prior to assessing the couple's risk exposures, we establish the following:

- With the Schmitts' retirement imminent, there is no longer a need for disability or life insurance coverage.
- The government pension income that they will soon begin to receive is now known with certainty.

A strategy should be established for the pension schemes the Schmitts have. Their financial advisor explains that the options for the couple are as follows:

1. Create a stream of income for the remainder of their lives by purchasing annuities. The current nominal rate is 4.5% after costs.
2. Withdraw lump sums. Up to one-third of the employer pension can be withdrawn, while the private pension offers more flexibility. Current law states that 25% of a lump sum distribution is tax-free.
3. Keep the monies invested in the retirement plans schemes.

LOS 29.g: Identify and analyze a family's risk exposures during the early retirement stage.

CFA® Program Curriculum, Volume 5, page 418

At this point, the couple's risks look slightly different than they have in previous stages. They do not need to keep their life or disability insurance because they are no longer employed and earnings risk is no longer an issue. Additionally, saving for retirement through their public or private pensions no longer incurs risk because the amount of pension income in retirement is known.

Instead, there are two big risks at the early retirement stage.

Retirement Income Risk

One of the risks the Schmitts face is outliving their assets in retirement. Because the couple will receive pension income from the mandatory government pension plan, we know that part of their retirement income is already covered. However, both Jessica and Paul have private and employer pension plans, which do not provide known income in retirement.

Investment Portfolio Goals

- Provide economic support for Peter (this is a top priority).
- Give an inheritance to their children, chiefly Roxane.

- Offer Roxane a deposit on her house purchase in coming years.
- Maintain the ability to draw on their investments to cover unexpected expenses—for example, if their retirement income does not increase as much as the cost of living. Or if an unexpected expense arises, for example, related to their health care needs.

LOS 29.h: Recommend and justify a plan to manage risks to an individual's retirement lifestyle goals.

CFA® Program Curriculum, Volume 5, page 422

Retirement Income Objectives

The Schmitts have an objective of making sure their after-tax retirement income covers their €70,000 of living expenses. Their combined government pension plan income will yield €77,150 before taxes, so the couple will have to supplement the rest of this income with their employer and private pensions.

Current law says the couple can withdraw up to 25% of their company pension plans tax-free. If we withdraw 25% from Jessica's largest account and Paul's only pension account, and use the remaining balance to purchase an inflation-protected annuity at 4.5% after all fees, the couple would receive a total of €93,600 in pre-tax income, or €72,000 after tax. This is greater than the €70,000 in annual living expenses.

Figure 29.14: Summary of the Schmitts' Retirement Income Proposal in Early Retirement Stage (€)¹³

Jessica's state pension	28,200
Paul's state pension	48,950
Total pretax income from state pension	77,150
Annuity (4.5% after all fees) purchased using 75% of Jessica's company pension plan	11,800
Annuity (4.5% after all fees) purchased using 75% of Paul's private pension plan	4,600
Total pretax income from pensions and annuities	93,600
Less tax	21,600
After-tax income	72,000

The remaining one-quarter of the two pension plans could be taken as a tax-free lump sum (creating a total of €121,250). Jessica's remaining, untouched, private pension plan, would not be needed as a source of retirement income. You suggest withdrawing that 25% of that plan as a tax-free lump sum of €43,750, leaving the remainder invested in the plan.

The end result of this is the couple's living expenses are covered by pension income and inflation-protected annuities, while the couple is able to withdraw €165,000 tax-free (€121,250 + €43,750).

Investment Portfolio Asset Allocation

Suppose that the Schmitts ask you to advise them about their investment portfolio, which currently stands at €1,511,000. The couple will additionally receive a pension

lump sum of €165,000 tax-free, which will leave €131,250 in Jessica's private pension plan, and bring the total value of resources available to about €1.8 million.

We must address the couple's top priority objective: supporting Peter. At the moment, the couple is taking care of their son from their current living expenses. However, they estimate the annual cost of supporting Peter will be €35,000 in nominal terms in 10 years, at which point they believe they will no longer be able to provide for him. This amount is expected to remain relatively constant in real terms. Using some assumptions around life expectancy, we estimate that the present value of these costs amounts to €800,000.

Next, we inquire about the couple's investment preferences, to which they respond with the following:

- They do not want to experience more than a 20% drop in the overall value of their investment portfolio.
- The Schmitts like to feel "in control" and wish to invest in instruments they can liquidate easily.
- Despite Eurolandia's stability, they worry about inflation.
- They do not want to make investments in real estate funds.

Because the Schmitts' income needs are being met by their pension income and annuities, their ability to take risk in their investment accounts is much higher than that of other couples that may need to use such accounts to supplement their pension income.

However, based on Jessica's comments about not wanting to see their portfolio value decrease more than 20% in any year, their willingness to take risk is lower.

Because there are multiple objectives, it is appropriate to use a goals-based asset allocation approach. Using a combination of a goals-based investing techniques and capital market assumptions for the major asset classes (including Eurolandian equities), we come up with the following proposal:

Figure 29.15: Investment Portfolio and Goals as the Schmitts Enter Retirement¹⁴

Existing Asset Allocation	Current Allocation (€)	Goals	Time Horizon	Recommended Asset Allocation
Liquid funds (cash proceeds from pension lump sum)	165,000	Help Roxane with property purchase deposit	<1 year	Keep funds in cash
Inflation-protected government bond funds	380,000	Care for Peter	10 years	Inflation-protected bonds 45% (739,000)
Corporate bond funds	370,000	Inheritance for Roxane (amount undefined) and funding for unexpected expenses	Up to 25 years	Corporate bond funds 10% (164,000)
Passively managed equity funds	750,000			Global equities 35% (575,000), including actively managed equity funds in Jessica's private pension plan; Eurolandian equities 10% (164,000)
Jessica's private pension plan (actively managed equities)	131,250			
Total	Approximately 1.8 million			

We justify this recommendation using the following comments:

- To help Roxane with a down payment on a new home, we recommend keeping the funds received from the pension lump sum in cash.
- We calculated the present value of Peter's care costs to be €800,000. In the investment portfolio, we should allocate this amount to inflation-protected government bonds to maintain purchasing power.
- The majority of the remaining balance should be allocated to global equities to allow the investment portfolio to benefit from long-term stock returns.

Notice the portfolio is already invested in various asset classes, so a transition will require the couple to realize capital taxes. Therefore, we should recommend these moves are made in a matter that takes advantage of capital gains tax exemptions, if applicable.



MODULE QUIZ 29.4

To best evaluate your performance, enter your quiz answers online.

Lynn and Michael are 65 years old and have reached the early retirement stage of their careers. They currently have no debt outstanding and, over the course of their lives, have built up a combined investment portfolio value of \$5 million. They meet with their advisor, Jamie Rodriguez, CFA, to discuss the following objectives in retirement:

- Live a comfortable retirement with their annual expenses covered. Starting next year, they estimate their annual living expenses will be \$100,000 before tax.
- Set aside \$1 million (in today's dollars) to leave to their three children, Kyle, Jacob, and Grant, in 30 years.
- Go on vacation twice a year, the total cost of which should amount to roughly \$20,000 per year.

Throughout the conversation, Jamie inquires about the couple's risk tolerance. Lynn explains that she made a few bad investments earlier in her career and doesn't think she could stomach a drawdown of more than 20% in any given year. Michael shares that he wants more upside potential in their portfolio and wants to invest a significant portion of it in the stock market.

1. Describe and justify Lynn's ability and willingness to take risk.
2. Based on the couple's objectives, describe and justify which asset allocation technique Jamie should follow, and what kind of asset allocation recommendation (conservative, moderate, or aggressive) he should make across the different objectives.
 - a. Asset allocation technique
 - b. Asset allocation
 - i. Live a comfortable retirement
 - ii. Leave \$1 million (in today's dollars) to their three children
 - iii. Go on vacation twice a year

KEY CONCEPTS

LOS 29.a

Risk exposures during the early career stage:

A family in the early career stage will have little financial assets, and economic assets will be primarily human capital.

Earnings risk: There is a risk of earnings loss from unemployment and/or disability.

Premature death risk: Spouses and children need protection against an untimely death of a spouse and the subsequent loss of income.

LOS 29.b

Managing risk exposures during the early career stage:

Earnings risk: A family should accumulate a savings reserve to protect against unemployment, as well as take out disability insurance.

Premature death risk: A family should purchase life insurance. The amount can be determined using the *human life value* and/or *needs analysis* methods.

LOS 29.c

Risk exposures during the career development stage:

Earnings risk: There is a risk of earnings loss from unemployment and disability. Risk increases with rising income, as well as if there is an increase in the number of dependents.

Premature death risk: Early passing can set surviving family members back in lifestyle, plus there may be an additional decrease in income if the surviving spouse becomes the primary caregiver for children.

Investment portfolio: Even if the family has built up investment savings, the portfolio may not be properly diversified or may be too correlated to human capital.

Retirement goals: Retirement income objectives must be met.

LOS 29.d

Managing risk exposures during the career development stage:

Earnings risk: To protect against unemployment, three to six months of expenses should be accumulated. To protect against disability, disability insurance should be purchased (and updated to reflect revised salary projections).

Premature death risk: Families should purchase and/or update their life insurance policy to reflect expenses and salary projections

Investment portfolio: This should be properly allocated and diversified against human capital.

Retirement goals: Proper savings goals should be developed. Asset allocation in retirement and savings accounts should match the objectives of these goals.

LOS 29.e

Risk exposures during the peak accumulation stage:

Earnings risk: There is a risk of earnings loss from unemployment and disability. Risk increases with rising income, as well as if there is an increased number of dependents.

Premature death risk: Premature death can set surviving family members back in lifestyle. Employment income may be impacted if the spouse takes on additional childcare duties.

Investment portfolio: Investment portfolios may not be appropriately allocated for current life stage and/or for the objectives to be met in retirement.

Retirement goals: Income objectives in retirement should be identified.

LOS 29.f

Managing risk exposures during the peak accumulation stage:

Earnings risk: As a hedge against unemployment, three to six months of expenses should be built up. To protect against disability, disability insurance should be purchased and/or updated to reflect updated salary projections. It may be appropriate to decrease insurance coverage at this stage to reflect the shortened time horizon.

Premature death risk: Life insurance should be updated. It is likely that the appropriate amount of insurance will decrease because the time horizon has been shortened.

Investment portfolio: This should be reallocated and rebalanced to reflect shortened time to retirement. It may be appropriate to reallocate to a balanced fund.

Retirement goals: Savings goals and asset allocation recommendations should reflect income objectives in retirement.

LOS 29.g

Risk exposures during the early retirement stage:

Retirement income: The retiree is no longer contributing to a retirement account, so income is known. The family must be able to match expenses with a reasonable income objective.

Investment portfolio: The investment portfolio may not match family goals for this life stage.

LOS 29.h

Managing risks to an individual's retirement lifestyle goals:

Retirement income: The family should consider purchasing annuities and/or taking lump sum distributions from pension plans (if applicable) to maximize potential income and tax benefit.

Investment portfolio: The investment portfolio should be allocated to match objectives and the time horizons of those objectives.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 29.1

1. **B** In their early career stage, people have many working years ahead of them, and thus tend to be richly endowed with human capital—especially if they are trained in fields that are in high demand. (LOS 29.a)
2. **B** People that are young and rich in human capital can afford to take more investment risk because they have ample time to recoup investment losses, plus they will have opportunities to invest labor income ahead of them during their working career. The other two reasons are reasons for someone in their early career stage to not invest in their portfolio aggressively. (LOS 29.b)
3. **C** In the early career stage of life, a home purchase will increase a person's vulnerability to unexpected short-term outlays: their ability to pay unexpected bills will be limited if they use their limited savings as a down payment or to cover transaction costs. (LOS 29.b)

Module Quiz 29.2

1. **B** It is difficult to directly insure against earnings risk arising from loss of employment. Financial advisors typically recommend that their clients build up a savings "buffer" amounting to approximately six months' worth of normal expenditures. This allows employees to self-insure themselves to be able to cope with job loss. (LOS 29.c)
2. **B** Individuals should hold an investment portfolio with as low as possible correlation to their human capital. They should also steer clear of concentrated holdings in favor of diversification. Financial advisors generally recommend low-cost pooled investment vehicles, specifically funds that are diversified across a broad range of regions, sectors, and securities. (LOS 29.d)
3. **B** If the client has children, his level of insurance coverage will need to be reviewed and potentially increased significantly. Under the *human life value* method, the amount of coverage that a life insurance policy should provide is estimated as the amount of future earnings that must be replaced, which is based on current and future salary. (LOS 29.d)

Module Quiz 29.3

1. **Disability Insurance Coverage for Brandon and Eileen**

	Eileen	Brandon
Post-tax income to be replaced (salary \times (1 – 0.2))	80,000	48,000
Annual disability coverage from government assistance (salary \times 0.3)	30,000	18,000
Shortfall	50,000	30,000
Benefit period (until retirement)	10 years	10 years
Assumed annual benefit adjustment	4%	2%
Discount rate	3%	3%

Calculating the present value of future earnings replacement required for Eileen:

- Growth-adjusted discount rate = $1.03/1.04 - 1 = -0.96\%$.
- Set the calculator to annuity due mode (BGN) using the keystrokes 2nd PMT 2nd ENTER.
- The PV of future earnings replacement is calculated using the TVM keys: 10 N; -0.96 I/Y; 50,000 PMT; CPT PV = -522,383.

The amount of additional disability insurance coverage Eileen should take out is **\$522,400**.

Calculating the present value of future earnings replacement required for Brandon:

- Growth-adjusted discount rate = $1.03/1.02 - 1 = 0.98\%$.
- With calculator in BGN mode, using the TVM keys: 10 N; 0.98 I/Y; 30,000 PMT; CPT PV = \$287,232.

The amount of additional disability insurance coverage Brandon should take out is **\$287,200**.

(LOS 29.e)

2. Even though Eileen received such a large salary increase, the time horizon until retirement has shortened. Therefore, the present value of future earnings not covered by the government assistance program may now actually be less than the current disability coverage. (LOS 29.e)
3. C The idea behind goals-based investing is to disaggregate an investor's portfolio into multiple sub-portfolios, each designed to fund a goal that has its own probability of success and time horizon. (LOS 29.f)

Module Quiz 29.4

1. a. Willingness

Lynn's willingness to take risk is low. She mentions making a few bad investments earlier in her career, which has made her cautious. Additionally, Lynn said she doesn't think she could stomach a 20% drawdown in any given year.

- b. Ability

Lynn's ability to take risk is high. She and Michael currently have a portfolio of \$5 million, and their income needs are \$120,000 next year. Even though they wish to

set aside \$1 million, that's still 3% ($\$120,000 / \$4,000,000$) of income needs per year.

(LOS 29.g)

2. a. Asset allocation technique

Jamie should follow a goals-based asset allocation technique. Lynn and Michael have multiple objectives that span multiple time periods. Jamie should recommend dividing their portfolio into sub-portfolios.

b. Asset allocation

i. Live a comfortable retirement

This sub-portfolio will represent the largest allocation. Because the income needs are small relative to the total portfolio, the asset allocation can be aggressive. However, given Lynn's low willingness to take risk, this sub-portfolio should be more conservative so as to keep her invested.

ii. Leave \$1 million (in today's dollars) to their three children

Because this objective culminates 30 years in the future, this sub-portfolio should be invested aggressively (in asset classes like stocks) to grow as much as possible.

iii. Go on vacation twice per year

Because this annual income goal is covered by the first objective, the answer should be the same as i.

(LOS 29.h)

¹. Portions of the case are reprinted from Level III CFA Volume 5, starting on page 382.

². Reprinted from Level III CFA Volume 5, page 383, Exhibit 2.

³. Reprinted from Level III CFA Volume 5, page 389, Exhibit 5.

⁴. Reprinted from Level III CFA Volume 5, page 390, Exhibit 6.

⁵. Reprinted from Level III CFA Volume 5, page 395, Exhibit 8.

⁶. Reprinted from Level III CFA Volume 5, page 395, Exhibit 8.

⁷. Reprinted from Level III CFA Volume 5, page 400, Exhibit 11.

⁸. Reprinted from Level III CFA Volume 5, pages 400, 401, Exhibit 12.

⁹. Reprinted from Level III CFA Volume 5, pages 405, 406, Exhibit 13.

¹⁰. Reprinted from Level III CFA Volume 5, pages 412, 413, Exhibit 19.

¹¹. Reprinted from Level III CFA Volume 5, page 419, Exhibit 22.

¹². Reprinted from Level III CFA Volume 5, page 419, Exhibit 23.

¹³. Reprinted from Level III CFA Volume 5, page 422, Exhibit 24.

¹⁴. Reprinted from Level III CFA Volume 5, page 424, Exhibit 26.

The following is a review of the Integrated Cases in Risk Management: Institutional principles designed to address the learning outcome statements set forth by CFA Institute. Cross-Reference to CFA Institute Assigned Reading #30.

READING 30: INTEGRATED CASES IN RISK MANAGEMENT: INSTITUTIONAL

Study Session 14

EXAM FOCUS

The focus of this reading is risk considerations associated with the portfolio strategy of an institutional investor. A fictional sovereign wealth fund is the case study for the reading, which illustrates the risks associated with direct investments in illiquid assets. The case study also has a strong focus on environmental, social, and governance (ESG) risks. As a Level III candidate, you will be required to analyze and quantify a wide variety of risks as the case study develops over time.

This reading also includes a variety of risk management and measurement approaches and introduces the components of an enterprise risk management (ERM) system. It is important to be able to recognize the strengths and weaknesses of an ERM system in exam questions and be able to recommend improvements.

MODULE 30.1: FINANCIAL RISKS FACED BY INSTITUTIONAL INVESTORS



Video covering this content is available online.

LOS 30.a: Discuss financial risks associated with the portfolio strategy of an institutional investor.

CFA® Program Curriculum Volume 5, page 437

Risk Management for Institutional Investors

Risk management is concerned with the impact of events and exposures to risk factors that may prevent an organization from achieving its long-term objectives. Risks explored in this reading include financial risks such as market and liquidity risk, and non-financial risks such as operational and reputational risk.

Investors are increasingly interested in **environmental, social, and governance (ESG) issues** and want to engage with portfolio companies ever more closely to monitor business plans and activities. Global issues such as climate change, sustaining the environment, fair treatment of labor, employee health and safety, and addressing standards of living in the poorest nations are becoming important considerations when choosing investment assets. How might these ESG issues impact investors?

Investors are keen to avoid being associated with any adverse publicity and potential **reputational damage** from investing in companies with negative environmental, social, and governance impacts, sometimes referred to as **headline risk**. The investment strategy of aligning portfolio assets to benefit from the ongoing ESG transition to a more

sustainable world is attracting a lot of interest as a medium to long-term investment strategy.

Institutional Investor Risk Objectives

Pension funds provide retirement income to plan members. The key risk is the inability to meet contractual pension payouts to beneficiaries when due.

Endowments and foundations aim to provide financial support to current and future beneficiaries, so maintaining *intergenerational equity* (i.e., being fair to current and future generations). The key risk is the inability to provide sufficient financial support to the budget of the institution, preventing the institution from fulfilling its mission and purpose.

Sovereign wealth funds have varying objectives but, in general, provide government funding in either the short, medium, or long term. The case study later in this reading is a fictitious sovereign wealth savings fund set up to transfer wealth to future generations over the long term. Typically, the proceeds from the discovery and sale of valuable natural resources forms the capital invested in sovereign wealth savings funds.

Banks and insurance companies focus mainly on asset-liability management. Banks borrow short term and lend long term, creating an inherent duration mismatch, which introduces liquidity risk and interest rate risk. Banks aim to earn the spread between lending rates and funding rates, known as the net interest margin.

Insurance companies also need to fund the products they sell, which may be a contingent claim many years in the future (e.g., a life insurance policy). Both banks and insurance companies are required to hold minimum levels of solvency capital and are not the focus of this reading.

Risk Consideration: Illiquid Assets

The **endowment model** assumes a long, often perpetual time horizon. Institutions such as university endowments aim for real long-term growth to fund their future spending, yet also need to be fair and equitable to current students.

To achieve long-term growth, institutions turn up the risk dial and include high allocations to illiquid asset classes such as private equity, real estate, hedge funds, natural resources, and infrastructure. However, this creates a dilemma for the institution. With large allocations to illiquid assets, how does an organization meet its current liquidity spending needs, both in normal market conditions and in a crisis? There is a saying, "You can't eat an illiquid asset."

This leads to the risk that an organization is unable to make the very payments that the institution was set up to provide. It is important to find the right balance between liquid and illiquid assets and to carefully plan sources of contingency funding.



PROFESSOR'S NOTE

Before the financial crisis in 2008, the Harvard Endowment held approximately 55% of its portfolio in private equity, hedge funds, and real assets. Between July 1 and October 31, 2008, the endowment fell 22%, a drop of \$8 billion. Harvard faced a liquidity crisis. How do you fund current spending with illiquid assets? Ultimately, Harvard chose to borrow to secure the funding needed rather than suffer losses by selling illiquid assets at deep discounts.

Risk Consideration: Types of Liquidity Risk

Liquidity risk has different dimensions and definitions. **Market liquidity** (a.k.a. asset liquidity) refers to how quickly an asset can be sold at a fair price. The relative size of a holding versus the market volume is an important factor, as is market turnover and current trading conditions. For example, selling 500 shares will be easier than selling 500,000. Selling in normal trading conditions will be very different from selling in a crisis, when many investors are heading for the exits at the same time.

Funding liquidity risk is the risk of being unable to meet financial obligations when due. The Harvard Endowment in 2008 is a good example to illustrate both types of liquidity risk. Being unable to sell a large proportion of portfolio assets, except at fire sale prices, illustrates asset illiquidity. However, being able to raise funds via borrowing to meet spending obligations illustrates that Harvard had available sources of funding liquidity.

Risk Consideration: Liquidity in a Crisis

In normal market conditions, portfolios may perform in line with long-term expectations, liquidity is plentiful, and market sentiment is positive. In crisis conditions, many markets react negatively to uncertainty and liquidity disappears as investors run for the exits.

Notice how funding liquidity and market liquidity are connected. In a crisis, sources of funding often dry up or become expensive (such as securitizations). At the same time, market liquidity can also fall, leaving investors with illiquid assets and liquidity funding shortages.

Liquidity Needs and Sources for Institutional Investors

Liquidity outflows will vary considerably depending on the contractual obligations of each institutional investor. Pensions have contractual payments to retirees due today and promised future payments to active plan members. Endowments and foundations may have more discretion over their current and future spending plans. Sovereign wealth funds may have long-term multigenerational time horizons or be required to support a government budget deficit today.

Liquidity outflows can also be in the form of **capital calls**. Private equity investments call for investor capital in stages, with investors receiving capital calls, often at short notice, making liquidity planning more difficult. Capital calls are a good reason not to overcommit to this asset class and to provision the required liquidity funding. The **denominator effect** is the risk that portfolio allocations to illiquid assets increase due to capital calls.

Liquidity inflows include pension contributions and donations for endowments and foundations. Inflows also include investment distributions received from illiquid investments such as private equity. Donations can fluctuate, especially in economic downturns, as donors may be less able to contribute.

Portfolio rebalancing is more difficult to implement with illiquid assets. Rebalancing a portfolio back to the agreed strategic asset allocation requires selling and buying portfolio assets. This will be more costly to achieve with substantial illiquid holdings in normal market conditions and may not be possible at all in a crisis. Portfolio assets held for liquidity include cash and fixed income; however, the endowment model aims for long-term growth with lower allocations to these liquid assets.

Risk Consideration: Illiquid Assets and Return Smoothing

Return smoothing results from investments in illiquid assets, such as private equity and real estate, held for long time periods in private markets. The lack of transactions in these illiquid private markets creates a valuation problem. How do we value the assets with no recent transactions? Portfolio valuations are, instead, based on appraisal estimates that lag “true” values. Smoothing creates a false picture of volatility by applying a downward bias.

The **impact of smoothing** in a rising market is that asset values and return estimates are too low, leading to falsely low return volatility. In a falling market, asset values and return estimates are too high, leading again to a false picture of low volatility. The common impact of smoothing on return volatility is that it appears low, creating a false impression of lower risk.

Using **smoothed data** results in poor decision-making in asset allocation. Assets with smoothed returns appear to have lower correlations with the rest of the portfolio. A consequence may be to overallocate to illiquid assets aiming for increased portfolio diversification. In reality, the assets have higher “true” volatility and higher correlations with portfolio assets, so relying on smoothed data is misleading.

Public market equivalents are an effective proxy for returns in private markets. Using small-cap equities as a proxy for private equity is an example of this approach. A second approach is to unsmooth the illiquid asset returns (i.e., bring back the true volatility by removing the first- and higher-order serial correlations in observed returns).



PROFESSOR'S NOTE

Capital Market Expectations Reading 4 includes a model to estimate volatility from smoothed returns in the Forecasting Volatility section.

Risk Consideration: Direct vs. Indirect Investments in Illiquid Assets

Direct investments in illiquid asset classes, such as private equity and infrastructure, are in the form of sole or co-ownership (co-investing) of a private company.

Advantages of direct investments in illiquid assets are:

- Control over individual investment assets.
- Increased portfolio liquidity due to control over the timing of exits.
- Access to more detailed firm information and business plans.
- Avoids paying fund management fees (e.g., 2% per annum (pa) and 20% profit sharing over a hurdle return).

Disadvantages of direct investments in illiquid assets are:

- Portfolio concentration risk results given the challenge to diversify across enough projects.
- Attracting and retaining in-house expertise is challenging and expensive.
- Directly owning a business can lead to additional liabilities (e.g., products, customers, legal, health and safety, employee welfare, and environmental).

- Being a direct owner increases reputational risk due to being closely associated with a firm should problems occur.

Indirect investments in illiquid asset classes, such as private equity and infrastructure, are in the form of investment funds via a third-party investment manager.

Advantages of indirect investments in illiquid assets are:

- Increased diversification across individual projects reduces idiosyncratic risks. It is common to also diversify across project vintage years (the year an investment is first made).
- Specialized fund management expertise can be outsourced, so there is no need to recruit, retain, and compensate an internal team.
- Liability is limited to only the funds invested.

Disadvantages of indirect investments in illiquid assets are:

- Little control over choice of portfolio assets.
- Less information available on individual assets.
- Lower portfolio liquidity, as no control over the timing of exits.
- Payment of fund management fees, typically 2% annual management and 20% share of profits above a hurdle return.
- Uncertain timing of capital calls, which creates liquidity risks.

Managing Liquidity Risk

Institutional investors use various tools to estimate and manage their liquidity needs.

A five-step liquidity management process is as follows:

Step 1: Establish liquidity risk parameters (policy guidelines, escalation triggers).

Step 2: Assess the liquidity of the current portfolio (measure vs. guidelines; monitor).

Step 3: Develop a cash flow model (project future expected cash flows).

Step 4: Stress test liquidity needs (and cash flow projections).

Step 5: Plan for emergencies (a.k.a. a contingency funding plan; what to liquidate, other funding options).



MODULE QUIZ 30.1

To best evaluate your performance, enter your quiz answers online.

1. You are reviewing indirect investments in private equity. Which of the following is *most accurate* of this investment approach?
 - Indirect investments decrease portfolio liquidity.
 - Indirect investments incur annual fund management fees and avoid profit sharing.
 - Indirect investments have higher asset concentrations.
2. Which of the following is *least accurate* of unsmoothed returns?
 - Volatility is biased downward.
 - Market transactions are plentiful.
 - Appraisals are rarely used.
3. Identify *two* disadvantages of direct investments in private asset classes.

MODULE 30.2: ENTERPRISE RISK MANAGEMENT



Video covering this content is available online.

LOS 30.e: Evaluate strengths and weaknesses of an enterprise risk management system and recommend improvements.

CFA® Program Curriculum, Volume 5, page 455

Perspectives of Risk Management

Top-down perspective is set by the board of directors and the chief investment officer (CIO). It defines the overall risk tolerance, return objectives, and overall investment guidelines for the institution. It also establishes an enterprise risk management framework to optimize risk and return decisions, coordinate risk planning and actions, and help make better strategic business decisions.

Bottom-up perspective is taken by the investment team tasked with implementing the investment strategy. This involves measuring, monitoring, and reporting risk exposures of individual portfolios and asset classes. An internal investment team could be in place or hire external asset managers and monitor progress toward the overall return and risk objectives.

Portfolio-level risk is a function of the correlations and covariances of the assets in the portfolio. Assets, risk factors, and correlations will likely behave very differently in crisis periods.

Asset class-level risk requires detailed information that may be challenging to obtain. For public securities, such as equities, detailed information will likely be readily available, whereas for privately held investments, such as private equity or hedge funds, information may be less detailed and available less frequently.

Returns-based risk systems focus on the analysis of an investment manager's historic returns for a fund or strategy. Note the assumption that past performance is helpful in estimating future performance and evaluating manager skill.

Holdings-based risk systems have access to the details of the underlying assets held in the fund. Access to this granular level of data may not be available, especially for hedge funds aiming to maintain confidentiality over proprietary investment strategies. Holdings-based systems are more costly and time consuming to analyze and implement.

Absolute risk measures risk on a stand-alone basis.

Relative risk compares risk and return to a suitable benchmark.

Short-term risk metrics focus on estimating short-term losses. Calculations of volatility, value at risk, and conditional value at risk focus on relatively short time periods (all discussed later in this reading).

Long-term risk metrics, including Monte Carlo simulation, provide estimates of asset values and cash flow spending over longer time periods. Monte Carlo simulation is a powerful tool for exploring various assumptions, portfolio allocations, and spending strategies and is able to incorporate the effects of rebalancing strategies.

Quantitative models are a useful resource in risk management (e.g., value at risk, stress testing, and Monte Carlo simulation). Behind every model are assumptions such as

distributions, data periods, time horizons, growth, inflation, and default rates that drive future estimates and values. Rather than predict the future, these models aim to show a range of possible futures.

Qualitative risk assessments are also important in risk management. Risks such as reputational risk and operational risk are very difficult to quantify. The **four eyes** principle (two heads are better than one) is an important resource in risk (i.e., discussing risks, sharing experience, and cross-functional investment committees).

Human biases from personal experience and beliefs influence both quantitative and qualitative approaches in the assumptions chosen. For example, many U.S. credit practitioners had not experienced real estate price declines until 2008.

Due Diligence and Ongoing Risk Monitoring

Investing in alternative assets such as hedge funds, private equity, and real assets requires considerable due diligence to assess financial, operational, and investment risks prior to investing.

Due diligence evaluating an investment team, its operations, risk management practices, custodians, safekeeping of assets, and the business ethics of a firm is essential. A growing component of due diligence covers environmental, social, and governance issues, discussed later in this reading.

Applying a Enterprise Risk Management Framework to Institutional Investors

Enterprise risk management (ERM) is a top-down approach in which an organization decides which risks to take and which to avoid or transfer to achieve its purpose and objectives.

ERM typically includes all risks faced by an organization, including major risks such as:

- Credit risk.
- Market risk.
- Operational risk.
- Liquidity risk.
- Reputational risk.
- Environmental, social, and governance risks.

ERM starts with strong governance from the board of directors and clearly defines risk tolerances and return objectives creating a coordinated risk management framework with clear accountabilities throughout the organization.

A typical risk management process involves the following steps:

Step 1: Identify risks.

Step 2: Measure risks.

Step 3: Perform risk mitigation and management.

Step 4: Monitor risks.

Step 5: Report risks.

Step 6: Use analysis and strategic planning.

Enterprise Risk Management Framework

The **board of directors** sets the overall risk tolerance and return objectives for the organization. The risk framework will usually include an internal investment committee and CIO. The investment committee will include senior leaders across the organization to leverage strategic experience and risk expertise.

An investment policy statement (IPS) is the investment plan specifically tailored to the organization's objectives and constraints, acting as a route map toward achieving the required return objectives.

Risk tolerance is defined within the IPS. Specific risk tolerances can be set for the following:

- Volatility.
- Maximum drawdown.
- Value at risk and conditional value at risk.
- Leverage, derivatives, and short positions.
- Limits on illiquid holdings.
- Maximum tracking error budgets.

The objective is not to minimize or eliminate risk but instead to optimize the compensation for taking the risk (i.e., take the right level of risk for the institution).

Risk Measurement Methodologies

Value at risk (VaR) is an estimate of an unexpected loss of an asset or portfolio, at a given confidence level, for a given holding period. Unexpected losses are low frequency, high severity events.

- Expected losses (high frequency, low severity)
- Unexpected losses (low frequency, high severity)
- Catastrophic losses (very low frequency, very high severity)

VaR defines unexpected losses at a chosen confidence level, typically 95%, 99%, or 99.9%.

Consider an example of a 1-day, 95% VaR estimate of \$1 million.

- The confidence level is 95%, meaning we assume that 95% of the time, the maximum loss will be \$1 million.
- The significance level is 5%, also known as the error rate, meaning that 5% of the time the loss will be larger than the \$1 million estimate.

A common misconception is that VaR describes the maximum possible loss. In the example above, there is a 5% chance that the losses will exceed the VaR estimate of \$1 million and fall into the catastrophic loss category.

When selecting a VaR holding period, it is important to consider the *liquidity of the asset* or portfolio. For many years, regulators assumed a 10-day VaR holding period for market risk, assuming that most assets can be liquidated in 10 days. The 2008 crisis showed that,

for many assets, 10 days is insufficient, and so regulation now requires the consideration of longer holding periods.

While VaR is a useful tool to explore unexpected losses, consideration must also be given to *catastrophic losses* that lie in the tail of the distribution *beyond the VaR estimate*.

Conditional VaR is defined as the *average loss beyond a VaR estimate*. Conditional VaR is also widely referred to as expected shortfall and expected tail loss.

Consider an example of a 1-day, 95% VaR estimate of \$1 million.

- Conditional VaR focuses on the tail of the loss distribution, beyond the VaR estimate.
- It explores the potential for losses to be higher than the VaR scenario (i.e., explores catastrophic losses).
- It takes an average of the losses beyond the VaR estimate.
- It is a useful complement to VaR to explore non-normal market conditions.

Stress testing and scenario analysis are also important risk tools to explore the uncertainty of the future. Business models estimate future revenues, costs, and earnings using realistic assumptions today. Stress testing explores how *changes in assumptions* affect business revenues, costs, and earnings. A business model may look attractive in normal market conditions; however, conditions may change.

Stress testing identifies *critical factors* driving the success and profitability of a business and explores how unexpected changes in critical factors impact revenues, costs, and earnings. Stress testing is a form of “*what if*” analysis, helping to understand critical vulnerabilities and aiding contingency planning.

Scenario analysis explores historical, current, and hypothetical events that may affect a business. For example, climate scenario analysis is currently a hot topic trying to explore the potential impacts of climate change over time.

Maximum drawdown is the greatest drop in net asset value measured from a high to a low over a specific time period (e.g., the maximum daily drawdown). This is an intuitive risk measure because it is easier to relate to the concepts of declines in value (i.e., drawdowns as opposed to complex calculations).

It is common to use maximum drawdown as a risk-adjusted return measure, such as return over the maximum drawdown, so that the risk taken is in context with the returns earned, and then used as a comparable ratio.

Portfolio factor analysis indicates common drivers and correlations within portfolio assets. It is essential to *look through* portfolio assets to understand common factor exposures.

Examples of portfolio risk factors include the following:

- Growth, value, and momentum.
- Volatility and credit.
- Liquidity.
- Currency.
- Equity.
- Environmental, social, and governance.

Strategically selecting **factor exposures** and **required levels of diversification** across factors are important risk and return considerations.

Tools to explore factor exposures include these:

- Returns-based analysis (analyzing a manager or fund's past returns).
- Holdings-based analysis (analyzing the holdings within a fund).
- Scenario analysis (historic and forward looking).
- Stress testing (of critical risk factors).

Strategic asset allocation (SAA) is the long-term policy asset allocation that sets the optimum course toward achieving an organization's investment objectives. The SAA is implemented internally by an in-house investment team, or externally via third-party investment managers. The portfolio is regularly monitored, reviewed, and rebalanced, in line with the investment policy statement.

Appropriate benchmarks are selected for public equity investments to allow the measurement and assessment of active return (alpha) and active risk (tracking error). To be effective, benchmarks should reflect the manager's style and fulfill the **SAMURAI criteria** contained in the CFA LIII Evaluation Readings (originally defined by Bailey & Tierney 1998).

Characteristics of a valid benchmark are as follows:

- Specified in advance.
- Appropriate and consistent with the manager's investment style.
- Measurable.
- Unambiguous, able to clearly identify the securities.
- Reflective of current investment opinions.
- Accountable, accepted by the manager.
- Investible, possible to replicate passively.

Currency risk exposures are aligned to risk tolerances and monitored carefully because they can have a large impact on domestic returns when foreign returns are converted back to the reporting currency. The IPS will specify passive, semiactive, or active currency approaches, depending on risk tolerance, experience, and expertise in this area.

Currency hedging can be costly and more difficult to achieve in emerging markets due to the lower availability of derivative instruments.

Allocation drift is the drift away from the desired strategic asset allocation. Regular rebalancing strategies are agreed on to bring the portfolio back in line with the strategic asset allocation.

Reporting to stakeholders means reporting to bodies such as to the internal investment committee and the board of directors.



MODULE QUIZ 30.2

To best evaluate your performance, enter your quiz answers online.

1. A risk analyst estimates a 95%, 10-day VaR of \$1.25 million. The investment committee asks the analyst to change the VaR model assumptions. Which of the following is correct?

- A. An increase in the significance level will increase the VaR estimate.
 - B. A decrease in the holding period will reduce the VaR expected loss.
 - C. An increase in the confidence level will increase the conditional VaR.
2. Which of the following is *least accurate* of an enterprise risk management system?
- A. Risk tolerance is set by the chief investment officer.
 - B. Maximum drawdown provides short-term risk estimates.
 - C. Returns-based risk systems are more likely to be preferred to holdings-based risk systems with hedge fund risk analysis.
3. Identify *three* steps in the enterprise risk management process.

MODULE 30.3: ENVIRONMENTAL AND SOCIAL RISKS FACED BY INSTITUTIONAL INVESTORS



Video covering this content is available online.

LOS 30.b: Discuss environmental and social risks associated with the portfolio strategy of an institutional investor.

CFA® Program Curriculum Volume 5, page 447

Externalities, Responsible Investing, and Universal Ownership

Externalities are costs or benefits received resulting from the actions of third parties. For example, during the 2020–2021 COVID-19 pandemic, enforced lockdowns led to commercial winners and losers. Sectors such as hospitality and retail were negatively affected; however, the enforced switch to online business also brought new opportunities for growth and innovation.

Principles for responsible investing (PRI) is a voluntary framework developed in 2006 by the United Nations in collaboration with the investment community, to incorporate ESG issues into investment analysis and decision-making. A key theme of the framework is for investors to be **active owners** engaging with portfolio firms and seeking ESG disclosures. The aim is to understand current ESG exposures (e.g., carbon dependencies from fossil fuels) and review adaption plans and revised business models for those businesses needing to change to a zero-carbon world.



PROFESSOR'S NOTE

The Adaptive Markets Hypothesis in Level III Behavioral Finance has a similar theme. Human evolution has taught us, we have to adapt to survive. In the behavioral finance context, the hypothesis is suggesting that using the same old trading strategies will not work forever. In this reading, the transition to ESG-friendly technology, new regulation, and shifts in market demand have already started and will continue over time. To survive, firms will need to adapt or mitigate these ESG risks in the new world.

Universal ownership is a concept that applies to large institutional investors such as pension funds and sovereign wealth funds that create large well-diversified portfolios. The concept of being a universal owner is that, in large portfolios, these investors have their share of both winners and losers from externalities.

For example, a portfolio firm that pollutes a river to save costs may well be increasing costs for other firms in the portfolio that rely on the availability of natural resources, such as clean water. The universal owner does not benefit from investing in firms

following such practices. Instead, the universal owner benefits from raising ESG standards overall across society.

Environmental and Social Factors

Institutional investors are increasingly incorporating environmental and social factors into investment decisions alongside traditional financial factors. A common strategy is to align portfolio exposures to sectors, industries, and firms, which are likely to prosper in transitioning to a more sustainable society. Conversely, it is important to avoid investing in firms with poor management practices in the treatment of their workforce, health, and safety or with environmental issues.

Environmental Issues

- Air and water pollution.
- Carbon emissions and climate change.
- Energy efficiency.
- Water scarcity and waste management.
- Deforestation and biodiversity.

Social Issues

- Human rights and labor standards.
- Gender and diversity.
- Occupational health and safety.
- Customer satisfaction and product responsibility.
- Data security and privacy.
- Community relations and charities.

Climate Risks and Opportunities

The **2015 Paris Climate Agreement** encouraged countries and companies to reduce or eliminate carbon emissions, in order to limit global temperature increases to 2 degrees Celsius (+2DC) above pre-industrial levels. Individual countries determine their own nationally determined contributions (NDCs), which are pledges toward reducing their national carbon emissions.

While this was a positive step in the right direction, current levels of global NDC pledges to reduce carbon emissions are insufficient. To achieve the Paris Agreement goal, carbon emissions need to fall 25% by 2030 and reach net zero carbon by 2070, according to the Intergovernmental Panel on Climate Change.

The world needs to transition toward a low carbon future, but how easy or difficult will this be, and how fast or slow will the transition happen? Aligning portfolio assets and exposures to those sectors, technologies, and firms likely to benefit from this transition over the medium to long term is a popular ESG strategy. Conversely, there should be a push toward avoiding sectors, technologies, and firms with earnings linked to fossil fuels and outdated unworkable business plans in a future zero-carbon economy.

Stranded assets are resources that are no longer viable and difficult to monetize due to new regulatory restrictions, outdated technology, or shifts in consumer demand (e.g., coal

mines, black and white TVs, tape decks, etc.). Firms that fail to adapt may find outdated assets stranded.

The **Inevitable Policy Response (IPR)** is research estimating *when* (not if) governments and policymakers will make the necessary regulatory changes to deliver the climate change needed, to meet the objectives set in the Paris Agreement.

The research uses the term **inevitable**, meaning governments will be forced to act more decisively, as the longer the delay in taking action, the more abrupt the policy changes will need to be in the future, and the greater the economic shocks in transitioning to a zero-carbon world.

The research conducted by Vivid Economics and Energy Transition Advisers, explores the impacts of transition risk on the macroeconomy, sectors, regions, asset classes, and on the implications for land use. The research forecasts that policy responses are required by 2025, which could be abrupt, forceful, and disorderly, and would bring considerable transition risks and economic shocks.

Adapting to climate change will bring winners and losers. Firms that invest in new low carbon technology and that can adapt to new business models will become the early winners. Firms relying on fossil fuels and outdated practices may find higher taxes and limits on activities, and changes to customer preferences could find existing business models are no longer viable. For example, the switch to electric vehicles is already underway and it is accelerating as countries change policies and the regulation of fossil fuels.

Climate Risks: Transition Risk and Physical Risk

Climate transition risk is the risk of being too slow to transition to the new zero-carbon world, effectively left behind with an outdated business model. While it widely accepted that the physical climate risks are the gradual impacts zero-carbon transition is inevitable, the speed that this transition will happen is uncertain.

Drivers of transition risk are as follows:

- Future changes in carbon regulation (e.g., carbon limits, carbon taxes, and bans).
- Higher input costs (of fossil fuels) reducing profit margins.
- Development of new clean technologies (e.g., transition to electric vehicles).
- Shifts in consumer preferences (e.g., transition away from fossil fuels).
- Increased environmental concerns and increased global coordination (e.g., Paris Agreement 2015).

Climate transition risk is systemic in nature, affecting whole sectors, regions, and cities. Systemic impacts from transition risk also include customers, suppliers, distribution channels, transportation, and vital infrastructure. The interconnectedness of local economies to climate risk factors results in the modeling of climate risk scenarios being highly complex.

Physical climate risk has two dimensions:

- Acute physical risks.
- Chronic physical risks.

Acute physical climate risks are *one-off weather events*. Examples include the following:

- Wildfires.
- Hurricanes.
- Storms.
- Droughts and heat waves.

Climate change is increasing the frequency and intensity of these weather events.

For example, the devastation of a hurricane or a wildfire, to human life, as well the potential for damaging businesses, property, and portfolio assets, has been increasing. Hurricane Katrina in the United States in 2005 resulted in 1,800 deaths and \$125 billion in damage. In 2020, there were numerous global wildfires, notably in Australia, California, and Oregon, resulting in loss of life and billions of dollars of damage.

Chronic physical climate risks are the *gradual impacts of climate change*. Examples include:

- Rising sea levels.
- Rising temperatures from global warming.

Coastal areas are affected by rising sea levels, with real asset values falling and properties becoming uninsurable. Towns and cities near water may find that the changing climate means having to relocate.

Rising temperatures affect infrastructure, such as roads and railways, leading to the accelerated depreciation of these assets and increased costs. In warm climates, rising temperatures disrupt working conditions and the ability to provide products and services in heat waves.

New Risk Factors: Location and Temperature

Physical climate risks illustrate the importance of the *location of portfolio assets* and the resulting risks of flooding due to sea level rises and one-off weather events such as storms, hurricanes, heat waves, and droughts. Portfolio assets may also be impacted by *increases in local temperatures* in certain locations (e.g., droughts, heat waves, and wildfires).



PROFESSOR'S NOTE

Location and temperature are important risk factors in the case study later in this reading. Be sure to read the background due diligence case study notes carefully.

The **Task Force on Climate-Related Financial Disclosures (TCFD)** encourages organizations, including banks, asset managers, and asset owners, to make climate related disclosures within existing reporting requirements. The TCFD, established in 2015, is a voluntary disclosure framework that encourages organizations to make disclosures in the following areas:

- Governance.
- Strategy.
- Risk management.
- Metrics and targets.

Firms have access to climate-related scenarios to estimate the future impacts to their business models and firm assets, from both physical and transition climate risks.

Climate Risk Responses: Mitigation and Adaption

Climate risk mitigation and adaption strategies reduce the vulnerability to both physical and transition climate risks. **Mitigation strategies** reduce the reliance on fossil fuels and carbon intensive resources. Increases in carbon regulation, restrictions on usage, and carbon taxes will likely increase input costs.

Adaption strategies look to prosper in the zero-carbon world, investing in markets, companies, and technologies that are likely to benefit from the transition. Climate change brings many new opportunities aligned to future decarbonization policy and regulation, and it aligns to changing consumer preferences and the opening of new zero-carbon markets, products, and services.

New opportunities include the following:

- Clean energy (providers and manufacturers of clean energy: solar, wind, hydro).
- Energy efficiency (products and services to improve energy efficiency, such as recycling).
- Batteries and storage (products improving storage capacity; impacts for electric vehicles).
- Smart grids (digitally enhanced electricity grids; integration of clean energy sources).
- Materials (lithium and copper are needed for batteries in clean energy technologies).

Material Social Issues for an Institutional Investor

Outsourcing and Labor Practices

International outsourcing aims to reduce costs and increase efficiency to increase profit margins. Outsourcing partners take over workloads in manufacturing, operational roles, and customer service functions, usually in low-cost labor countries.

Social issues for institutional investors include the following:

- Exploitation of workers.
- Lax employment regulation.
- A lack of unions to protect employees.
- Forced employee overtime.
- Poor working conditions.
- Health and safety practices.
- Equality and human rights.

The **reputational damage** from being associated with the exploitation of local workers is an important risk, sometimes termed **headline risk**. This is especially important with direct international investments in such countries where the institutional investor is both an owner and managing the business. This reputational damage can be costly,

leading to consumer boycotts, aggressive action groups, fines, and the enforced switching of supply chains.

Manufacturing and technology brands such as Nike, Apple, and Samsung have all been accused of labor management issues.

Fair and Just

Respecting and protecting the rights of employees in all countries is termed the “**just transition**”. In developed countries, laws and regulations exist to ensure fairness and justice for all, and to prevent the exploitation of the vulnerable. These formal protections often do not exist in developing countries.

As economies transition to low and zero carbon, industries such as coal mining may see the displacement of workers and negative impacts to local communities. In this context, a “just transition” will encourage a dialogue between workers, employers, and policymakers to minimize the human impact and to provide support to those affected.

Sustainable Development

The term “sustainable development” means meeting the needs of the current generation while protecting resources for future generations. This is a familiar concept at Level III as we discuss intergenerational equity [i.e., being fair to both current and future generations (endowments and foundations)]. The context here is sustainability for society as a whole.

The United Nations introduced 17 sustainable development goals in 2005 as part of its 2030 agenda for sustainable development. The goals include commitments to meeting 169 targets across the following areas:

1. No poverty, zero hunger, good health and well-being, quality education.
2. Gender equality, clean water and sanitation, affordable clean energy.
3. Decent work, industry and infrastructure, reduced inequalities, sustainable cities.
4. Responsible consumption and production, climate action, life below water, life on land.
5. Peace, justice, and strong institutions, partnerships for the goals.

Transition to Sustainable Economies

Since the industrial revolution, carbon-intensive industries have developed and expanded, having negative impacts on the world’s natural capital.

The world’s natural capital includes:

- Air and water.
- Soil geology.
- All living things.

These carbon-intensive industries have been a key driver of climate change.

Transitioning to a sustainable economy aims to protect the world’s natural capital, limiting negative impacts on the environment and confronting social inequities. Creating a “just transition” in the change that lies ahead will help people, regions, and countries adapt to a zero-carbon future.

Institutional investors are increasingly engaging with firms on ESG issues, assessing transition plans, reviewing business models, considering climate scenarios, and identifying the firms that are best and worst placed to prosper in the change that lies ahead.



MODULE QUIZ 30.3

To best evaluate your performance, enter your quiz answers online.

1. Which of the following is *least accurate* of the 2015 Paris Agreement on climate risk?
 - A. Agreed to limit global temperature rises to +2 degree Celsius versus 2015 levels.
 - B. Voluntary pledges from countries to reduce carbon emissions.
 - C. Insufficient current reductions in emissions to meet the Paris Agreement targets.
2. Which of the following is *least likely* to be an example of climate transition risk?
 - A. Insurers refuse to renew insurance on a coastal property.
 - B. Carbon regulation bans the sale of fossil fuel-powered automobiles from 2030.
 - C. Carbon taxes increase the cost of goods sold for a manufacturer.
3. Explain the concept of a “just” transition, and identify the type of risk associated with this concept.

MODULE 30.4: CASE STUDY



LOS 30.c: Analyze and evaluate the financial and non-financial risk exposures in the portfolio strategy of an institutional investor.

Video covering this content is available online.

LOS 30.d: Discuss various methods to manage the risks that arise on long-term direct investments of an institutional investor.

LOS 30.e: Evaluate strengths and weaknesses of an enterprise risk management system and recommend improvements.

CFA® Program Curriculum Volume 5, page 455

Case Study Introduction and Background Information

You work as an analyst for a small sovereign wealth fund in Ruritania (R-SWF), reporting to the head of risk. The R-SWF investment committee is considering new **direct investments in private equity and infrastructure**. As part of your role, you are evaluating these potential investments and will have the responsibility for monitoring and reviewing any investments made moving forward. The committee has tasked you to review the R-SWF risk management system and recommend improvements.

Republic of Ruritania and the Discovery of Natural Resources

Twenty years ago, Ruritania found large deposits of valuable rare metals used in the manufacturing of computers and technology. Ruritania formed a sovereign wealth fund (R-SWF) to provide growth for future generations. A key goal of the “savings” sovereign wealth fund is to transform nonrenewable assets into diversified financial assets to **share wealth across generations**.

R-SWF Assets

R-SWF contains a diversified portfolio of fixed income, equities, and alternatives. R-SWF has both **direct investments** and investments made via **investment funds**. The alternative investments include private equity, real estate, and infrastructure.

Case Study Sections

The case study is broken down into three sections (referred to as scenes):

- **Scene 1: Today.** An investment committee meeting to discuss **two potential new investments**.
- **Scene 2: Three years later.** Investment committee meeting to discuss the investment performance of the two investments.
- **Scene 3: Two years after Scene 2** (i.e., 5 years from today). Additional information is provided on investment performance.

Scene 1: Investment Committee Meeting Today

Initial Case Facts (1.0)

- The investment committee is considering **two new direct investments in private equity and infrastructure**. You are supporting the head of risk in discussing the risks of the potential investments at the meeting.
- Investment 1—A **direct infrastructure investment** in an airport.
- Investment 2—A **direct private equity investment** in a beverage manufacturer.

The investment committee participants (and CFA Level III candidates) have the following background information.

- Memo 1A—Background on R-SWF's performance and asset allocation.
- Memo 1B—Details on the proposed **direct infrastructure investment**.
- Memo 1C—Details on the proposed **direct private equity investment**.



PROFESSOR'S NOTE

The background information that follows is part of the R-SWF due diligence process to evaluate these two new investment proposals. This due diligence data is available in advance of the upcoming investment committee meeting that you will be attending. All the case study documents contain many clues that link to the risk concepts and theory covered earlier in the reading. Remember your task is to identify the risks of the two investment proposals and review the strengths and weaknesses of the R-SWF risk management process.

Memo A—Investment Committee Meeting Memo 1.0

TO: R-SWF Investment Committee members
FROM: R-SWF Chief Investment Officer
RE: Investment Committee Meeting Agenda
Distribution: Head of Risk, Head of PE, Head of Equities, Head of Infrastructure, and LIII Candidates

MEETING AGENDA

■ Review of Asset Allocation:	Chief Investment Officer
■ Review of Infrastructure Investment Opportunity:	Head of Infrastructure
■ Review of Private Equity Investment Opportunity:	Head of Private Equity
■ Risk review—Infrastructure Opportunity:	Head of Risk + All
■ Risk review—Private Equity Opportunity:	Head of Risk + All
■ Summary and Actions:	Chief Investment Officer

MEMO 1A—ASSET ALLOCATION BACKGROUND DATA

R-SWF Summary Data

- The Ruritanian Sovereign Wealth Fund was created 25 years ago.
- Latest AUM is \$50 billion.
- Over the 25-year time horizon, R-SWF has outperformed its benchmark by 150 bp net of fees.
- Since inception, the fund has experienced some short-term periods of underperformance.

R-SWF Current Asset Allocation

■ Equities	40%
■ Fixed Income	9%
■ Alternatives	50%
■ Cash	1%

Funding for the **two new direct investments** in **private equity** and **infrastructure** will come from a mix of cash, fixed income, dividends, and receivables. The asset/liability committee (ALCO) will determine the funding mix.

R-SWF Allocation: Alternatives

■ Real estate	15%
■ Hedge funds	10%
■ Infrastructure	10%
■ Private capital	10%
■ Natural resources	5%

R-SWF Allocation: Private Capital

■ Private equity funds	5%
■ PE direct & co-investments	3%
■ Private debt funds	1%
■ Private debt direct	1%

R-SWF Allocation: Infrastructure

■ Infrastructure funds	7%
■ Infrastructure direct	3%

MEMO 1B—PROPOSED DIRECT INFRASTRUCTURE INVESTMENT

Overview of Investment Opportunity—Sunnyland Airport

Sunnyland is a frontier market, island nation, with beautiful beaches and a range of hotels. Tourism is currently constrained due to the small airport that can only support light aircraft carrying up to 10 passengers. The local government plans to expand the airport with a new terminal and runway, which will open up tourism to larger aircraft carrying up to 150 passengers. The terminal and runway will be located 2 km and 1 km from the sea, respectively.

R-SWF Sunnyland Airport Investment

- R-SWF is considering a **\$100 million investment** in a public-private partnership with the Sunnyland Airport Authority (SAA), on a build-operate-transfer (BOT) basis.
- This potential infrastructure investment of \$100 million **represents 0.2%** of the latest R-SWF AUM of \$50 billion.
- The Sunnyland Airport infrastructure investment (if undertaken) would represent **approximately 2% of total infrastructure assets** (i.e., \$100 million / \$5,100 million = 1.96%).
- The expected investment term is 25 years.
- The expected IRR over the full investment term is 15%.
- The R-SWF head of infrastructure believes the potential return on investment in the Sunnyland Airport infrastructure project far outweighs the potential risks.

Sunnyland Airport Project Costs and Funding

- Total project cost of \$500 million for the airport terminal (estimated to carry 5 million passengers per annum).
- **Airport operating group (AOG)** providing \$33 million of funding and will operate the airport under a fixed fee plus or minus a performance incentive.
- Nonrecourse project finance of \$300 million (70/30 debt/equity) with a 15-year term and 3-year grace period.
- **Two-year construction period** with a fixed price construction contract via tender process.
- A **25-year concession** in place with an investor consortium, with entitlements to collect commercial revenue (car parking, duty free, retail), as well as all regulated airport charges (passenger departure and landing charges). The terms of the concession require a payment of a quarterly concession fee of 35% of all revenue to the Sunnyland Airport Authority (SAA).
- Concession agreement requirement that the construction of the airport terminal meet quality and performance standards.

MEMO 1C—PROPOSED DIRECT PRIVATE EQUITY INVESTMENT

Overview of Investment Opportunity—Atsui Beverage Company (ABC)

The Atsui Beverage Company (ABC) is located in the tropical frontier market of Atsui. ABC is the only local manufacturer and seller of carbonated beverages in Atsui; all other beverages are imported. ABC is an unlisted company and is keen to raise funds to modernize its plant.

It is important to the founder of ABC to keep control of the company, and so it is only willing to sell a minority stake in the company to raise private equity capital.

ABC Financial Information

- Revenue for the last 12 months of \$50 million, and EBITDA of \$7 million. The R-SWF head of PE is optimistic about the **potential for significant improvement in revenue and efficiency** once the plant modernization is completed. **Modernization** will allow ABC to **expand the business** into noncarbonated sports drinks and juices.
- ABC estimates show that productivity will increase significantly once the plant is modernized. Central to the modernization plans is an estimated **40% reduction** in **the labor head count** from 500 to 300 local employees. This reduction in head count will bring **large cost savings** and future higher EBITDA margins.

Atsui Local Information

- Atsui is a landlocked nation, meaning that access to the nearest port is in another nation state via river transportation.
- ABC is located near a river and uses this method of transportation to the port. The **nearby river** is well known for its **unique biodiversity** that flourishes in the tropical climate of Atsui.

R-SWF Atsui Beverage Company (ABC) Investment

- The founder of ABC is offering R-SWF a **minority 35% stake** in the company in return for **\$25 million**.
- The ABC investment of \$25 million **represents 0.05% of R-SWF total assets** of \$50 billion and **0.4% of R-SWF total private equity assets** of \$6,025 million (including ABC).
- R-SWF is an experienced private equity investor in both direct and indirect forms of private equity investments. R-SWF is planning to increase its allocation to direct private equity investments, including co-ownership over the next 5 years.
- R-SWF has **two seats on the board of ABC**, which will expand from **five to seven members**. The head of PE plans to take one of these board positions on behalf of R-SWF and no decisions taken as to the second board member.
- The R-SWF head of PE recommends the proposed investment in ABC on the basis that the **potential returns far exceed the potential risks**.

Minutes of the Investment Committee Meeting 1.0

Participants:

- Chief Investment Officer
- Head of Infrastructure
- Head of Private Equity
- Head of Risk
- Head of Equities
- Analysts

Meeting Minutes

Meeting Key Purpose—Chief Investment Officer

To consider the proposed R-SWF infrastructure and PE investments in Sunnyland Airport and the Atsui Beverage Company and specifically discuss the risks of each

Sunnyland Airport Overview—Head of Infrastructure

- Summary of the proposition and background data provided to everyone in the background notes.
- The recent **build-operate-transfer (BOT)** analyst training received excellent feedback.
- Recap of the project financials: Overall airport project cost of \$500 million and a 2-year construction period. Our investment commitment would be \$100 million, representing 0.2% of AUM.
- The experienced airport operator, **AOG**, will be running the operation and contributing \$33 million of its own private equity.
- Balance of project capital (approx. \$300 million) from the local government in nonrecourse 15-year debt capital, with a 3-year grace period.
- Expected return on the R-SWF \$100 million investment over **25-year investment horizon** is estimated to be 15% IRR.
- Head of infrastructure has visited Sunnyland and noted the lack of natural resources to diversify its economy. **Sunnyland is heavily reliant on tourism**, hence, the need for the airport expansion project.

Atsui Beverage Company (ABC) Overview—Head of Private Equity

- Summary of the proposition and background data provided to everyone in the background notes.
- Head of PE discussed the recent trips to Atsui as part of the due diligence process. Of note was the discovery of a potentially strong product, the "**Mango Special**," one of a series of **new noncarbonated drinks and juices** that can be expanded once the plant is modernized.
- Recap of the project financials: ABC is offering a **35% ownership stake** in return for a **\$25 million investment**. ABC advises that \$20 million of the R-SWF \$25 million investment will be used for modernization of its plant.
- Head of private equity recapped the efficiency savings from the planned reduction in head count and the potential increases in EBITDA from modernizing the plant, discussed in the background notes. In addition, the opening of the noncarbonated drinks markets, bringing in new revenue streams for ABC.

Risk Discussions on the Atsui ABC Investment: Clarifications from the Head of Private Equity

- **Risk to the cost savings.** Head of private equity clarified that the cost savings are contingent on reducing the workforce from 500 to 300. The chief investment officer suggested there is a risk that local unions and/or local politicians may oppose this reduction in headcount.
- **Reputational risk.** Such an adverse reaction to the modernization could lead to reputational risk for R-SWF and bring conflicts in Ruritania's relations with the Atsui government. Head of private equity explained the plans for community relations with both impacted employees and with the local community in Atsui. ABC will be investing heavily in staff training and development to help the transition.
- **Risk of local and foreign competition.** Question raised about the extent of local competition and the ability of foreign competitors to enter the Atsui beverage

marketplace. Head of PE clarified that ABC is the sole beverage manufacturer in Atsui and that the local government applies high import tariffs that have been effective in limiting foreign competitors.

- **Risk of a change of government in Atsui.** Question raised about the upcoming elections in Atsui. Head of risk highlighted the risk that a change in administration may end import tariffs, bringing in foreign competition. The chief investment officer agreed that it is likely that Atsui will reduce import tariffs in the future.
- **Risk of a price war with foreign competitors.** Point made that if tariffs are reduced, large foreign beverage competitors could enter the Atsui beverage market and start a price war. Head of PE suggested ABC has **unique local beverages** such as the **Mango Special** that are popular in the local market. The foreign competitors do not compete with these product lines.
- **Question about exports.** Head of equities asked if ABC is planning to start exporting its products as part of its expansion plans. Chief investment officer advised that the neighboring markets are also tropical frontier countries, where beverages are still a luxury item. Transport to the nearest port is via a river, which does have the potential to open up sales to neighboring markets.
- **Risk of ABC management.** Head of risk raised a question about the **experience, skills, and education of the founder**, bearing in mind that R-SWF will only have a minority stake in the business with limited control. The risk of corruption was a follow-on point raised as a potential issue. Head of PE advised that R-SWF will be tracking progress carefully and directly involved in the modernization process. R-SWF has had **lots of co-investing experience** in working with management teams. R-SWF has two seats on the board. Also, extensive due diligence has been carried out with management, suppliers, and customers. Plans are also in place to **incentivize management** to ensure alignment to growth plans and strong oversight.

General Risk Discussions on Both Investments

- **Currency risk.** Head of risk raised the issue of currency risk in frontier markets in general. Volatility of the local currency against the dollar could lead to large losses from currency risk alone. Head of Infrastructure advised that the revenues from the Sunnyland Airport project would be largely in dollars, as customer pricing is geared toward international travel markets. Head of PE advised that dollars are widely used by visitors in Atsui.
- **Local borrowing.** Question raised about the **currency of local borrowing** for both frontier market organizations. Head of infrastructure advised that the \$300 million debt in the Sunnyland Airport project is denominated in dollars, as local banks do not have the lending capacity yet.
- **Default risk.** Head of risk raised the question of default risk on the borrowings of each organization to complete their respective capital projects. Head of infrastructure advised that the \$300 million debt raised in Sunnyland was **nonrecourse financing**, and the detailed concession agreement clearly outlined the terms of default.
- **Climate risk.** Head of equities identified the **medium to long-term climate risk impact of sea level rise** on the 25-year Sunnyland Airport investment, which is less than a kilometer from the sea. Over time and especially at high tides, airport operations may be impacted. Head of Infrastructure advised that drainage systems

have been designed to handle projected climate impacts, and the engineers are confident of mitigation plans, based on 1-in-50-year and 1-in-100-year flood scenarios.

- **Local government relations.** Question raised about local relationships between Ruritania and the frontier markets, as both projects will need the support of local administrations. Both the head of PE and of infrastructure advised the projects had the support of the local governments.
- **Sunnyland Airport stress testing:** Head of risk asked about stress testing the assumed 15% IRR returns over the 25-year investment horizon. Risks identified included construction delays, penalties, budget overruns, and variances in revenues. Head of infrastructure discussed research completed of airport traffic scenarios, including **low, base case, and high customer traffic scenarios**. The low case 25-year IRR was in the region of 10%, and the high case was toward 20%. For cost overrun scenarios, a +/- 10% sensitivity has been factored in, which translates to a 25-year 13% IRR. The contracts pass any liabilities for delays or substandard work to the contractor.
- **Risk of a global recession.** Question raised from the head of equities about the impacts on tourism to frontier markets from a prolonged global recession. Sunnyland relies heavily on tourism and would be impacted by a downturn in discretionary spending. Head of infrastructure advised that historically during downturns, airlines have cut prices to stimulate demand and recovered relatively quickly.
- **Coronavirus pandemic and future pandemics.** Head of risk recapped the experience from the 2020-2021 coronavirus pandemic, especially the inability to travel due to restrictions from some locations. The risk of new variants leading to future pandemics and further travel restrictions would have the potential to limit or even halt all revenue for an extended period. Head of infrastructure advised that COVID-19 has resulted in updated contract terms with more emphasis on restructuring and rescheduling finance agreements to allow all parties time to recover from temporary travel restrictions.
- **Tourism portfolio correlation.** Head of PE asked for clarification of R-SWF portfolio exposures to tourism to avoid excessive concentration and sector correlations.

VOTING ON THE SUNNYLAND INFRASTRUCTURE INVESTMENT

■ Head of Infrastructure	YES
■ Head of Risk	YES
■ Head of PE	YES
■ Head of Equities	YES
■ Chief Investment Officer	YES

VOTING ON THE ATSUI ABC PRIVATE EQUITY INVESTMENT

■ Head of Infrastructure	YES
■ Head of Risk	YES
■ Head of PE	YES
■ Head of Equities	YES
■ Chief Investment Officer	YES

The investment committee approved investments in both projects.

CASE STUDY QUESTIONS BASED ON INVESTMENT COMMITTEE MEETING 1.0

Question 1:

Evaluate the impact of adding *each* of the proposed investments to the liquidity risk of the R-SWF portfolio. **Justify** your answer.

Question 2:

A key risk in the Sunnyland airport investment is changing volumes of customer traffic. **Explain** and **describe** a form of analysis that you would implement to explore this risk and increase confidence prior to investing.

Question 3:

Explain the financial risks of the upcoming election in Atsui to the proposed private equity investment in ABC.

Answer 1:

The Sunnydale Airport investment of \$100 million represents 0.2% of R-SWF total assets and 2% of total infrastructure assets. The Atsui ABC investment of \$35 million represents 0.05% of R-SWF total assets and 0.4% of total private equity assets. The conclusion is that both proposed investments are relatively small and so will not affect overall portfolio liquidity.

In addition, both investments are direct investments providing a greater degree of control and discretion over investment exit plans. R-SWF also has a long time horizon and is a “savings sovereign wealth fund” with few contractual needs for income instead structured for growth.

The nature of the planned 25-year investment term in Sunnyland and in growing the business in ABC in Atsui makes each investment relatively illiquid in the short and medium term. However, at the R-SWF portfolio level, due to its relatively small size, liquidity risk is not affected by the addition of these two investments.

Answer 2:

The Sunnyland Airport project depends on attracting an increased number of tourists. Although airport capacity will increase from supporting only light aircraft able to carry a maximum of 10 passengers to supporting larger aircraft carrying up to 150 passengers, there is a key risk in the variability of customer traffic numbers.

A global recession leading to reductions in discretionary spending as well as travel restrictions resulting from future variants in a pandemic are risk factors impacting customer traffic. Scenario analysis will explore the impacts of changes to customer traffic resulting from a range of realistic scenarios. This scenario analysis should incorporate appropriate assumptions affecting frontier markets, as well as data from previous regional downturns and local data from the pandemic.

Each scenario should aim to quantify the financial impacts of variations in traffic on revenues, costs, and earnings, incorporating specific risks and local/regional contagion impacts on Sunnyland. Stress testing is recommended to explore breakeven points and critical customer number levels to maintain viable business models in the short, medium, and longer term.

Answer 3:

The approach is not sufficient to manage the financial risks resulting from a change of government in the upcoming elections. Under the current administration, heavy tariffs on foreign imports protect ABC from foreign competition, allowing it a virtual local monopoly. The CIO estimated that a relaxing of tariffs after the election is a fair assumption. Should this occur, ABC will find new larger entrants into its local market better able to compete on price. ABC does currently have unique local beverages; however, there is the risk of competitors creating similar alternatives once tariffs are reduced.

Scenario analysis is recommended to explore the impacts of a change in tariff, future relations with a changed local administration, and the impacts on regional and international competition prior to investing.

Scene 2: R-SWF Investments 2.0—Extension of Case Facts

Three years have passed since R-SWF made the two direct investments in Sunnyland and Atsui. The investment committee now **plans an investment review of the two projects**. Last month, the first stage of the review focused on financial performance, with the upcoming second stage of the review focusing on **current and potential future risks**.

The following data and updated project information is provided to all investment committee members and CFA Level III candidates.

- **Memo 2A:** Current R-SWF asset allocation and performance
- **Memo 2B:** Update on the Sunnyland Airport infrastructure project and risk discussion
- **Memo 2C:** Update on the Atsui ABC private equity project and risk discussion

Memo 2A—Investment Committee Meeting Memo 2.0

TO: R-SWF Investment Committee members
FROM: R-SWF Chief Investment Officer
RE: Investment Committee Meeting 2.0 Agenda
Distribution: Head of Risk, Head of PE, Head of Equities, Head of Infrastructure, and LIII Candidates

MEETING AGENDA

- | | |
|---|--------------------------|
| ■ Review of Asset Allocation: | Chief Investment Officer |
| ■ Review of the Sunnyland Infrastructure Project: | Head of Infrastructure |
| ■ Review of the Atsui ABC Private Equity Project: | Head of Private Equity |
| ■ Risk review – Infrastructure Opportunity: | Head of Risk + All |
| ■ Risk review – Private Equity Opportunity: | Head of Risk + All |
| ■ Other Risks: | Head of Equities |
| ■ Summary and Actions: | Chief Investment Officer |

MEMO 2A—ASSET ALLOCATION AND PERFORMANCE DATA

R-SWF Summary Data:

- 28 years since R-SWF inception.
- Latest AUM \$56 billion USD (previously \$50 billion).
- Over the 28-year time horizon, R-SWF has outperformed its benchmark by 130 bp net of fees (previously 150 bp).
- Since inception, the fund has experienced some short-term periods of underperformance.

R-SWF Updated Asset Allocation:

■ Alternatives	51%
■ Equities: Emerging & Frontier	17%
■ Equities: Developed	12%
■ Fixed Income	9%
■ Cash	1%

A detailed breakdown and analysis of the current asset allocation was provided for the financial review last month.

Memo 2B—Sunnyland Airport Infrastructure Project—Update

Project Update

The **construction of the airport is complete**, with no material cost overruns. The Sunnyland government and airport authority are happy with the quality of the new terminal and its potential to increase tourism.

A **grand opening** of the new terminal is planned for September, just before the start of the October to May tourist season. The airport operating group (AOG) managing the terminal is looking to renegotiate its management contract and raise management fees.

Climate Change

The new runway is only 1 km from the ocean, and concerns are increasing about the medium- to long-term **risk of a rise in sea level** due to climate change. **One-off weather events** such as storms are also increasing in frequency and intensity in the region.

In addition, Sunnyland has experienced hotter temperatures in recent years because of climate change. Previously, the local tourist season was October through May, with tourists avoiding the baking hot summer months. However, hotter May temperatures in recent years risk shortening the Sunnyland tourist season even further.

Risk Discussions on the Sunnyland Infrastructure Investment

Risks Identified:

- **Revenue risk** that airport traffic may be lower than previously estimated.
- **Service quality risk** of underperforming service quality standards, impacting customer experience and reputational risk.
- **Risk of higher than estimated operating and maintenance costs.**
- **Risk of default of AOG**, the operator of the Sunnyland Airport terminal.
- **Expropriation risk** of airport assets by the Sunnyland government.
- **Currency risk** when translating profits back to the reporting currency.
- **Interest rate risk** of future increases in borrowing costs.
- **Other risks** (e.g., climate risks).

Memo 2C—Atsui ABC Private Equity Project—Update

The modernization of the ABC plant is complete.

Economic Recession

Unfortunately, Atsui and the wider region are suffering from an economic recession that started last year. Because beverages are a luxury item, ABC revenues are down.

New Government and Lower Import Tariffs

The elections brought in a **change of government**, which has reduced foreign import tariffs from **100% to 20%**. Speculation is that the new government wants to attract foreign loan finance and reduce barriers to local markets.

Cost Savings and Efficiency

The original plan to **decrease headcount by 40%** has increased to **50%** due to lower revenues in the current recession. Cost savings are slow to realize due to the **strict employment laws in Atsui**, requiring 2-year notice periods. In a drive to cut costs, the ABC management recently **cut employee breaks** from 1 hour to 30 minutes and **removed soap from the restrooms**, asking employees to bring in their own.

Dumping Waste in the Local River

To cut costs, ABC management has been **dumping waste in the nearby river** rather than paying for transport down river to the waste treatment plant. The local river has beautiful fishing and biodiversity, but the dumping of waste is starting to spoil the area.

Risk Discussions on the Atsui ABC Private Equity Investment

Risks Identified:

- **Elimination of import tariffs** no longer providing any protection against foreign competitors.
- **Shifts in market preferences** away from carbonated beverages to healthier alternatives.
- **Quality control** risks of products, services, and compliance with local regulations.
- **Local management risks**, as we are not in control of the operation, being a minority shareholder.
- **Expropriation risk** from the Atsui government.
- **Currency risk** when translating profits to the reporting currency.
- **Other risks** (e.g., climate risks).

Minutes of the Investment Committee Meeting 2.0

Participants:

- Chief Investment Officer
- Head of Infrastructure
- Head of Private Equity
- Head of Risk
- Head of Equities
- Analysts

Meeting Minutes

Meeting Key Purpose—Chief Investment Officer

Following last month's financial review of the Sunnyland Airport and Atsui ABC projects, we agreed to have an updated risk review based on our updated risk analysis.

R-SWF assets have grown by \$6 billion to \$56 billion over the last 3 years; however, the fund outperformance above benchmark fell from 150 bp to 130 bp due to recent difficulties in real estate markets.

CIO emphasized the growing importance of environmental and social risks and the **increased scrutiny on the fund** from outside observers.

Sunnyland Airport Project Update—Head of Infrastructure

New Airport Terminal

- The new Sunnyland Airport terminal is fully completed and has had great reviews both locally and internationally.
- The construction phase experienced delays beyond the estimated 2-year construction plan, resulting in cost overruns, which according to the contract are liabilities for the contractor. To date, some of the delay penalties are still to be paid and discussions continue with the contractor, the airport operator (AOG), and the government over cost allocations moving forward.
- The official launch of the new terminal is late August, ready for the October through May visitor season. Early bookings are in line with our expectations for year 1.

Climate Change

- Head of risk made the point that **concerns about the effects of climate change directly impacting Sunnyland Airport have increased in the last 3 years.**
- Head of infrastructure advised that the **assumptions used** in the original environmental impact assessment scenarios **have changed**. The original assumptions provided some comfort that rising sea levels and the impact of severe on-off weather events would be at a manageable level. Current discussions with the government in Sunnyland are that the island may need to construct flood barriers, where the cost and effectiveness is still largely unknown.
- Head of equities suggested that **all businesses on the Island** would require **protection from flooding** from sea level rise. This may lead to many joint funding projects and government intervention.
- Head of infrastructure suggested that **new climate taxes** might need be imposed in Sunnyland to cover the costs of constructing flood barriers.

Higher Airport Terminal Management Costs

- Head of infrastructure advised that AOG, the airport operator, has signaled it wants to **negotiate an increased fee** to operate the terminal. Important to have a concession agreement that aligns all interests when the airport traffic begins to rise. Risk that AOG wants out of the contract and leaves us with the problem of finding a new operator.

Atsui ABC Project Update

Modernized Plant but Many Challenges—Update From Head of PE

- The modernization of the ABC plant is now completed. Atsui is in the **middle of a recession**, which has resulted in a devaluation of its currency and **drop in the demand** for ABC beverage products.
- Following the recent elections, the new administration plans to **reduce tariffs on imports** from 100% to 20%, taking away ABC's competitive price advantage
- The planned efficiency savings from reducing head count are slow to materialize, as Atsui employment rights require up to a 2-year notice period for employees. Because of the recession, ABC management plans to lay off up to 50% of its workforce rather than 40% as originally planned. This brings **reputational risk** for R-SWF being associated with significant layoffs in frontier markets.
- ABC has been **dumping waste in the nearby river**, rather than paying transportation for waste treatment, as a way to cut costs. The river has a **unique natural biodiversity**, including a very rare reptile. The actions of ABC are

beginning to attract the attention of locals and environmental scientists who are noticing changes to the river.

- ABC management, in an effort to cut costs, has **restricted employee breaks** from 1 hour to 30 minutes and has **removed soap from the restrooms**, requiring employees bring their own soap to work.

Is It Time to Exit the ABC Investment?

- Head of risk raised concerns over reputational risk. While the investment in ABC is not significantly large, the **reputational risks** of being associated with health and safety, social justice, and environmental pollution issues are very significant and potentially very damaging. It is time to exit!
- Head of PE acknowledged the risks raised but suggested retaining the ABC investment.
- CIO discussed the role of educating ABC management in environmental, social, and reputational risks.
- Head of equities also outlined that it is necessary to change the focus of the ABC management incentives, **away from cost cutting**, to instead **incentivize quality management practices**. The question remains as to whether the founder and majority shareholder will be open to changing their management practices if this increases costs.
- Head of equities suggested that if the investment is retained, discussions must open up with the Atsui government. The Atsui government policies of reducing tariffs on imports and mandatory 2-year redundancy periods may lead to the ultimate closure of the ABC factory unless a workable rescue plan can be established.
- CIO acknowledged the **headline risk** of Ruritania being widely reported as associated with the mistreatment of Atsui ABC employees, environmental pollution, and social injustice in this current recessionary environment.

Atsui ABC Investment—Head of Risk Summary

- Engage with ABC management; change the mindset away from just cost cutting to measures of quality that incorporate the ESG risks we have discussed.
- Lobby the Atsui government on the tariffs and 2-year notice period to see if they will help ABC.
- Review progress in 1 year. If no progress, time to look for the exits.
- CIO thanked the head of risk for this summary.

Sunnyland Airport Investment—Head of Equities Summary

- Engage with the Sunnyland government about its plans to adapt to climate change.
- This is a long-term investment; the effects of climate change will intensify with rising sea levels and warmer summers.
- Engaging with the government and the wider community, including the local business leaders and local people, is the way forward.

CASE STUDY QUESTIONS BASED ON INVESTMENT COMMITTEE MEMO 2.0

Question 4:

You are asked by the chief investment officer to **describe** how the following risks will be managed for each investment.

- Shift in market demand toward healthier foods and the reduction in demand for carbonated drinks in Atsui
- Risk that future interest rates will be higher than expected, resulting in higher borrowing costs for the Sunnyland airport project

Question 5:

Identify the primary environmental risk for the investments in Sunnyland Airport and in the Atsui Beverage Company. **Recommend** how each risk can be managed by R-SWF.

Question 6:

Identify a material social risk that applies to both investments that was not identified by the investment committee. **Discuss** how the risk should be managed.

Answer 4:

Shift in customer preferences

ABC can hedge this risk by continuing to diversify its product range to include healthier alternatives. The popular Mango Special is a good example of a locally developed, successful, healthy, noncarbonated beverage. ABC should leverage its experience in beverage product development using natural ingredients and widen its range of natural, healthy product offerings. Investing in research and development, trialing new products, and working closely with customers will help ABC anticipate changes in consumer tastes and market demand.

Protect against rising interest rates

R-SWF should consider hedging its interest rate exposure in the Sunnyland project. Both up-front and opportunity costs of hedging should be incorporated into the analysis, along with any cash flow impacts of hedges. The choice of financial instruments to hedge interest rate exposures in frontier markets is likely to be more limited.

Answer 5:

Sunnyland Airport

The primary environmental risk affecting the investment in Sunnyland Airport is the impact of climate change. First, a rise in sea level (chronic physical climate risk) may affect the airport runway and terminal, potentially disrupting operations, as the airport is less than 1 km from the sea.

This risk of flooding and disruption will increase at high tides. Bearing in mind the long-term nature of this R-SWF investment in Sunnyland, there is a risk that if the rise in sea level is significant over time, the airport could no longer operate safely; worst-case scenario is that the airport would need to close. The Sunnyland data also acknowledges an increasing frequency and severity of one-off (acute physical climate risks) weather events such as storms. Planes are not able to take off and/or land in severe storms, so the airport traffic disruptions will likely increase due to climate change over time.

Recommended that R-SWF engage with the key stakeholders in Sunnyland, such as the local government, the airport operator, and business and community leaders, to understand Sunnyland plans to combat climate change. It is likely that a number of large-scale government-led adaption initiatives such as building flood barriers will be needed. Recommended that R-SWF use scenario analysis to explore the impacts of climate change. The rising sea level can't be mitigated by R-SWF, but plans can be put in place to adapt working with the government and the local community.

Atsui ABC

The primary environmental risk affecting ABC is its dumping of waste into the river. This recent management-led cost-cutting practice is already changing the river, known for its unique biodiversity, beauty, and rare wildlife. ABC is already attracting the attention of scientists and other environmental groups concerned about the river, bringing potentially damaging reputational risk for R-SWF being associated with polluting the river and destroying the environment. Potentially, any cost savings may be soon be lost if ABC is charged with cleanup costs, potential fines, and reputational damage.

Recommended that R-SWF engage with ABC management to stop this practice. Important to find alternative environmentally friendly ways to deal with waste. To minimize the environmental and reputational damage, assess the cost/benefit of a cleanup operation to restore the river. Educate ABC management in sustainable development and a “just” transition in environmental and social working practices. Discuss with ABC management the introduction of positive management incentives to align interests and reward sustainability in ABC. As R-SWF only has a 35% minority stake in ABC, there is a risk that the founder does not buy in to these concepts. R-SWF must

communicate the risks above to ensure that the waste dumping stops. By engaging with ABC to make these changes, R-SWF will align with its own ESG investment objectives.

Answer 6:

Reputational risk

Reputational risk is significant for both investments. Reputational risk may be easy to identify but very difficult to quantify and manage.

ABC reputational risk

ABC management's cost-cutting practices are introducing significant reputational risk, both for ABC and R-SWF. First, dumping waste into the river, polluting the local environment, damaging an area of unique biodiversity home to rare wildlife is already attracting the attention of locals, environmental scientists, and other groups. The ABC actions could well damage relations with the community, which uses the river as a popular fishing spot, and attract fines, penalties, and cleanup costs.

The potential reputational damage from negative publicity to both ABC and R-SWF is far greater. ABC relies on customers from its local markets. There is a risk of negative reactions to ABC from polluting the local environment, repercussions from the local people who buy their products, and from community groups and from the government. Second, there is risk of reputational damage to R-SWF from being associated with environmental pollution and destroying the habitat of rare wildlife.

A second area of reputational risk for both ABC and R-SWF is social issues connected to the treatment of the ABC workforce. Cutting 50% of the workforce will have a major impact on the local community. ABC does not have any plans in place for a "just" transition to engage with staff and community leaders to help minimize disruption.

Management practices, such as cutting lunch breaks and removing soap from restrooms, bring reputational risk for both ABC and, especially, R-SWF. The R-SWF CIO termed this "headline risk," making the headlines for the wrong reasons (i.e., being associated with social injustice, health and safety and/or human rights issues would be extremely damaging). The focus instead should be on retraining staff and introducing incentives to ensure quality sustainable management practices.

Sunnyland reputational risk

The impact of sea level rise due to climate risk can be damaging to the reputation of R-SWF in a number of ways. First, R-SWF must be actively engaging with the local stakeholders, such as the government, the airport operator, and local communities, to show R-SWF is willing to participate in finding and implementing solutions. Failure to engage may bring reputational damage to these vital ongoing business relationships. The island as a whole needs to work together to find ways to adapt to climate change, and R-SWF, as an owner of the airport, needs to be actively involved.

A second aspect of reputational risk is for tourism in Sunnyland as a whole. If summers are becoming too hot, storms becoming more frequent and intense, and flights potentially becoming less reliable, will this impact the island's reputation with foreign visitors. These longer-term impacts of climate change may change tourist traffic. Finally, the quality of service standards, efficiency, and overall customer service experience at the new airport terminal will affect the reputation of Sunnyland as a tourist destination.

Scene 3: R-SWF Case Continues

Two years have passed since the 3-year review meeting, which means five years have now passed since the initial investments in Sunnyland and ABC.

Update on the Sunnyland Airport Infrastructure Investment

Revenues are down due to fewer tourists. Airport traffic has fallen to 50% below the base case forecast.

Costs have been rising due to commencing climate adaptation programs in Sunnyland. Costs are 50% higher than the base case forecast.

The outlook for the medium and long term is unfavorable.

Update on the Atsui ABC Private Equity Investment

R-SWF sold its 35% stake in ABC for \$27 million to an international beverage company. R-SWF avoided any adverse reputational damage resulting from the investments in ABC.

Question 7:

Using evidence from the R-SWF case study, **evaluate** the strengths and weaknesses of R-SWF enterprise risk management processes. **Recommend** and **justify** improvements.

Answer 7:

R-SWF ERM strengths

Enterprise risk management requires a coordinated approach across an organization involving the senior managers to make strategic risk and return decisions.

R-SWF has successfully created this coordinated risk framework via its investment committee structure, involving all the heads of each asset class, together with the head of risk. The R-SWF committee members were all involved in identifying key risks and assessing the strategic risk and return of each investment proposition. In fact, all committee members had a vote on proceeding with each project. Further evidence of the strong risk focus, is the investment committee meeting 2.0, which was specifically to review updated risks of both investments.

As part of ERM, it is essential to have a strong independent risk function that challenges the business to consider key risks. Clearly, R-SWF has this in place, as the head of risk raised many risk issues at each meeting and strongly cautioned against the rising reputational risks of the ABC investment.

R-SWF was effective in providing relevant data and additional training to committee members to enable participants to make informed decisions. The meetings themselves welcomed contributions from all attending; even heads of other asset classes had their say. For example, the head of equities made some valuable contributions to the climate risk discussions, illustrating the benefits for R-SWF of pooling risk expertise at the committee meetings.

R-SWF ERM weaknesses

First, environmental and social risks were not evaluated prior to investing. The due diligence background data for both projects did provide important clues to signal further investigations, which were not followed up. For example, plans to significantly cut employee head count in ABC brought issues of labor fairness, health, and safety, as well as social justice. The unique biodiversity of the local river and environment were identified in the initial briefing notes but were not recognized as risks at the pre-investment meeting.

These ESG issues were not considered in negotiations with ABC management about working practices and incentives. R-SWF should have engaged with the founder and agreed on sustainable management practices for the workforce and the environment. R-SWF should have avoided incentivizing cost cutting and rewarded quality in building a sustainable business model.

The Sunnyland Airport investment is highly dependent on tourist numbers. The scenario analysis exploring the impacts of scenarios was inadequate. In reality, tourist traffic was 50% down and costs were 50% up from base case assumptions in just 5 years. More detailed scenario analysis was needed, incorporating realistic assumptions. In addition, stress testing is recommended to explore the impacts of low frequency but high impact downturns in airport traffic. This would have helped R-SWF better understand the risks and make better decisions.

The due diligence to climate risk was also inadequate. Realizing the new airport terminal will be within 1 km of the sea and Sunnyland being a tropical island nation should have prompted further investigation. The initial engineering impact assessments relied upon by R-SWF proved to be inaccurate only 3 years later. R-SWF should have expanded its climate risk due diligence to include climate scenario analysis and stress testing prior to investing.

While the investment committee did identify many risks, there was little evidence of robust action plans to mitigate risks. The action plan should incorporate controls, as well as hedging and other risk transfer strategies. Finally, the plan should incorporate the environmental, social, and reputational risks mentioned above.

MODULE QUIZ 30.4



To best evaluate your performance, enter your quiz answers online.

1. Identify, for each investment, the *earliest* evidence that signaled potential environmental risks. Explain for each investment why the evidence selected signaled potential environmental risks. (Only one example of evidence is required for each investment.)
2. Identify, for each investment, the *earliest* evidence that signaled potential social risks. Explain for each investment why the evidence selected signaled potential social risks. (Only one example of evidence is required for each investment.)

KEY CONCEPTS

LOS 30.a

Focus on events that could prevent an organization from meeting its long-term objectives.

Financial risks: (1) market losses, (2) liquidity risk

Nonfinancial risks: (1) reputational, (2) operational risks, (3) environmental, social, and governance risks

Dimensions of risk: top-down and bottom-up analysis, returns-based and holdings-based, absolute and relative risk, long-term and short-term risk metrics, quantitative and qualitative techniques

Liquidity risks: define needs and sources for liquidity, in normal and crisis conditions

Illiquid assets: private equity, real estate, infrastructure

Appraisal valuations result in smoothed returns and volatility.

LOS 30.b

Universal owners are holders of large diversified portfolios. Universal owners are impacted both negatively and positively by externalities.

Physical climate risks arise from one-off weather events (acute physical risks—e.g., storms, floods, and heat waves) and gradual effects of climate change (chronic physical risks—e.g., rise in sea levels and temperatures).

Transition climate risks are driven by: (1) new carbon policy and regulation; (2) advances in clean technologies; (3) higher input costs; and (4) shifts in consumer preferences.

Portfolio assets can be adversely impacted by physical climate risk in vulnerable locations (e.g., sea level rise, increased heat waves). Businesses are also impacted by rises in temperatures affecting business models.

Climate change brings winners and losers: (1) winners profit in a zero carbon economy; and (2) losers with old business models may find assets stranded.

Climate transition strategies: (1) mitigation (avoid, withdraw from fossil fuels); (2) adaption (to zero-carbon business models).

Social risks: community relations, health and safety, labor standards, equality, and human rights.

“Just” transition: being fair and just to people affected by transition changes.

LOS 30.c

A key focus of the case study is the environmental and social risks for institutional investors. The case study background notes will provide important clues to signal a variety of risks. Being associated with portfolio firms with alleged social or environmental issues brings reputational risks.

LOS 30.d

Long-term direct investments in illiquid assets have both advantages and disadvantages:

Advantages: (1) control over assets (e.g., exits); (2) increased portfolio liquidity due to control of exits; (3) avoids paying fund management fees; and (4) access to more detailed information as a business owner

Disadvantages: (1) concentrated positions; (2) additional liabilities; (3) attracting, retaining, and compensating in-house expertise

Long-term indirect investments in illiquid assets also have advantages and disadvantages:

Advantages: (1) no need for in-house team and costs; (2) limited liability of funds invested.

Disadvantages: (1) pay fund management fees; (2) no control over portfolio assets; (3) lower liquidity due to no control over the timing of exits.

Managing liquidity risk requires a 5-step process: (1) establish liquidity parameters; (2) assess current liquidity; (3) develop a cash flow model to project future cash flows; (4) stress test liquidity needs; and (5) develop an emergency plan.

LOS 30.e

ERM framework includes: (1) board of directors; (2) chief investment officer; (3) investment committee; (4) risk function.

ERM risk management process includes: (1) identify risks; (2) measure risks; (3) manage and mitigate risks; (4) monitor risks; (5) risk reporting; and (6) strategic analysis and planning.

Investor policy statement contains the risk and return objectives and constraints of the investment plan.

Risk tolerance is set by the board and defined by: volatility, maximum drawdown, value at risk, and conditional value at risk, a.k.a. expected tail loss.

Quantitative risk methodologies include: (1) returns-based analysis; (2) holdings-based analysis; (3) scenario analysis; and (4) stress testing.

Other risk metrics include: liquidity risk parameters, active risk budgets, restrictions on leverage, and the use of derivatives.

Strategic asset allocation is: implemented either internally or via third-party investment managers.

Recommend a suitable benchmark for public investments to measure relative returns and active risk.

Have regular portfolio monitoring, reviews, and implementation of agreed rebalancing strategies.

Based on what was previously listed, identify strengths and weaknesses in an enterprise risk management system and recommend improvements.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 30.1

1. **A** Indirect investments are via investment funds that provide no direct control of the timing of exits. Therefore, indirect forms of investment in private equity reduce portfolio liquidity. Indirect investments incur both annual management and profit-sharing fees (carried interest). Indirect forms of investment achieve higher levels of diversification and lower levels of concentrations from investing in a larger number of projects. (LOS 30.a)
2. **A** Unsmoothed returns have plentiful transactions, have no need for appraisals, and reflect accurate levels of volatility. Smoothed returns have few transactions, a need for appraisals, and put a downward bias on volatility. (LOS 30.a)
3. Direct investments in private asset classes require a dedicated and experienced in-house team. It is challenging and expensive to attract and retain the high-quality, in-house talent needed.

Direct investments in private asset classes may have higher concentration of risks due to challenges in scaling up portfolio investments to achieve higher levels of diversification. Higher concentration risks increase the idiosyncratic risks associated with each individual investment. (LOS 30.a)

Module Quiz 30.2

1. **C** The VaR significance level is 5%. An increase in the significance level, say to 10%, changes the VaR confidence level to 90%. The lower confidence level reduces the VaR estimate.

A decrease in the holding period will decrease the VaR estimate. However, VaR is an estimate of an unexpected loss rather than an expected loss, making that answer option inaccurate.

An increase in the confidence level, say from 95% to 99%, will increase the VaR estimate, as more extreme tail losses will be incorporated. Conditional VaR will also increase because this represents the average loss beyond the VaR. (LOS 30.e)

2. **A** The board of directors sets the risk tolerance, not the chief investment officer.

Maximum drawdown, value at risk, and conditional value at risk are all short-term risk metrics. Monte Carlo simulation is a long-term risk methodology.

Returns-based risk systems analyze the historic returns of investment managers. Holdings-based risk systems have access to all the portfolio holdings as part of the analysis. Hedge funds often prefer to maintain confidentiality of portfolio holdings to protect proprietary investment strategies. As a result, returns-based risk systems will likely be preferred. (LOS 30.e)

3. The enterprise risk management process includes the following steps: (1) identify risks, (2) measure risks, (3) mitigate and manage risks, (4) monitor risks, (5) report risks, and (6) do strategic analysis and planning. (LOS 30.e)

Module Quiz 30.3

1. A The 2015 Paris Agreement agreed to limit global temperature rises to +2 degrees Celsius based on pre-industrial levels (not 2015 levels). The Paris Agreement has voluntary pledges to reduce carbon emissions called nationally determined contributions. Current levels of nationally determined contributions (voluntary pledges) are insufficient to meet the target set in the Paris Agreement (limiting global warming to +2DC). (LOS 30.b)
2. A Physical climate risk results from one-off weather-related weather events (acute physical risks) and gradual impacts of climate risk, such as rising sea levels (chronic physical risks). An insurer refusing to insure a coastal property is an example of chronic physical climate risk. Transition climate risk is failing to adapt or mitigate to the zero-carbon economy. Transition risk results in an outdated business model and possibly stranded assets (unable to monetize). Transition risk is driven by changes in carbon regulation (carbon taxes, carbon limits), new clean technologies, and shifts in consumer demand. (LOS 30.b)
3. A “just transition” relates to social risks. Fairness, justice, and equality are important principles for everyone. Business decisions can have impacts on employees, local communities, and entire towns and cities. “Just transitions” ensure that support and communication is provided to assist people impacted and minimize the negative impacts of transitions. (LOS 30.b)

Module Quiz 30.4

1. Memo 1B provided initial details of the Sunnyland Airport investment that contained important environmental risk signals.

The Sunnyland Airport and runway being located so close to the sea (2 km and 1 km) were important signals of the risk of sea level rise due to climate change. The chosen 25-year time horizon is also shown in Memo 1B. This signals the need for detailed climate scenario analysis to explore the chronic physical climate risk of sea level rises and the uncertainty that surrounds the scale, timing, and costs of impacts to mitigate such risks.

Memo 1C provided important environmental signals for the Atsui Beverage Company Investment. The due diligence information in this memo included the details that ABC is a landlocked country, relying upon a river that allows for transport to the port. The river has unique biodiversity, which immediately should trigger environmental discussions. Investing directly brings the potential for additional liabilities. Further investigations were necessary to identify potential risks and the local regulations that may exist. Discussions should have taken place with the founder based upon this risk signal. (LO 30.c)

2. Memo 1B also signaled social risks present in the Sunnyland Airport project.

Local government and community relations are at the center of such an important infrastructure project. Memo 1B shows a wide range of parties being involved in the project (e.g., the government, the airport operator, the construction contractors, and R-SWF). This illustrates the social risks of working with multiple stakeholders, agreeing on approaches, and finding solutions when things go wrong. Later in the

case, tensions did start to appear as the airport operator wanted to renegotiate its fee.

With the airport being so important to so many businesses, local people, industry groups, and investors, there is considerable social risk with the project. Worst case, if R-SWF falls out with the airport operator, who replaces them? Alternatively, if relations worsen between R-SWF and the local government, investment assets could be expropriated or heavy local taxes introduced.

Memo 1C signals social risks connected with the ABC private equity investment.

First, the founder is worried about giving up control. This signals a need for discussions with the founder about agreeing to a business model, working practices, and the design of sustainable incentive programs. R-SWF should have ensured that ABC management practices are aligned to sustainable development standards, in the treatment of the workforce and the environment. It was later discovered that management practices were not aligned, and exploitation of the workforce and the dumping of waste illustrates R-SWF did not adequately explore these social risks when co-investing.

A second signal of social risks also contained in Memo 1C is the proposed dramatic reduction in the ABC head count from 500 to 300. This should have signaled further investigations into employee contract law, which would have revealed the required very generous 2-year notice period. R-SWF did not follow up on this, and the resulting delays caused considerable problems in capturing efficiencies. In addition, the scale of the planned reduction in head count in such a small local community will result in considerable social impacts to individuals and the wider community. The loss of local jobs, relationship with the community, brand reputation, and relationship with the government are all important social considerations. Planned changes should follow a “just transition,” where communities are consulted and supported throughout periods of change.

Note that only one piece of evidence to signal each risk was required.

(LOS 30.c)

TOPIC QUIZ: TRADING, PERFORMANCE EVALUATION, AND MANAGER SELECTION; AND CASE STUDIES

You have now finished the Trading, Performance Evaluation, and Manager Selection; and Case Studies topic section. On your Schweser online dashboard, you can find a Topic Quiz that will provide immediate feedback on how effective your study of this material has been. The test is best taken timed; allow three minutes per question. Topic Quizzes are more exam-like than typical QBank questions or module quiz questions. A score less than 70% suggests that additional review of the topic is needed.

The following is a review of the Ethical and Professional Standards (1) principles designed to address the learning outcome statements set forth by CFA Institute. Cross-Reference to CFA Institute Assigned Readings #31 & #32.

READINGS 31&32: CODE OF ETHICS AND STANDARDS OF PROFESSIONAL CONDUCT, GUIDANCE FOR STANDARDS I–VII

Study Session 15

EXAM FOCUS

Ethics will most likely be 10%–15% of the exam with two or three item set questions. While the CFA Institute has never specifically said they will not use constructed responses for ethics, they have not done so for over 10 years. The content and what you need to know will be the same regardless of the question format.

Level III questions tend to focus on compliance, portfolio management issues, and questions on the Asset Manager Code. Prepare properly and ethics can be an easier section of the exam. That is a big advantage when you move to the questions in other topic areas.

Just like Level I and Level II, ethics requires that you know the principles and be able to apply them to specific situations to make the expected decision. Some ethics questions can be vague with unclear facts so be prepared to make a “best guess” on a few of the questions. As you read the material, pay particular attention to the numerous examples (the application). As soon as you finish reading the Ethics material, work the Schweser and CFA end of reading practice problems. Reading principles without practicing questions for application or vice versa will not be sufficient and you need to do both. Be prepared and make this an easier part of the exam.

MODULE 31.1: CODE AND STANDARDS



LOS 31.a: Describe the structure of the CFA Institute Professional Conduct Program and the disciplinary review process for the enforcement of the CFA Institute Code of Ethics and Standards of Professional Conduct.

Video covering this content is available online.

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The CFA Institute Professional Conduct Program is covered by the CFA Institute Bylaws and the Rules of Procedure for Proceedings Related to Professional Conduct. The Program is based on the principles of fairness of the process to members and candidates and maintaining the confidentiality of the proceedings. The Disciplinary Review Committee of the CFA Institute Board of Governors has overall responsibility for the Professional Conduct Program and enforcement of the Code and Standards.

The CFA Institute Professional Conduct staff conducts inquiries related to professional conduct. Several circumstances can prompt such an inquiry:

1. Self-disclosure by members or candidates on their annual Professional Conduct Statements of involvement in civil litigation or a criminal investigation, or that the member or candidate is the subject of a written complaint.
2. Written complaints about a member or candidate's professional conduct that are received by the Professional Conduct staff.
3. Evidence of misconduct by a member or candidate that the Professional Conduct staff received through public sources, such as a media article or broadcast.
4. A report by a CFA exam proctor of a possible violation during the examination.
5. Analysis of exam materials and monitoring of social media by CFA Institute.

Once an inquiry has begun, the Professional Conduct staff may request (in writing) an explanation from the subject member or candidate and may: (1) interview the subject member or candidate, (2) interview the complainant or other third parties, and/or (3) collect documents and records relevant to the investigation.

The Professional Conduct staff may decide: (1) that no disciplinary sanctions are appropriate, (2) to issue a cautionary letter, or (3) to discipline the member or candidate. In a case where the Professional Conduct staff finds a violation has occurred and proposes a disciplinary sanction, the member or candidate may accept or reject the sanction. If the member or candidate chooses to reject the sanction, the matter will be referred to a disciplinary review panel of CFA Institute members for a hearing. Sanctions imposed may include condemnation by the member's peers or suspension of candidate's continued participation in the CFA Program.

LOS 31.b: Explain the ethical responsibilities required by the Code and Standards, including the sub-sections of each standard.

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Code of Ethics

Members of CFA Institute [including Chartered Financial Analyst® (CFA®) charterholders] and candidates for the CFA designation ("Members and Candidates") must:¹

- Act with integrity, competence, diligence, respect, and in an ethical manner with the public, clients, prospective clients, employers, employees, colleagues in the investment profession, and other participants in the global capital markets.
- Place the integrity of the investment profession and the interests of clients above their own personal interests.
- Use reasonable care and exercise independent professional judgment when conducting investment analysis, making investment recommendations, taking investment actions, and engaging in other professional activities.
- Practice and encourage others to practice in a professional and ethical manner that will reflect credit on themselves and the profession.
- Promote the integrity and viability of the global capital markets for the ultimate benefit of society.

- Maintain and improve their professional competence and strive to maintain and improve the competence of other investment professionals.

The Standards of Professional Conduct

I. Professionalism

II. Integrity of Capital Markets

III. Duties to Clients

IV. Duties to Employers

V. Investment Analysis, Recommendations, and Actions

VI. Conflicts of Interest

VII. Responsibilities as a CFA Institute Member or CFA Candidate

Standards of Professional Conduct²

I. PROFESSIONALISM

- A. **Knowledge of the Law.** Members and Candidates must understand and comply with all applicable laws, rules, and regulations (including the CFA Institute *Code of Ethics* and *Standards of Professional Conduct*) of any government, regulatory organization, licensing agency, or professional association governing their professional activities. In the event of conflict, Members and Candidates must comply with the more strict law, rule, or regulation. Members and Candidates must not knowingly participate or assist in any violation of laws, rules, or regulations and must disassociate themselves from any such violation.
- B. **Independence and Objectivity.** Members and Candidates must use reasonable care and judgment to achieve and maintain independence and objectivity in their professional activities. Members and Candidates must not offer, solicit, or accept any gift, benefit, compensation, or consideration that reasonably could be expected to compromise their own or another's independence and objectivity.
- C. **Misrepresentation.** Members and Candidates must not knowingly make any misrepresentations relating to investment analysis, recommendations, actions, or other professional activities.
- D. **Misconduct.** Members and Candidates must not engage in any professional conduct involving dishonesty, fraud, or deceit or commit any act that reflects adversely on their professional reputation, integrity, or competence.

II. INTEGRITY OF CAPITAL MARKETS

- A. **Material Nonpublic Information.** Members and Candidates who possess material nonpublic information that could affect the value of an investment must not act or cause others to act on the information.

B. Market Manipulation. Members and Candidates must not engage in practices that distort prices or artificially inflate trading volume with the intent to mislead market participants.

III. DUTIES TO CLIENTS

A. Loyalty, Prudence, and Care. Members and Candidates have a duty of loyalty to their clients and must act with reasonable care and exercise prudent judgment. Members and Candidates must act for the benefit of their clients and place their clients' interests before their employer's or their own interests.

B. Fair Dealing. Members and Candidates must deal fairly and objectively with all clients when providing investment analysis, making investment recommendations, taking investment action, or engaging in other professional activities.

C. Suitability.

1. When Members and Candidates are in an advisory relationship with a client, they must:

- a. Make a reasonable inquiry into a client's or prospective clients' investment experience, risk and return objectives, and financial constraints prior to making any investment recommendation or taking investment action and must reassess and update this information regularly.

- b. Determine that an investment is suitable to the client's financial situation and consistent with the client's written objectives, mandates, and constraints before making an investment recommendation or taking investment action.

- c. Judge the suitability of investments in the context of the client's total portfolio.

2. When Members and Candidates are responsible for managing a portfolio to a specific mandate, strategy, or style, they must make only investment recommendations or take investment actions that are consistent with the stated objectives and constraints of the portfolio.

D. Performance Presentation. When communicating investment performance information, Members or Candidates must make reasonable efforts to ensure that it is fair, accurate, and complete.

E. Preservation of Confidentiality. Members and Candidates must keep information about current, former, and prospective clients confidential unless:

1. The information concerns illegal activities on the part of the client or prospective client,
2. Disclosure is required by law, or
3. The client or prospective client permits disclosure of the information.

IV. DUTIES TO EMPLOYERS

A. Loyalty. In matters related to their employment, Members and Candidates must act for the benefit of their employer and not deprive their employer of

the advantage of their skills and abilities, divulge confidential information, or otherwise cause harm to their employer.

B. Additional Compensation Arrangements. Members and Candidates must not accept gifts, benefits, compensation, or consideration that competes with, or might reasonably be expected to create a conflict of interest with, their employer's interest unless they obtain written consent from all parties involved.

C. Responsibilities of Supervisors. Members and Candidates must make reasonable efforts to ensure that anyone subject to their supervision or authority complies with applicable laws, rules, regulations, and the Code and Standards.

V. INVESTMENT ANALYSIS, RECOMMENDATIONS, AND ACTIONS

A. Diligence and Reasonable Basis. Members and Candidates must:

1. Exercise diligence, independence, and thoroughness in analyzing investments, making investment recommendations, and taking investment actions.
2. Have a reasonable and adequate basis, supported by appropriate research and investigation, for any investment analysis, recommendation, or action.

B. Communication with Clients and Prospective Clients. Members and Candidates must:

1. Disclose to clients and prospective clients the basic format and general principles of the investment processes used to analyze investments, select securities, and construct portfolios and must promptly disclose any changes that might materially affect those processes.
2. Disclose to clients and prospective clients significant limitations and risks associated with the investment process.
3. Use reasonable judgment in identifying which factors are important to their investment analyses, recommendations, or actions and include those factors in communications with clients and prospective clients.
4. Distinguish between fact and opinion in the presentation of investment analysis and recommendations.

C. Record Retention. Members and Candidates must develop and maintain appropriate records to support their investment analysis, recommendations, actions, and other investment-related communications with clients and prospective clients.

VI. CONFLICTS OF INTEREST

A. Disclosure of Conflicts. Members and Candidates must make full and fair disclosure of all matters that could reasonably be expected to impair their independence and objectivity or interfere with respective duties to their clients, prospective clients, and employer. Members and Candidates must ensure that such disclosures are prominent, are delivered in plain language, and communicate the relevant information effectively.

- B. Priority of Transactions.** Investment transactions for clients and employers must have priority over investment transactions in which a Member or Candidate is the beneficial owner.
- C. Referral Fees.** Members and Candidates must disclose to their employer, clients, and prospective clients, as appropriate, any compensation, consideration, or benefit received from, or paid to, others for the recommendation of products or services.

VII. RESPONSIBILITIES AS A CFA INSTITUTE MEMBER OR CFA CANDIDATE

- A. Conduct as Participants in CFA Institute Programs.** Members and Candidates must not engage in any conduct that compromises the reputation or integrity of CFA Institute or the CFA designation or the integrity, validity, or security of CFA Institute programs.
- B. Reference to CFA Institute, the CFA Designation, and the CFA Program.** When referring to CFA Institute, CFA Institute membership, the CFA designation, or candidacy in the CFA Program, Members and Candidates must not misrepresent or exaggerate the meaning or implications of membership in CFA Institute, holding the CFA designation, or candidacy in the CFA Program.



MODULE QUIZ 31.1

To best evaluate your performance, enter your quiz answers online.

1. In the case of a complaint about a member's professional conduct, CFA Institute Professional Conduct Program staff are *least likely* to:
 - A. review documents and records related to the complaint.
 - B. request an interview with the member or with the party making the complaint.
 - C. suspend the member's right to use the CFA designation while an investigation is in progress.
2. Which of the following requirements for members and candidates is one of the six components of the Code of Ethics?
 - A. Maintain and improve their professional competence.
 - B. Do not act or cause others to act on material nonpublic information.
 - C. Distinguish between fact and opinion when presenting investment analysis.
3. If a member or candidate is offered an additional compensation arrangement by a client, which of the seven Standards of Professional Conduct states the requirements the member or candidate must follow?
 - A. Duties to Clients.
 - B. Conflicts of Interest.
 - C. Duties to Employers.

LOS 32.a: Demonstrate a thorough knowledge of the CFA Institute Code of Ethics and Standards of Professional Conduct by interpreting the Code and Standards in various situations involving issues of professional integrity.

LOS 32.b: Recommend practices and procedures designed to prevent violations of the Code and Standards.

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PROFESSOR'S NOTE

You should be prepared for questions that require you to apply the Standards in specific case situations. In such questions, you must recognize the case facts described and then decide which Standards are directly relevant. This is primarily a test of critical thinking, not of memorization. To prepare you, we will in this section focus on a review of the key points for each Standard and the recommended procedures. If you know the main issues, you are more likely to successfully apply them. You should review the recommended procedures several times between now and exam day because they fit the Level III emphasis on the bigger picture and managing the business as well as portfolios and assets. Once you complete our review and understand the basic principles that you must know, then move to application and practice. For practice, complete our sample questions. The CFA reading includes many examples of applying the Standards, and you should read all the examples as well as complete the CFA end of chapter questions for this reading.

It is important you know the basic principles before you move to the specific examples and questions. Those examples and questions can only be a sample of possible applications. When you try to learn by practice only, without first knowing the principles that are being applied, you generally get the wrong ideas. Prepare and practice are two different steps. The combination is what leads to success. Do both.

In many cases the actions that members and candidates must not take are explained using terms open to interpretation, such as “reasonable,” “adequate,” and “token.”

Some examples from the Standards themselves are:

- ...use reasonable care and judgment to achieve...
- ...accept any gift, that reasonably could be expected to compromise...
- ...act with reasonable care and exercise prudent judgment...
- ...deal fairly and objectively with all clients...
- ...make a reasonable inquiry into...
- ...make reasonable efforts to ensure...
- ...might reasonably be expected to create a conflict of interest with...
- ...Have a reasonable and adequate basis...
- ...Use reasonable judgment in...
- ...matters that could be reasonably expected to impair...

The requirement of the LOS is that you know what constitutes a violation, not that you draw a distinction between what is “reasonable” and what is not in a given situation. We believe the exam writers take this into account and that if they intend, for example, to test whether a recommendation has been given without reasonable care and judgment, it will likely be clear either that the care and judgment exhibited by the analyst did not rise to the level of “reasonable,” or that it did.

No monetary value for a “token” gift is given in the Standards, although it is recommended that a firm establish such a monetary value for its employees. Here, again, the correct answer to a question will not likely hinge on candidate’s determination of what is a token gift and what is not. Questions should be clear in this regard. A business dinner is likely a token gift, but a week at a condominium in Aspen or tickets to the Super Bowl are likely not. Always look for clues in the questions that lead you to the question-writer’s preferred answer choice, such as “lavish” entertainment and “luxury” accommodations.

Next, we present a summary of each subsection of the Standards of Professional Conduct. For each one, we first detail actions that violate the Standard and then list actions and behaviors that are recommended within the Standards. We suggest you learn the violations especially well so you understand that the other items are recommended. For the exam, it is not necessary to memorize the Standard number and subsection letter. Knowing that an action violates, for example, Professionalism, rather than Duties to Employers or Duties to Clients, should be sufficient in this regard. Note that some actions may violate more than one Standard.

One way to write questions for this material is to offer a reason that might make one believe a Standard does not apply in a particular situation. In most, if not all, cases the “reason” does not change the requirement of the Standard. If you are prohibited from some action, the motivations for the action or other circumstances simply do not matter. If the Standard says it’s a violation, it’s a violation. An exception is when intent is key to the Standard, such as intending to mislead clients or market participants in general.

MODULE 32.1: GUIDANCE FOR STANDARDS I(A) AND I(B)



Video covering
this content is
available online.

STANDARD I: PROFESSIONALISM³

Standard I(A) Knowledge of the Law

Members and Candidates must understand and comply with all applicable laws, rules, and regulations (including the CFA Institute Code of Ethics and Standards of Professional Conduct) of any government, regulatory organization, licensing agency, or professional association governing their professional activities. In the event of conflict, Members and Candidates must comply with the more strict law, rule, or regulation. Members and Candidates must not knowingly participate or assist in and must dissociate from any violation of such laws, rules, or regulations.

The Standards begin with a straightforward statement: Don’t violate any laws, rules, or regulations that apply to your professional activities. This includes the Code and Standards, so any violation of the Code and Standards will also violate this subsection.

A member may be governed by different rules and regulations among the Standards, the country in which the member resides, and the country where the member is doing business. Follow the most strict of these, or, put another way, do not violate any of the three sets of rules and regulations.

If you know that violations of applicable rules or laws are taking place, either by coworkers or clients, you must approach your supervisor or compliance department to remedy the situation. If they will not or cannot, then you must dissociate from the activity (e.g., not working with a trading group you know is not allocating client trades properly according to the Standard on Fair Dealing, or not using marketing materials that you know or should know are misleading or erroneous). If this cannot be accomplished, you may, in an extreme case, have to resign from the firm to be in compliance with this Standard.

Recommendations for Members

- Establish, or encourage employer to establish, procedures to keep employees informed of changes in relevant laws, rules, and regulations.
- Review, or encourage employer to review, the firm's written compliance procedures on a regular basis.
- Maintain, or encourage employer to maintain, copies of current laws, rules, and regulations.
- When in doubt about legality, consult compliance personnel or a lawyer.
- When dissociating from violations, keep records documenting the violations, encourage employer to bring an end to the violations.
- There is no requirement in the Standards to report wrongdoers, but local law may require it; members are "strongly encouraged" to report violations to CFA Institute Professional Conduct Program.

Recommendations for Firms

- Have a code of ethics.
- Provide employees with information on laws, rules, and regulations governing professional activities.
- Have procedures for reporting suspected violations.

Standard I(B) Independence and Objectivity

Members and Candidates must use reasonable care and judgment to achieve and maintain independence and objectivity in their professional activities. Members and Candidates must not offer, solicit, or accept any gift, benefit, compensation, or consideration that reasonably could be expected to compromise their own or another's independence and objectivity.

Analysts may face pressure or receive inducements to give a security a specific rating, to select certain outside managers or vendors, or to produce favorable or unfavorable research and conclusions. Members who allow their investment recommendations or analysis to be influenced by such pressure or inducements will have violated the requirement to use reasonable care and to maintain independence and objectivity in their professional activities. Allocating shares in oversubscribed IPOs to personal accounts is a violation.

Normal business entertainment is permitted. Members who accept, solicit, or offer things of value that could be expected to influence the member's or others' independence or objectivity are violating the Standard. Gifts from clients are considered less likely to compromise independence and objectivity than gifts from other parties. Client gifts must be disclosed to the member's employer prior to acceptance, if possible, but after acceptance, if not.

Members may prepare reports paid for by the subject firm if compensation is a flat rate not tied to the conclusions of the report (and if the fact that the research is issuer-paid is disclosed). Accepting compensation that is dependent on the conclusions, recommendations, or market impact of the report, and failure to disclose that research is issuer-paid, are violations of this Standard.

Recommendations for Members

Members or their firms should pay for their own travel to company events or tours when practicable and limit use of corporate aircraft to trips for which commercial travel is not an alternative.

Recommendations for Firms

- Establish policies requiring every research report to reflect the unbiased opinion of the analyst and align compensation plans to support this principal.
- Establish and review written policies and procedures to assure research is independent and objective.
- Establish restricted lists of securities for which the firm is not willing to issue adverse opinions. Factual information may still be provided.
- Limit gifts from non-clients to token amounts.
- Limit and require prior approval of employee participation in equity IPOs.
- Establish procedures for supervisory review of employee actions.
- Appoint a senior officer to oversee firm compliance and ethics.

MODULE 32.2: GUIDANCE FOR STANDARDS I(C) AND I(D)



Video covering
this content is
available online.

Standard I(C) Misrepresentation

Members and Candidates must not knowingly make any misrepresentations relating to investment analysis, recommendations, actions, or other professional activities.

Misrepresentation includes knowingly misleading investors, omitting relevant information, presenting selective data to mislead investors, and plagiarism. Plagiarism is using reports, forecasts, models, ideas, charts, graphs, or spreadsheets created by others without crediting the source. Crediting the source is not required when using projections, statistics, and tables from recognized financial and statistical reporting services. When using models developed or research done by other members of the firm, it is permitted to omit the names of those who are no longer with the firm as long as the member does not represent work previously done by others as his alone.

Actions that would violate the Standard include:

- Presenting third-party research as your own, without attribution to the source.
- Guaranteeing a specific return on securities that do not have an explicit guarantee from a government body or financial institution.
- Selecting a valuation service because it puts the highest value on untraded security holdings.
- Selecting a performance benchmark that is not comparable to the investment strategy employed.
- Presenting performance data or attribution analysis that omits accounts or relevant variables.
- Offering false or misleading information about the analyst's or firm's capabilities, expertise, or experience.
- Using marketing materials from a third party (outside adviser) that are misleading.

Recommendations for Members

- Understand the scope and limits of the firm's capabilities to avoid inadvertent misrepresentations.
- Summarize your own qualifications and experience.
- Make reasonable efforts to verify information from third parties that is provided to clients.
- Regularly maintain web pages for accuracy.
- When using social media, only distribute the same information that is allowed to be distributed using traditional forms of communication.
- Avoid plagiarism by keeping copies of all research reports and supporting documents and attributing direct quotes, paraphrases, and summaries to their source.

Standard I(D) Misconduct

Members and Candidates must not engage in any professional conduct involving dishonesty, fraud, or deceit or commit any act that reflects adversely on their professional reputation, integrity, or competence.

The first part here regarding professional conduct is clear: no dishonesty, fraud, or deceit. The second part, while it applies to all conduct by the member, specifically requires that the act, "reflects adversely on their professional reputation, integrity, or competence." The guidance states, in fact, that members must not try to use enforcement of this Standard against another member to settle personal, political, or other disputes that are not related to professional ethics or competence.

Recommendations for Firms

- Develop and adopt a code of ethics and make clear that unethical behavior will not be tolerated.
- Give employees a list of potential violations and sanctions, including dismissal.
- Check references of potential employees.

MODULE 32.3: GUIDANCE FOR STANDARD II



STANDARD II: INTEGRITY OF CAPITAL MARKETS

Video covering this content is available online.

Standard II(A) Material Nonpublic Information

Members and Candidates who possess material nonpublic information that could affect the value of an investment must not act or cause others to act on the information.

Information is "material" if its disclosure would affect the price of a security or if a reasonable investor would want the information before making an investment decision. Information that is ambiguous as to its likely effect on price may not be considered material.

Information is "nonpublic" until it has been made available to the marketplace. An analyst conference call is not public disclosure. Selective disclosure of information by corporations creates the potential for insider-trading violations.

The prohibition against acting on material nonpublic information extends to mutual funds containing the subject securities as well as related swaps and options contracts. It is the member's responsibility to determine if information she receives has been publicly disseminated prior to acting or causing others to act on it.

Some members and candidates may be involved in transactions during which they are provided with material nonpublic information by firms (e.g., investment banking transactions). Members and candidates may use this information for its intended purpose, but must not use the information for any other purpose unless it becomes public information.

Under the so-called **mosaic theory**, reaching an investment conclusion through perceptive analysis of public information combined with non-material nonpublic information is not a violation of the Standard.

Recommendations for Members

- Make reasonable efforts to achieve public dissemination by the firm of information they possess.
- Encourage their firms to adopt procedures to prevent the misuse of material nonpublic information.

Recommendations for Firms

- Issue press releases prior to analyst meetings to assure public dissemination of any new information.
- Adopt procedures for equitable distribution of information to the market place (e.g., new research opinions and reports to clients).
- Establish firewalls within the organization for who may and may not have access to material nonpublic information. Generally, this includes having the legal or compliance department clear interdepartmental communications, reviewing employee trades, documenting procedures to limit information flow, and carefully reviewing or restricting proprietary trading whenever the firm possesses material nonpublic information on the securities involved.
- Ensure that procedures for proprietary trading are appropriate to the strategies used. A blanket prohibition is not required.
- Develop procedures to enforce firewalls with complexity consistent with the complexity of the firm.
- Physically separate departments.
- Have a compliance (or other) officer review and authorize information flows before sharing.
- Maintain records of information shared.
- Limit personal trading, require that it be reported, and establish a restricted list of securities in which personal trading is not allowed.
- Regularly communicate with and train employees to follow procedures.

Standard II(B) Market Manipulation

Members and Candidates must not engage in practices that distort prices or artificially inflate trading volume with the intent to mislead market participants.

Member actions may affect security values and trading volumes without violating this Standard. The key point here is that if there is the *intent to mislead*, then the Standard is violated. Of course, spreading false information to affect prices or volume is a violation of this Standard as is making trades intended to mislead market participants.



MODULE QUIZ 32.1, 32.2, 32.3

To best evaluate your performance, enter your quiz answers online.

1. In situations where the laws of a member or candidate's country of residence, the local laws of regions where the member or candidate does business, and the Code and Standards specify different requirements, the member or candidate must abide by:
 - A. local law or the Code and Standards, whichever is stricter.
 - B. the Code and Standards or his country's laws, whichever are stricter.
 - C. the strictest of local law, his country's laws, or the Code and Standards.
2. According to the Standard on independence and objectivity, members and candidates:
 - A. may accept gifts or bonuses from clients.
 - B. may not accept compensation from an issuer of securities in return for producing research on those securities.
 - C. should consider credit ratings issued by recognized agencies to be objective measures of credit quality.
3. Bill Cooper finds a table of historical bond yields on the website of the U.S. Treasury that supports the work he has done in his analysis and includes the table as part of his report without citing the source. Has Cooper violated the Code and Standards?
 - A. Yes, because he did not cite the source of the table.
 - B. Yes, because he did not verify the accuracy of the information.
 - C. No, because the table is from a recognized source of financial or statistical data.
4. Which of the following statements about the Standard on misconduct is *most accurate*?
 - A. Misconduct applies only to a member or candidate's professional activities.
 - B. Neglecting to perform due diligence when required is an example of misconduct.
 - C. A member or candidate commits misconduct by engaging in any illegal activity, such as a parking ticket offense.
5. Ed Ingus, CFA, visits the headquarters and main plant of Bullitt Company and observes that inventories of unsold goods appear unusually large. From the CFO, he learns that a recent increase in returned items may result in earnings for the current quarter that are below analysts' estimates. Bullitt plans to make this conclusion public next week. Based on his visit, Ingus changes his recommendation on Bullitt to "Sell." Has Ingus violated the Standard concerning material nonpublic information?
 - A. Yes.
 - B. No, because the information he used is not material.
 - C. No, because his actions are consistent with the mosaic theory.
6. Green Brothers, an emerging market fund manager, has two of its subsidiaries simultaneously buy and sell emerging market stocks. In its marketing literature, Green Brothers cites the overall emerging market volume as evidence of the market's liquidity. As a result of its actions, more investors participate in the emerging markets fund. Green Brothers *most likely*:
 - A. did not violate the Code and Standards.
 - B. violated the Standard regarding market manipulation.
 - C. violated the Standard regarding performance presentation.

MODULE 32.4: GUIDANCE FOR STANDARDS III(A) AND III(B)

STANDARD III: DUTIES TO CLIENTS



Video covering
this content is
available online.

Standard III(A) Loyalty, Prudence, and Care

Members and Candidates have a duty of loyalty to their clients and must act with reasonable care and exercise prudent judgment. Members and Candidates must act for the benefit of their clients and place their clients' interests before their employer's or their own interests.

Client interests always come first. Although this Standard does not impose a fiduciary duty on members or candidates where one did not already exist, it does require members and candidates to act in their clients' best interests and recommend products that are suitable given their clients' investment objectives and risk tolerances. Members and candidates must:

- Exercise the prudence, care, skill, and diligence under the circumstances that a person acting in a like capacity and familiar with such matters would use.
- Manage pools of client assets in accordance with the terms of the governing documents, such as trust documents or investment management agreements.
- Make investment decisions in the context of the total portfolio.
- Inform clients of any limitations in an advisory relationship (e.g., an adviser who may only recommend her own firm's products).
- Vote proxies in an informed and responsible manner. Due to cost-benefit considerations, it may not be necessary to vote all proxies.
- Client brokerage, or "soft dollars" or "soft commissions," must be used to benefit the client.
- The "client" may be the investing public as a whole rather than a specific entity or person.

Recommendations for Members

Submit to clients, at least quarterly, itemized statements showing all securities in custody and all debits, credits, and transactions. Disclose where client assets are held and if they are moved. Keep client assets separate from others' assets.

If in doubt as to the appropriate action, what would you do if you were the client? If still in doubt, disclose and seek written client approval.

Encourage firms to address these topics when drafting policies and procedures regarding fiduciary duty:

- Follow applicable rules and laws.
- Establish investment objectives of client.
- Consider suitability of a portfolio relative to the client's needs and circumstances, the investment's basic characteristics, or the basic characteristics of the total portfolio.
- Diversify unless account guidelines dictate otherwise.
- Deal fairly with all clients in regard to investment actions.
- Disclose conflicts of interest.
- Disclose manager compensation arrangements.
- Regularly review actions for consistency with documents.
- Vote proxies in the best interest of clients and ultimate beneficiaries.

- Maintain confidentiality.
- Seek best execution.
- Put client interests first.

Standard III(B) Fair Dealing

Members and Candidates must deal fairly and objectively with all clients when providing investment analysis, making investment recommendations, taking investment action, or engaging in other professional activities.

Do not discriminate against any clients when disseminating recommendations or taking investment action. "Fairly" does not mean "equally." In the normal course of business, there will be differences in the time emails, faxes, and other communications are received by different clients.

Different service levels are acceptable, but they must not negatively affect or disadvantage any clients. Disclose the different service levels to all clients and prospects, and make premium levels of service available to all those willing to pay for them.

Give all clients a fair opportunity to act on every recommendation. Clients who are unaware of a change in the recommendation for a security should be advised of the change before an order for the security is accepted.

Treat clients fairly in light of their investment objectives and circumstances. Treat both individual and institutional clients in a fair and impartial manner. Members and candidates should not take advantage of their position in the industry to disadvantage clients (e.g., taking shares of an oversubscribed IPO).

Recommendations for Members

- Encourage firms to establish compliance procedures requiring proper dissemination of investment recommendations and fair treatment of all customers and clients.
- Maintain a list of clients and holdings—use to ensure that all holders are treated fairly.

Recommendations for Firms

- Limit the number of people who are aware that a change in recommendation will be made.
- Shorten the time frame between decision and dissemination.
- Publish personnel guidelines for pre-dissemination—have in place guidelines prohibiting personnel who have prior knowledge of a recommendation from discussing it or taking action on the pending recommendation.
- Disseminate new or changed recommendations simultaneously to all clients who have expressed an interest or for whom an investment is suitable.
- Establish systematic account review—ensure that no client is given preferred treatment and that investment actions are consistent with the account's objectives.
- Disclose available levels of service and the associated fees.
- Disclose trade allocation procedures.
- Develop written trade allocation procedures to:
 - Document and time stamp all orders.

- Bundle orders and then execute on a first come, first fill basis.
- Allocate partially filled orders.
- Provide the same net (after costs) execution price to all clients in a block trade.

MODULE 32.5: GUIDANCE FOR STANDARDS III(C), III(D), AND III(E)



Video covering this content is available online.

Standard III(C) Suitability

1. When Members and Candidates are in an advisory relationship with a client, they must:
 - a. Make a reasonable inquiry into a client's or prospective client's investment experience, risk and return objectives, and financial constraints prior to making any investment recommendation or taking investment action and must reassess and update this information regularly.
 - b. Determine that an investment is suitable to the client's financial situation and consistent with the client's written objectives, mandates, and constraints before making an investment recommendation or taking investment action.
 - c. Judge the suitability of investments in the context of the client's total portfolio.
2. When Members and Candidates are responsible for managing a portfolio to a specific mandate, strategy, or style, they must make only investment recommendations or take only investment actions that are consistent with the stated objectives and constraints of the portfolio.

In advisory relationships, members must gather client information at the beginning of the relationship, in the form of an investment policy statement (IPS). Consider clients' needs and circumstances and, thus, their risk tolerance. Consider whether or not the use of leverage is suitable for the client.

If a member is responsible for managing a fund to an index or other stated mandate, he must select only investments that are consistent with the stated mandate.

Unsolicited Trade Requests

An investment manager may receive a client request to purchase a security that the manager knows is unsuitable, given the client's investment policy statement. The trade may or may not have a material effect on the risk characteristics of the client's total portfolio and the requirements are different for each case. In either case, however, the manager should not make the trade until he has discussed with the client the reasons (based on the IPS) that the trade is unsuitable for the client's account.

If the manager determines that the *effect on the risk/return profile of the client's total portfolio is minimal*, the manager, after discussing with the client how the trade does not fit the IPS goals and constraints, may follow his firm's policy with regard to unsuitable trades. Regardless of firm policy, the client must acknowledge the discussion and an understanding of why the trade is unsuitable.

If the trade would have a *material impact on the risk/return profile of the client's total portfolio*, one option is to update the IPS so the client accepts a changed risk profile that

would permit the trade. If the client will not accept a changed IPS, the manager may follow firm policy, which may allow the trade to be made in a separate client-directed account. In the absence of other options, the manager may need to reconsider whether to maintain the relationship with the client.

Recommendations for Members

- Establish a written IPS, considering type of client and account beneficiaries, the objectives, constraints, and the portion of the client's assets managed.
- Review the IPS annually and update for material changes in client and market circumstances.
- Develop policies and procedures to assess suitability of portfolio changes. Consider the impact on diversification, risk, and meeting the client's investment strategy.

Standard III(D) Performance Presentation

When communicating investment performance information, Members and Candidates must make reasonable efforts to ensure that it is fair, accurate, and complete.

Members must not misstate performance or mislead clients or prospects about their investment performance or their firm's investment performance.

Members must not misrepresent past performance or reasonably expected performance, and must not state or imply the ability to achieve a rate of return similar to that achieved in the past.

For brief presentations, members must make detailed information available on request and indicate that the presentation has offered only limited information.

Recommendations for Members

- Encourage firms to adhere to Global Investment Performance Standards.
- Consider the sophistication of the audience to whom a performance presentation is addressed.
- Present the performance of a weighted composite of similar portfolios rather than the performance of a single account.
- Include terminated accounts as part of historical performance and clearly state when they were terminated.
- Include all appropriate disclosures to fully explain results (e.g., model results included, gross or net of fees, etc.).
- Maintain data and records used to calculate the performance being presented.

Standard III(E) Preservation of Confidentiality

Members and Candidates must keep information about current, former, and prospective clients confidential unless:

1. The information concerns illegal activities on the part of the client;
2. Disclosure is required by law; or
3. The client or prospective client permits disclosure of the information.

If illegal activities by a client are involved, members may have an obligation to report the activities to authorities.

The confidentiality Standard extends to former clients as well.

The requirements of this Standard are not intended to prevent members and candidates from cooperating with a CFA Institute Professional Conduct Program (PCP) investigation.

Recommendations for Members

- Members should avoid disclosing information received from a client except to authorized coworkers who are also working for the client. Consider whether the disclosure is necessary and will benefit the client.
- Members should follow firm procedures for storage of electronic data and recommend adoption of such procedures if they are not in place.
- Assure client information is not accidentally disclosed.



MODULE QUIZ 32.4, 32.5

To best evaluate your performance, enter your quiz answers online.

1. Cobb, Inc., has hired Jude Kasten, CFA, to manage its pension fund. The client(s) to whom Kasten owes her primary duty of loyalty is:
 - A. Cobb's management.
 - B. the shareholders of Cobb, Inc.
 - C. the beneficiaries of the pension fund.
2. Which of the following actions is *most likely* a violation of the Standard on fair dealing?
 - A. A portfolio manager allocates IPO shares to all client accounts where it is suitable, including her brother's fee-based retirement account.
 - B. An investment firm routinely begins trading for its own account immediately after announcing recommendation changes to clients.
 - C. After releasing a general recommendation to all clients, an analyst calls the firm's largest institutional clients to discuss the recommendation in more detail.
3. The Standard regarding suitability *most likely* requires that:
 - A. an adviser must analyze an investment's suitability for the client prior to recommending or acting on the investment.
 - B. a member or candidate must decline to carry out an unsolicited transaction that she believes is unsuitable for the client.
 - C. when managing an index fund, a manager who is evaluating potential investments must consider their suitability for the fund's shareholders.
4. Which of the following is *most likely* a recommended procedure for complying with the Standard on performance presentation?
 - A. Exclude terminated accounts from past performance history.
 - B. Present the performance of a representative account to show how a composite has performed.
 - C. Consider the level of financial knowledge of the audience to whom the performance is presented.
5. The CFA Institute Professional Conduct Program (PCP) has begun an investigation into Chris Jones, a Level II CFA candidate, and a number of his CFA charterholder colleagues. Jones has access to confidential client records that could be useful in clearing his name and wishes to share this information with the PCP. Which of the following *most accurately* describes Jones's duties with regard to preservation of confidentiality?
 - A. Sharing the confidential information with the PCP would violate the Standards.
 - B. The Standards encourage, but do not require, that Jones support the PCP investigation into his colleagues.
 - C. Jones may share confidential information about former clients with the PCP but may not share confidential information about current clients.

MODULE 32.6: GUIDANCE FOR STANDARD IV



STANDARD IV: DUTIES TO EMPLOYERS

Video covering
this content is
available online.

Standard IV(A) Loyalty

In matters related to their employment, Members and Candidates must act for the benefit of their employer and not deprive their employer of the advantage of their skills and abilities, divulge confidential information, or otherwise cause harm to their employer.

This Standard is applicable to employees. If members are independent contractors, rather than employees, they have a duty to abide by the terms of their agreements.

Members must not engage in any activities that would injure the firm, deprive it of profit, or deprive it of the advantage of employees' skills and abilities.

Members should always place client interests above interests of their employer, but consider the effects of their actions on firm integrity and sustainability.

There is no requirement that the employee put employer interests ahead of family and other personal obligations; it is expected that employers and employees will discuss such matters and balance these obligations with work obligations.

There may be isolated cases where a duty to one's employer may be violated in order to protect clients or the integrity of the market, when the actions are not for personal gain. This may be referred to as whistle-blowing.

Independent practice for compensation is allowed if a notification is provided to the employer fully describing all aspects of the services, including compensation, duration, and the nature of the activities and the employer consents to all terms of the proposed independent practice before it begins.



PROFESSOR'S NOTE

The distinction between an employee and contractor is important in applying this and other standards. Think of it as employee status conveys an implication of an exclusive work relationship with the employer and contractor does not. To engage in outside practice or accept additional compensation requires disclosure and approval from the employer. But consider an individual who directly offers services to various clients. The manager is self-employed. With no inference of exclusivity, there is no need to notify or receive approval to add another client. This still leaves other responsibilities in place. If the clients expected or were told the manager is full time self-employed and goes to part time or also becomes an employee at another firm, that is almost certainly material to any reasonable client and must be disclosed.

When leaving an employer, members must continue to act in their employer's best interests until their resignation is effective. Activities that may constitute a violation include:

- Misappropriation of trade secrets.
- Misuse of confidential information.
- Soliciting employer's clients prior to leaving.
- Self-dealing.
- Misappropriation of client lists.

Employer records on any medium (e.g., home computer, tablet, cell phone) are the property of the firm.

When an employee has left a firm, simple knowledge of names and existence of former clients is generally not confidential. There is also no prohibition on the use of experience or knowledge gained while with a former employer. If an agreement exists among employers (e.g., the U.S. "Protocol for Broker Recruiting") that permits brokers to take certain client information when leaving a firm, a member may act within the terms of the agreement without violating the Standard.

Members and candidates must adhere to their employers' policies concerning social media. When planning to leave an employer, members and candidates must ensure that their social media use complies with their employers' policies for notifying clients about employee separations.

Recommendations for Members

- Keep personal and professional social media accounts separate. Business-related accounts approved by the firm constitute employer assets.
- Understand and follow the employer's policies regarding competitive activities, termination of employment, whistleblowing, and whether you are considered a full- or part-time employee, or a contractor.

Recommendations for Firms

Employers should not have incentive and compensation systems that encourage unethical behavior.

- Establish codes of conduct and related procedures.

Standard IV(B) Additional Compensation Arrangements

Members and Candidates must not accept gifts, benefits, compensation, or consideration that competes with or might reasonably be expected to create a conflict of interest with their employer's interest unless they obtain written consent from all parties involved.

Compensation includes direct and indirect compensation from a client and other benefits received from third parties.

Written consent from a member's employer includes email communication.

Understand the difference between an additional compensation arrangement and a gift from a client:

- If a client offers a bonus that depends on the *future performance* of her account, this is an additional compensation arrangement that requires written consent in advance.
- If a client offers a bonus to reward a member for her account's *past performance*, this is a gift that requires disclosure to the member's employer to comply with Standard I(B) Independence and Objectivity.

Recommendations for Members

Make an immediate written report to the employer detailing any proposed compensation and services, if additional to that provided by the employer. It should disclose the nature, approximate amount, and duration of compensation.

Members and candidates who are hired to work part time should discuss any arrangements that may compete with their employer's interest at the time they are hired and abide by any limitations their employer identifies.

Standard IV(C) Responsibilities of Supervisors

Members and Candidates must make reasonable efforts to ensure that anyone subject to their supervision or authority complies with applicable laws, rules, regulations, and the Code and Standards.

Members with employees subject to her control or influence must have in-depth knowledge of the Code and Standards. Those members must make reasonable efforts to prevent employees from violating laws, rules, regulations, or the Code and Standards, as well as make reasonable efforts to detect violations.

An adequate compliance system must meet industry standards, regulatory requirements, and the requirements of the Code and Standards.

Members with supervisory responsibilities have an obligation to bring an inadequate compliance system to the attention of firm's management and recommend corrective action.

A member or candidate faced with no compliance procedures or with procedures he believes are inadequate must decline supervisory responsibility in writing until adequate procedures are adopted by the firm.

Recommendations for Members

A member should recommend that his employer adopt a code of ethics. Members should encourage employers to provide their codes of ethics to clients.

Once the compliance program is instituted, the supervisor should:

- Distribute it to the proper personnel.
- Update it as needed.
- Continually educate staff regarding procedures.
- Issue reminders as necessary.
- Require professional conduct evaluations.
- Review employee actions to monitor compliance and identify violations.
- Respond promptly to violations, investigate thoroughly, increase supervision while investigating the suspected employee, and consider changes to prevent future violations.

Recommendations for Firms

Do not confuse the code with compliance. The code is general principles in plain language. Compliance is detailed procedures to meet the code.

Compliance procedures should:

- Be clearly written.
- Be easy to understand.
- Designate a compliance officer with authority clearly defined.

- Have a system of checks and balances.
- Establish a hierarchy of supervisors.
- Outline the scope of procedures.
- Outline what conduct is permitted.
- Contain procedures for reporting violations and sanctions.

The supervisor must then:

- Disseminate the compliance program to appropriate personnel and periodically update the program.
- Continually educate and remind personnel to follow the program.
- Make professional conduct review part of employee review.
- Review employee actions to identify and then correct violations.

When a violation is detected, the supervisor must:

- Respond promptly and investigate thoroughly.
- Supervise the accused closely until the issue is resolved.
- Consider changes to minimize future violations.

Ethics education will not deter fraud, but when combined with regular compliance training, it will establish an ethical culture and alert employees to potential ethical and legal pitfalls.

Incentive compensation plans must reinforce ethical behavior by designing them to align employee incentives with client best interests (e.g., don't incent inappropriate risk taking or other actions detrimental to the client).

MODULE 32.7: GUIDANCE FOR STANDARD V



STANDARD V: INVESTMENT ANALYSIS, RECOMMENDATIONS, AND ACTIONS

Video covering this content is available online.

Standard V(A) Diligence and Reasonable Basis

Members and Candidates must:

1. Exercise diligence, independence, and thoroughness in analyzing investments, making investment recommendations, and taking investment actions.
2. Have a reasonable and adequate basis, supported by appropriate research and investigation, for any investment analysis, recommendation, or action.

The application of this Standard depends on the investment philosophy adhered to, members' and candidates' roles in the investment decision-making process, and the resources and support provided by employers. These factors dictate the degree of diligence, thoroughness of research, and the proper level of investigation required.

The level of research needed to satisfy the requirement for due diligence will differ depending on the product or service offered. A list of things that should be considered prior to making a recommendation or taking investment action includes:

- Global and national economic conditions.
- A firm's financial results and operating history, and the business cycle stage.

- Fees and historical results for a mutual fund.
- Limitations of any quantitative models used.
- A determination of whether peer group comparisons for valuation are appropriate.

Evaluate the quality of third-party research. Examples of criteria to use in judging quality are:

- Review assumptions used.
- Determine how rigorous the analysis was.
- Identify how timely the research is.
- Evaluate objectivity and independence of the recommendations.

When **using** quantitative research such as computer-based models, screens, and rankings, members need not be experts. However, they must understand the basic assumptions and risks and consider a range of input values and the resulting effects on output. When **creating** such models, a higher level of knowledge and understanding is required.

Develop standardized criteria to evaluate external advisers and subadvisers, such as considering:

- The advisers' code of ethics plus their compliance and control procedures.
- The quality of their return information and process to maintain adherence to intended strategy.

When participating in group research or decision-making, members who disagree need not dissent or disassociate from the final conclusion, as long as the conclusion was based on a reasonable and adequate basis and was independently and objectively developed.

Recommendations for Members

Members should *encourage their firms to consider* these policies and procedures supporting this Standard:

- Have a policy requiring that research reports and recommendations have a basis that can be substantiated as reasonable and adequate.
- Have detailed, written guidance for proper research, supervision, and due diligence.
- Have measurable criteria for judging the quality of research, and base analyst compensation on such criteria.
- Have written procedures that provide a minimum acceptable level of scenario testing for computer-based models and include standards for the range of scenarios, model accuracy over time, and a measure of the sensitivity of cash flows to model assumptions and inputs.
- Have a policy for evaluating outside providers of information that addresses the reasonableness and accuracy of the information provided and establishes how often the evaluations should be repeated.
- Adopt a set of standards that provides criteria for evaluating external advisers and states how often a review of external advisers will be performed.

Standard V(B) Communication with Clients and Prospective Clients

Members and Candidates must:

1. Disclose to clients and prospective clients the basic format and general principles of the investment processes they use to analyze investments, select securities, and construct portfolios and must promptly disclose any changes that might materially affect those processes.
2. Disclose to clients and prospective clients significant limitations and risks associated with the investment process.
3. Use reasonable judgment in identifying which factors are important to their investment analyses, recommendations, or actions and include those factors in communications with clients and prospective clients.
4. Distinguish between fact and opinion in the presentation of investment analyses and recommendations.

All means and types of communication with clients are covered by this Standard, not just research reports or other written communications.

Members must distinguish between opinions and facts and always include the basic characteristics of the security being analyzed in a research report. Expectations based on statistical modeling and analysis are not facts.

Members must explain to clients and prospects the investment decision-making process used.

In preparing recommendations for structured securities, allocation strategies, or any other nontraditional investment, members must communicate those risk factors specific to such investments.

Members must communicate significant changes in the risk characteristics of an investment or investment strategy.

Members must update clients regularly about any changes in the investment process, including any risks and limitations that have been newly identified.

When using projections from quantitative models and analysis, members may violate the Standard by not explaining the limitations of the model and the assumptions it uses, which provides a context for judging the uncertainty regarding the estimated investment result.

Members and candidates must inform clients about limitations inherent to an investment. Two examples of such limitations are liquidity and capacity. Liquidity refers to the ability to exit an investment readily without experiencing a significant extra cost from doing so. Capacity refers to an investment vehicle's ability to absorb additional investment without reducing the returns it is able to achieve.

Recommendations for Members

Selection of relevant factors in a report can be a judgment call so members should maintain records indicating the nature of the research, and be able to supply additional information if it is requested by the client or other users of the report.

Encourage the firm to establish a rigorous method of reviewing research work and results.

Standard V(C) Record Retention

Members and Candidates must develop and maintain appropriate records to support their investment analyses, recommendations, actions, and other investment-related communications with clients and prospective clients.

Members must maintain research records that support the reasons for the analyst's conclusions and any investment actions taken. Such records are the property of the firm. All communications with clients through any medium, including emails and text messages, are records that must be retained.

A member who changes firms must re-create the analysis documentation supporting her recommendation using publicly available information or information obtained from the company and must not rely on memory or materials created at her previous firm.

Recommendations for Members

Maintain notes and documents to support all investment communications.

Recommendations for Firms

If no regulatory standards or firm policies are in place, the Standard recommends a seven-year minimum holding period.



MODULE QUIZ 32.6, 32.7

To best evaluate your performance, enter your quiz answers online.

1. Connie Fletcher, CFA, works for a small money management firm that specializes in pension accounts. Recently, a friend asked her to act as an unpaid volunteer manager for the city's street sweep pension fund. As part of the position, the city would grant Fletcher a free parking space in front of her downtown office. Before Fletcher accepts, she should *most appropriately*:
 - A. do nothing because this is a volunteer position.
 - B. inform her current clients in writing and discuss the offer with her employer.
 - C. disclose the details of the volunteer position to her employer and obtain written permission from her employer.
2. Sarah Johnson, a portfolio manager, is offered a bonus directly by a client if Johnson meets certain performance goals. To comply with the Standard that governs additional compensation arrangements, Johnson should:
 - A. decline to accept a bonus outside of her compensation from her employer.
 - B. disclose this arrangement to her employer in writing and obtain her employer's permission.
 - C. disclose this arrangement to her employer only if she actually meets the performance goals and receives the bonus.
3. A member or candidate who has supervisory responsibility:
 - A. should place particular emphasis on enforcing investment-related compliance policies.
 - B. is responsible for instructing those to whom he has delegated authority about methods to detect and prevent violations of the law and the Code and Standards.
 - C. has complied with the Standards if she reports employee violations to upper management and provides a written warning to the employee to cease such activities.
4. Which of the following actions is a *required*, rather than *recommended*, action under the Standard regarding diligence and a reasonable basis for a firm's research recommendations?
 - A. Compensate analysts based on a measure of the quality of their research.

- B. Review the assumptions used and evaluate the objectivity of third-party research reports.
 - C. Have a policy requiring that research reports and recommendations have a basis that can be substantiated as reasonable and adequate.
5. Claire Marlin, CFA, manages an investment fund specializing in foreign currency trading. Marlin writes a report to investors based on an expected appreciation of the euro relative to other major currencies. Marlin shows the projected returns from the strategy under three favorable scenarios: if the euro appreciates less than 5%, between 5% and 10%, or more than 10%. She clearly states that these forecasts are her opinion. Has Marlin violated the Standard related to communication with clients?
- A. Yes.
 - B. No, because she disclosed the basic characteristics of the investment.
 - C. No, because she distinguished fact from opinion and discussed how the strategy may perform under a range of scenarios.
6. If regulations do not specify how long to retain the documents that support an analyst's conclusions, the Code and Standards recommend a period of at least:
- A. 5 years.
 - B. 7 years.
 - C. 10 years.

MODULE 32.8: GUIDANCE FOR STANDARD VI



STANDARD VI: CONFLICTS OF INTEREST

Video covering this content is available online.

Standard VI(A) Disclosure of Conflicts

Members and Candidates must make full and fair disclosure of all matters that could reasonably be expected to impair their independence and objectivity or interfere with respective duties to their clients, prospective clients, and employer. Members and Candidates must ensure that such disclosures are prominent, are delivered in plain language, and communicate the relevant information effectively.

Members must fully disclose to clients, prospects, and their employers all actual and potential conflicts of interest in order to protect investors and employers. These disclosures must be clearly stated.

The requirement that all potential areas of conflict be disclosed allows clients and prospects to judge motives and potential biases for themselves. Disclosure of broker-dealer market-making activities would be included here. Board service is another area of potential conflict.

The most common conflict that requires disclosure is actual ownership of stock in companies that the member recommends or that clients hold.

Another common source of conflicts of interest is a member's compensation/bonus structure, which can potentially create incentives to take actions that produce immediate gains for the member with little or no concern for longer-term returns for the client. Such conflicts must be disclosed when the member is acting in an advisory capacity and must be updated in the case of significant change in compensation structure.

Members must give their employers enough information to judge the impact of a conflict, take reasonable steps to avoid conflicts, and report them promptly if they occur.

Recommendations for Members

Any special compensation arrangements, bonus programs, commissions, performance-based fees, options on the firm's stock, and other incentives should be disclosed to clients. If the firm refuses to allow this disclosure, document the refusal and consider disassociating from the firm.

Standard VI(B) Priority of Transactions

Investment transactions for clients and employers must have priority over investment transactions in which a Member or Candidate is the beneficial owner.

Client transactions take priority over personal transactions and over transactions made on behalf of the member's firm. Personal transactions include situations where the member is a beneficial owner.

Personal transactions may be undertaken only after clients and the member's employer have had an adequate opportunity to act on a recommendation. Note that family member accounts that are client accounts should be treated just like any client account; they should not be disadvantaged.

Members must not act on information about pending trades for personal gain. The overriding considerations with respect to personal trades are that they do not disadvantage any clients.

When requested, members must fully disclose to investors their firm's personal trading policies.

Recommendations for Members

Members should encourage their firms to adopt the procedures listed in the following recommendations for firms and disclose these to clients.

Recommendations for Firms

All firms should have basic procedures in place that address conflicts created by personal investing. The following areas should be included:

- Establish limitations on employee participation in equity IPOs and systematically review such participation.
- Establish restrictions on participation in private placements. Strict limits should be placed on employee acquisition of these securities and proper supervisory procedures should be in place. Participation in these investments raises conflict of interest issues similar to those of IPOs.
- Establish blackout/restricted periods. Employees involved in investment decision-making should have blackout periods prior to trading for clients—no front running (i.e., purchase or sale of securities in advance of anticipated client or employer purchases and sales). The size of the firm and the type of security should help dictate how severe the blackout requirement should be.
- Establish reporting procedures, including duplicate trade confirmations, disclosure of personal holdings and beneficial ownership positions, and preclearance procedures.
- Disclose, upon request, the firm's policies regarding personal trading.

Standard VI(C) Referral Fees

Members and Candidates must disclose to their employer, clients, and prospective clients, as appropriate, any compensation, consideration, or benefit received from or paid to others for the recommendation of products or services.

Members must inform employers, clients, and prospects of any benefit received for referrals of customers and clients, allowing them to evaluate the full cost of the service as well as any potential partiality. All types of consideration must be disclosed.

Recommendations for Members

Members should encourage their firms to adopt clear procedures regarding compensation for referrals.

Recommendations for Firms

Have an investment professional advise the clients at least quarterly on the nature and amount of any such compensation.

MODULE 32.9: GUIDANCE FOR STANDARD VII



Video covering this content is available online.

STANDARD VII: RESPONSIBILITIES AS A CFA INSTITUTE MEMBER OR CFA CANDIDATE

Standard VII(A) Conduct as Participants in CFA Institute Programs

Members and Candidates must not engage in any conduct that compromises the reputation or integrity of CFA Institute or the CFA designation or the integrity, validity, or security of CFA Institute programs.

Members must not engage in any activity that undermines the integrity of the CFA charter. This Standard applies to conduct that includes:

- Cheating on the CFA exam or any exam.
- Revealing anything about either broad or specific topics tested, content of exam questions, or formulas required or not required on the exam.
- Not following rules and policies of the CFA Program.
- Giving confidential information on the CFA Program to candidates or the public.
- Improperly using the designation to further personal and professional goals.
- Misrepresenting information on the Professional Conduct Statement (PCS) or the CFA Institute Professional Development Program.

Members and candidates are not precluded from expressing their opinions regarding the exam program or CFA Institute but must not reveal confidential information about the CFA Program.

Candidates who violate any of the CFA exam policies (e.g., calculator, personal belongings, Candidate Pledge) have violated Standard VII(A).

Members who volunteer in the CFA Program may not solicit or reveal information about questions considered for or included on a CFA exam, about the grading process, or about

scoring of questions.

Standard VII(B) Reference to CFA Institute, the CFA Designation, and the CFA Program

When referring to CFA Institute, CFA Institute membership, the CFA designation, or candidacy in the CFA Program, Members and Candidates must not misrepresent or exaggerate the meaning or implications of membership in CFA Institute, holding the CFA designation, or candidacy in the CFA Program.

Members must not make promotional promises or guarantees tied to the CFA designation, such as over-promising individual competence or over-promising investment results in the future (i.e., higher performance, less risk, etc.).

Members must satisfy these requirements to maintain membership:

- Sign the PCS annually.
- Pay CFA Institute membership dues annually.

If they fail to do this, they are no longer active members.

Do not misrepresent or exaggerate the meaning of the CFA designation.

There is no partial CFA designation. It is acceptable to state that a candidate successfully completed the program in three years if, in fact, he did, but claiming superior ability because of this is not permitted.

Recommendations for Members

Members should be sure that their firms are aware of the proper references to a member's CFA designation or candidacy, as errors in these references are common.



MODULE QUIZ 32.8, 32.9

To best evaluate your performance, enter your quiz answers online.

1. Daniel Lyons, CFA, is an analyst who covers several stocks, including Horizon Company. Lyons's aunt owns 30,000 shares of Horizon. She informs Lyons that she has created a trust in his name into which she has placed 2,000 shares of Horizon. The trust is structured so that Lyons will not be able to sell the shares until his aunt dies, but may vote the shares. Lyons is due to update his research coverage of Horizon next week. Lyons should *most appropriately*:
 - A. update the report as usual because he is not a beneficial owner of the stock.
 - B. advise his superiors that he is no longer able to issue research recommendations on Horizon.
 - C. disclose the situation to his employer and, if then asked to prepare a report, also disclose his beneficial ownership of the shares in his report.
2. Kate Wilson, CFA, is an equity analyst. Wilson enters two transactions for her personal account. For cash flow reasons, Wilson sells 500 shares of Tibon, Inc., a stock on which she currently has a "Buy" recommendation. Wilson buys 200 shares of Hayfield Co. and the following day issues a research report on Hayfield with a "Buy" recommendation. Has Wilson violated the Code and Standards?
 - A. No.
 - B. Yes, both of her actions violate the Code and Standards.
 - C. Yes, but only one of her actions violates the Code and Standards.
3. Hern Investments provides monthly emerging market research to Baker Brokerage in exchange for prospective client referrals and European equity research from Baker. Clients and prospects of Hern are not made aware of the agreement, but clients

unanimously rave about the high quality of the research provided by Baker. As a result of the research, many clients with non-discretionary accounts have earned substantial returns on their portfolios. Managers at Hern have also used the research to earn outstanding returns for the firm's discretionary accounts. Hern has *most likely*:

- A. not violated the Code and Standards.
 - B. violated the Code and Standards by using third-party research in discretionary accounts.
 - C. violated the Code and Standards by failing to disclose the referral agreement with Baker.
4. After writing the Level III CFA exam, Cynthia White goes to internet discussion site *CFA Haven* to express her frustration. White writes, "CFA Institute is not doing a competent job of evaluating candidates because none of the questions in the June exam touched on Alternative Investments." White *most likely* violated the Standard related to conduct as a candidate in the CFA program by:
- A. publicly disputing CFA Institute policies and procedures.
 - B. disclosing subject matter covered or not covered on a CFA exam.
 - C. participating in an internet forum that is directed toward CFA Program participants.
5. After passing all three levels of the CFA exams on her first attempts and being awarded her CFA charter, Paula Osgood is promoting her new money management firm by issuing an advertisement. Which of these statements would *most likely* violate the Standard related to use of the CFA designation?
- A. "To earn the right to use the CFA designation, Paula passed three exams covering ethics, financial statement analysis, asset valuation, and portfolio management."
 - B. "Paula passed three 6-hour exams on her first attempts and is a member of her local investment analyst society."
 - C. "Because of her extensive training, Paula will be able to achieve better investment results than managers who have not been awarded the CFA designation."

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 31.1

1. **C** The process for enforcing the Code and Standards does not include suspending a member or candidate while an inquiry is in progress. If CFA Institute Professional Conduct staff receive information that prompts an inquiry, the staff may request information from the member or candidate, interview parties who initiated a complaint, or review relevant records and documents. (LOS 31.a)
2. **A** One of the six components of the Code of Ethics requires members and candidates to "maintain and improve their professional competence and strive to maintain and improve the competence of other investment professionals." The other two answer choices are required by the Standards of Professional Conduct but are not components of the Code of Ethics. (LOS 31.b)
3. **C** The Standard related to additional compensation arrangements is a subsection of Standard IV Duties to Employers. (LOS 31.b)

Module Quiz 32.1, 32.2, 32.3

1. **C** To comply with Standard I(A) Knowledge of the Law, a member must always abide by the strictest applicable law, regulation, or standard. (Module 32.1, LOS 32.a,

32.b)

2. **A** Gifts from clients are acceptable under Standard I(B) Independence and Objectivity, but the Standard requires members and candidates to disclose such gifts to their employers. Standard I(B) allows issuer-paid research as long as the analysis is thorough, independent, unbiased, and has a reasonable and adequate basis for its conclusions, and the compensation from the issuer is disclosed. Members and candidates should consider the potential for conflicts of interest inherent in credit ratings and may need to do independent research to evaluate the soundness of these ratings. (Module 32.1, LOS 32.a, 32.b)
3. **C** According to Standard I(C) Misrepresentation, members and candidates must cite the sources of the information they use in their analysis, unless the information is factual data (as opposed to analysis or opinion) from a recognized financial or statistical reporting service. The U.S. Treasury is one example of a recognized source of factual data. (Module 32.2, LOS 32.a, 32.b)
4. **B** Failing to act when required by one's professional obligations, such as neglecting to perform due diligence related to an investment recommendation, violates Standard I(D) Misconduct. Acts a member commits outside his professional capacity are misconduct if they reflect poorly on the member or candidate's honesty, integrity, or competence (e.g., theft or fraud). Violations of the law that do not reflect on the member or candidate's honesty, integrity, or competence (e.g., an act related to civil disobedience or minor civil offenses) are not necessarily regarded as misconduct. (Module 32.2, LOS 32.a, 32.b)
5. **A** The statement from the CFO about the current quarter's earnings is material nonpublic information. Ingus violated Standard II(A) Material Nonpublic Information by acting or causing others to act on it. (Module 32.3, LOS 32.a, 32.b)
6. **B** The intent of Green Brothers' actions is to manipulate the appearance of market liquidity in order to attract investment to its own funds. The increased trading activity was not based on market fundamentals or an actual trading strategy to benefit investors. It was merely an attempt to mislead market participants in order to increase assets under Green Brothers' management. The action violates Standard II(B) Market Manipulation. (Module 32.3, LOS 32.a, 32.b)

Module Quiz 32.4, 32.5

1. **C** Standard III(A) Loyalty, Prudence, and Care specifies that for the manager of a pension or trust, the duty of loyalty is owed to the beneficiaries, not to the individuals who hired the manager. (Module 32.4, LOS 32.a, 32.b)
2. **B** The firm must give its clients an opportunity to act on recommendation changes. Firms can offer different levels of service to clients as long as this is disclosed to all clients. The largest institutional clients would likely be paying higher fees for a greater level of service. The portfolio manager's brother's account should be treated the same as any other client account. (Module 32.4, LOS 32.a, 32.b)
3. **A** According to Standard III(C) Suitability, a member or candidate who is in an advisory relationship with a client is responsible for analyzing the suitability of an investment for the client before taking investment action or making a recommendation. If a member or candidate believes an unsolicited trade is

unsuitable for a client, the appropriate action is to discuss the trade with the client. The adviser may follow her firm's policies for obtaining client approval if the requested trade would not affect the risk and return of the client's portfolio materially. If the trade would have a material effect, the adviser should discuss with the client whether the IPS needs to be updated. When managing a fund to an index or stated mandate, the manager is responsible for ensuring that potential investments are consistent with the fund's mandate. Suitability for individuals would be a concern for an adviser who recommends the fund to clients, but not for the manager of the fund. (Module 32.5, LOS 32.a, 32.b)

4. **C** Recommendations stated in Standard III(D) Performance Presentation include considering the sophistication and knowledge of the audience when presenting performance data. Other recommendations are to include terminated accounts in past performance history; to present the performance of a composite as a weighted average of the performance of similar portfolios, rather than using a single representative account; and to maintain the records and data that were used to calculate performance. (Module 32.5, LOS 32.a, 32.b)
5. **B** Members and candidates are required to cooperate with PCP investigations into their own conduct and encouraged to cooperate with PCP investigations into the conduct of others. Sharing confidential information with the PCP is not a violation of Standard III(E) Preservation of Confidentiality. Any client information shared with the PCP will be kept in strict confidence. Standard III(E) states that members and candidates are required to maintain confidentiality of client records even after the end of the client relationship. (Module 32.5, LOS 32.a, 32.b)

Module Quiz 32.6, 32.7

1. **C** According to Standard IV(A) Loyalty, members and candidates are expected to act for the benefit of their employer and not deprive the employer of their skills. Fletcher is performing work similar to the services that her employer provides. Although the position is a volunteer position, Fletcher will receive compensation in the form of a free parking space. In light of the circumstances, Fletcher must disclose the details of the position to her employer and get written permission before accepting the volunteer position. (Module 32.6, LOS 32.a, 32.b)
2. **B** Johnson should disclose her additional compensation arrangement in writing to her employer and obtain her employer's written consent before accepting this offer, in accordance with Standard IV(B) Additional Compensation Arrangements. (Module 32.6, LOS 32.a, 32.b)
3. **B** Members or candidates may delegate supervisory duties to subordinates but remain responsible for instructing and supervising them. Reporting the violation and warning the employee are not sufficient to comply with Standard IV(C) Responsibilities of Supervisors. The supervisor must also take steps to prevent further violations while she conducts an investigation, such as limiting the employee's activity or increasing her monitoring of the employee. Supervisors should enforce investment-related and non-investment related policies equally. (Module 32.6, LOS 32.a, 32.b)
4. **B** Standard V(A) Diligence and Reasonable Basis requires analysts who use third-party research to review its assumptions and evaluate the independence and

objectivity of the research. The other choices are recommended procedures for compliance with the Standard. (Module 32.7, LOS 32.a, 32.b)

5. **A** Standard V(B) Communication with Clients and Prospective Clients requires that members and candidates communicate the risk associated with the investment strategy used and how the strategy is expected to perform in a range of scenarios. Marlin should have also discussed how her strategy would perform if the euro depreciates instead of appreciating as she expects. (Module 32.7, LOS 32.a, 32.b)
6. **B** When no other regulatory guidance applies, Standard V(C) Record Retention recommends that records be maintained for a minimum of seven years. (Module 32.7, LOS 32.a, 32.b)

Module Quiz 32.8, 32.9

1. **C** Even though the shares are held in trust, Lyons is considered a beneficial owner under Standard VI(A) Disclosure of Conflicts because he has a pecuniary interest in the shares and because he has the power to vote the shares. Lyons is obligated to inform his employer of the potential conflict. If Lyons's employer permits him to continue issuing investment recommendations on the company, Lyons must disclose the existence of a potential conflict in his reports. (Module 32.8, LOS 32.a, 32.b)
2. **C** Only one of these transactions is a violation. Standard VI(B) Priority of Transactions requires members and candidates to give clients an adequate opportunity to act on a recommendation before trading for accounts in which the member or candidate has a beneficial ownership interest. Members and candidates may trade for their own accounts as long as they do not disadvantage clients, benefit personally from client trades, or violate any regulations that apply. The Standard does not prohibit members and candidates from entering personal transactions that are contrary to what their firms are recommending for clients, as long as the transaction does not violate any of these criteria. (Module 32.8, LOS 32.a, 32.b)
3. **C** According to Standard VI(C) Referral Fees, Hern must disclose the referral arrangement between itself and Baker so that potential clients can judge the true cost of Hern's services and assess whether there is any partiality inherent in the recommendation of services. (Module 32.8, LOS 32.a, 32.b)
4. **B** Standard VII(A) Conduct as Participants in CFA Institute Programs prohibits candidates from revealing which portions of the Candidate Body of Knowledge were or were not covered on an exam. Members and candidates are free to disagree with the policies, procedures, or positions taken by the CFA Institute. The Standard does not prohibit participating in CFA Program-related internet blogs, forums, or social networks. (Module 32.9, LOS 32.a, 32.b)
5. **C** Standard VII(B) Reference to CFA Institute, the CFA designation, and the CFA Program prohibits members and candidates from implying superior performance as a result of being a CFA charterholder. Concise factual descriptions of the requirements to obtain the CFA charter are acceptable. Osgood's statement that she passed the exams on her first attempts is acceptable because it states a fact. (Module 32.9, LOS 32.a, 32.b)

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The following is a review of the Ethical and Professional Standards (1) principles designed to address the learning outcome statements set forth by CFA Institute. Cross-Reference to CFA Institute Assigned Reading #33.

READING 33: APPLICATION OF THE CODE AND STANDARDS: LEVEL III

Study Session 15

EXAM FOCUS

The cases are not intended to teach new material, but to provide additional examples of application of the Standards. There are four cases and within them are included 6, 9, 15, and 10 multiple-choice questions (40 total). Prior to reviewing the summary here, you should read each of the cases contained in the Level III curriculum readings and answer the multiple-choice questions. All 40 multiple-choice questions contain valuable explanations for the correct answer as well as explanations for the incorrect answers.

MODULE 33.1: CASES



LOS 33.a: Evaluate practices, policies, and conduct relative to the CFA Institute Code of Ethics and Standards of Professional Conduct.

Video covering this content is available online.

LOS 33.b: Explain how the practices, policies, or conduct does or does not violate the CFA Institute Code of Ethics and Standards of Professional Conduct.

CFA® Program Curriculum, Volume 6, page 193

Case Outline: Sovereign Investment Corporation

Victoria Adebayo has recently returned to her home country to become the chief financial officer of Sovereign Investment Corporation (SIC). Before this new role, Adebayo had worked for a U.K. hedge fund, HFI.

The objectives of SIC are to develop the country's economy by financing local projects that generate a positive return on investment and attract international investors. A secondary objective is to develop the country's capital markets. SIC controls an investment company, National Investments (NI), which offers domestically listed stock to international investors in return for overseas finance.

A regional governor, who is also the leader of the country's main opposition party, is lobbying for a major investment in a mining project in a remote area. The project will bring development benefits to the region and a positive ROI but requires significant capital investment. The current government's minister of finance advocates for a smaller urban infrastructure project. This project requires less initial investment than the mining project and will create hundreds of jobs for the supporters of the incumbent government. The minister of finance was involved in the hiring of Adebayo.

Adebayo believes that undertaking both projects simultaneously would place too great a strain on NI's resources. She quickly decides to invest in the smaller infrastructure project first and then later to invest in the larger mining project. Adebayo believes that this project sequence would have the benefits of supporting the current governmental regime and that the opposition party may have gained power by the time the mining project is undertaken. She also believes that the infrastructure project will generate a higher return in the short run, which will be beneficial for attracting investors, which in turn will help to finance the mining project.

DISCUSSION: DILIGENCE AND REASONABLE BASIS, SUITABILITY

Standard V(A): Diligence and Reasonable Basis requires members making investment decisions to have a reasonable and adequate basis to support their decisions. This includes exercising independence, thoroughness, and diligence. Adebayo has violated this standard as she acted quickly based on political considerations rather than proper financial analysis. Additionally, while she faces political pressure, she must remain independent and avoid conflicts of interest.

The political pressure causing a conflict of interest could have been mitigated if NI had developed a strong governance framework for investment decisions. This framework should be focused on allowing staff to perform sufficient due diligence and to make decisions free from bias. Simple disclosure of the conflict of interest per Standard VI(A): Disclosure of Conflicts would be insufficient to avoid a violation because it does not remove the requirement to make objective, independent investment decisions. The case also considers whether Adebayo could discharge her duties by requiring investment decisions to be authorized by a higher governmental authority. In this case, this would lead to greater political bias, not less, and still result in decisions lacking objectivity, which would still breach Standard V(A).

Standard III(C): Suitability requires members to make investment decisions that are consistent with a funds mandate. Adebayo has a dual mandate to invest in projects that will boost her country's economic development while generating positive ROI. Adebayo has not breached this standard as both projects considered are consistent with this mandate.

Anthony Corrales, a previous colleague of Adebayo at HFI, contacts Adebayo about a potential investment in NI. Corrales requests information on NI's financial condition and both current and future projects. Adebayo provides him with the standard investor disclosure package.

Corrales decides that NI is an excellent investment and complies with HFI's mandate. To convince his partners at the hedge fund of the strength of his convictions, he immediately invests 25% of his personal portfolio in NI. After several days of deliberation, the partners at HFI decide to invest in NI. At the same time, the HFI partners ask for assurance that NI will maintain its aggressive strategy, targeting high returns. Adebayo, in response, assures HFI that NI is committed to generating a high ROI for investors. Once HFI's investment is publicly announced, the shares of NI rise on the exchange. Corrales requests regular updates on NI's performance, funding plans, and financial status directly from Adebayo.

DISCUSSION: SUITABILITY, COMMUNICATION WITH CLIENTS AND PROSPECTIVE CLIENTS, FAIR DEALING

Standard III(C): Suitability requires members to make investment decisions that are consistent with a funds mandate. Adebayo violates the standard by not disclosing that NI has a dual mandate to promote economic development and positive ROI. Investors must be made aware that investment returns are not the only factor driving NI's investment decisions.

Sharing information on NI's financial position and projects is not a violation of standards, providing it is not confidential or material non-public information. Transparency is an important element of Standard V(B): Communication with Clients and Prospective Clients. Providing this information to potential investors is both reasonable and appropriate to support their due diligence. By providing the standard investor disclosure package, Adebayo is not showing any favoritism to HFI and therefore has not violated Standard III(B): Fair Dealing.

The request for regular updates directly from Adebayo is not a violation of Standard III(B): Fair Dealing, provided that all NI investors are fairly treated and are provided with the same information. No evidence is included in the case study that suggests the information supplied to Corrales by Adebayo is not provided to all NI investors.

DISCUSSION: PRIORITY OF TRANSACTIONS, CONFLICTS OF INTEREST

Standard VI(B): Priority of Transactions requires that investment transactions for clients and employers must have priority over transactions where a member is a beneficial owner. Corrales purchases his stake in NI before his employer. Trading for Corrales's personal account in advance of trading for clients or an employer is referred to as front running and is not only a violation of the standard but also illegal in many jurisdictions and, therefore, may also violate Standard I(A): Knowledge of the Law. Corrales's position in NI benefits directly from the price appreciation after the announcement of HFI's investment. Regardless of whether HFI is disadvantaged by Corrales's personal investment, Corrales should wait until after his employer (or clients) has traded before trading for his account.

Investing in the same stock as an employer or client does not automatically create a conflict of interest per Standard VI(A): Conflicts of Interest, provided that the ownership is disclosed. Reportable situations include conflicts that may interfere with the provision of unbiased investment advice or cause the employee not to act in the employer's best interest. In this scenario, it is implied that Corrales's employer is aware of his investment.

Corrales recruits overseas subadvisors to identify private market investments for HFI and to aid with local laws and regulations. The subadvisors are paid directly from the fund's assets and have connections with high-ranked local government officials but have minimal or no experience as financial advisors. The subadvisors make payments on behalf of the fund to cover "deal fees" aimed at gaining government support for investments. The subadvisors are not required to detail their actions or list what specific expenses the fees cover. The fees are reported as operating expenses in HFI's accounts.

DISCUSSION: SUBADVISORS

The use of subadvisors to provide specialist expertise outside of the scope of a member's experience or ability does not automatically violate Standard V(A): Diligence and Reasonable Basis. Corrales has breached the standard because members must review subadvisors as diligently as they review funds or securities, including their knowledge and expertise. In this case, the subadvisors have limited advisory experience. Additionally, members who are directly involved with the use of external advisors need to ensure that their firm has standardized criteria for reviewing external advisors.

Corrales's reporting of the "deal fees" as legitimate operating expenses breaches Standard I(C): Misrepresentation. The true nature of the payments appears to be to bribe overseas government officials. Additional suspicion is raised by the lack of supporting documentation. While subadvisors can be legitimately used to aid the investment process, the subadvisors' limited advisory experience would indicate that this is not their primary purpose. Bribery of government officials is likely to breach local anti-bribery laws, resulting in the violation of Standard I(A): Knowledge of the Law.

Ani Mehrotra is hired by Adebayo to promote NI globally to potential investors. Adebayo discloses to Mehrotra that she has not paid her CFA Institute membership dues but

continues to use the designation on her business card. When questioned on this, Adebayo claims that the use of the designation is like a degree from a university and cannot be taken away. When asked by a potential client, in a meeting at which Mehrotra is present, whether all of NI's senior investment professionals are CFA charterholders, she claims that they are, which is not contradicted by Mehrotra.

Mehrotra leads an exam prep class offered by his local society for local candidates. After the exam, his students describe their experience of the examination experience, including the relative difficulty of the exam and areas of the syllabus that were not tested. Mehrotra asks his students for their opinion on the most difficult exam questions. Mehrotra aims to use the feedback to ensure future candidates taking his course are better prepared.

DISCUSSION: REFERENCE TO THE CFA DESIGNATION AND CONDUCT OF PARTICIPANTS IN CFA INSTITUTE PROGRAMS

Adebayo has violated Standard VII(B): Reference to the CFA Institute, CFA Designation, and the CFA Program. Adebayo is incorrect in that the designation is like a university degree. To use the designation, members must satisfy the CFA Institute membership requirements, which include both annual payment dues and submission of the Professional Conduct Statement. Adebayo may refer to herself as a previous CFA Institute member but must not use the designation or present herself as a charterholder until her membership is reactivated.

Mehrotra violates Standard I(A): Knowledge of the Law by remaining silent while Adebayo claims all senior investment professionals at NI hold the charter. This standard makes members responsible for violations in which they knowingly participate or assist. A member who believes an activity is either unethical or unlawful must dissociate from the violations of others. Inaction is not sufficient to comply with the standard. To comply with the standard, Mehrotra should discuss the issue with Adebayo and ask her to correct the statement made to the client. If Adebayo refuses, Mehrotra should raise the issue with SIC's compliance department and dissociate by not attending any new sales meetings with Adebayo.

Mehrotra breaches Standard VII(A): Conduct as Participants in CFA Institute Programs, which prevents candidates from engaging in or members soliciting any conduct that compromises the integrity of CFA Institute Programs, including discussing the specifics of the examination. By soliciting information on specific questions, Mehrotra violates the standard. If Mehrotra informs future candidates of specific questions tested in the past or in areas that were not tested, this would also be a violation even if Mehrotra had not solicited the information. Discussing how candidates perceived the difficulty of the examination would not violate the standard as this is non-specific subjective information.

Case Outline: Marcia Lopez

During the same month, Marcia Lopez obtained a master's degree in finance, wrote the Level I CFA exam, and accepted a position in the wealth management department of a large financial institution, BankGlobal. Two months later, upon passing the Level I exam, she begins working at the firm. Her supervisor, David Hockett, CFA, is reviewing Lopez's business card request that states the following: "CFA, Level I." He adds that she should also include the year in which she expects to be granted the CFA charter.

DISCUSSION: REFERENCING PARTICIPATION IN THE CFA PROGRAM

According to Standard VII(B) Reference to CFA Institute, the CFA Designation, and the CFA Program, Lopez must be explicit that she is a CFA candidate and may not suggest that she has a partial designation. Furthermore, stating an expected date for receipt of the CFA charter is not acceptable because it is not possible to verify uncertain future events.

Hockett then has Lopez meet other members of his wealth management team. Hockett's team has a very strong rapport with BankGlobal's research department. Due to technical problems with the firm's computer systems, there is about a 45-minute delay between the time when the research analysts submit their changes in recommendations and the time when they are uploaded to BankGlobal's website and sent to their clients. As a courtesy to Hockett's team, the analysts usually inform them verbally about their changes prior to the information going live on the website. Right after they hear the information, the team uses that information to ensure that their discretionary accounts are not negatively impacted when the changes are made public.

DISCUSSION: FAIR DEALING

According to Standard III(B) Fair Dealing, Hockett's team members must not use the information verbally obtained from the analysts for the benefit of their discretionary clients' accounts until the information has been made public. By doing so, they are not treating all of the firm's clients in a fair and impartial manner. In fact, they are giving preferential treatment to the discretionary accounts and in the process, clients who have nondiscretionary accounts may be unfairly disadvantaged.

Although the information may be perceived by the general public to be material, the information was created by external analysts, who are assumed not to be in possession of material nonpublic information (unless otherwise stated). Therefore, there is no violation of Standard II(A) Material Nonpublic Information.

With a few months of work experience, Lopez is given the opportunity to meet with potential new clients, Marty and Mary Kochanski. The Kochanskis were referred to Hockett by Gary White, a business banker at BankGlobal. The only information that White provided to Hockett about the Kochanskis was that they were both 61 years old, retired, and wanted to invest the \$7.4 million of proceeds from the sale of Mary's business. Based solely on the information provided by White, Hockett tells Lopez to devise a "balanced portfolio" investment for the Kochanskis.

In preparing the portfolio, Lopez selects two equity and two fixed income funds. For those four funds, she makes a few simplifying assumptions in presenting the returns. For example, she averages the funds' five-year annualized rates of return and excludes terminated accounts. As well, she provides comparative numbers with five-year annualized rates of return for a "composite portfolio" that includes discretionary accounts of similar size to the Kochanskis' and that have a balanced objective.

DISCUSSION: KNOW YOUR CLIENT AND PERFORMANCE PRESENTATION

Hockett and Lopez did not perform sufficient due diligence on their prospective clients *prior* to recommending the balanced portfolio. That is in violation of Standard III(C) Suitability. They should have taken the time to meet with the clients to find out relevant information such as their risk and return objectives and their investment experience prior to recommending any investments.

Lopez excluded the performance of terminated accounts, which violates Standard III(D) Performance Presentation. The requirement to include terminated accounts is meant to prevent an upward bias in reporting returns due to survivorship bias.

The Kochanskis invest their \$7.4 million of funds in a balanced portfolio with BankGlobal. In a conversation with White, Hockett discusses his incentive and quarterly bonus program. Hockett acknowledges that the vast majority of his clients have low risk tolerances and have a long-term approach to investing. However, he has been earning excess returns in those accounts in the short-term by investing portions of their

portfolios in high beta stocks. Because those stocks have the appearance of low risk, Hockett does not need to amend the client investment policy statement.

Lopez sends a message to her close friends that she has taken on the Kochanskis as new clients.

DISCUSSION: SUITABILITY AND CONFIDENTIALITY

Hockett violated Standard III(C) Suitability because he has placed his client funds in unsuitable investments (e.g. high beta stocks with a short-term focus) that are inconsistent with their investment objectives (e.g. low risk tolerance with a long-term focus). Clearly, high beta stocks are not low risk. Changing the investment strategy requires the input and approval of the clients, which was not obtained by Hockett.

Lopez violated Standard III(E) Preservation of Confidentiality by revealing their identity as clients to her friends. All information about former, current, or prospective clients must be kept confidential and remain within the firm.

Case Outline: Castle Biotechnology

Castle Biotechnology (Castle) operates a biopharmaceutical company and controls nine other subsidiary biopharmaceutical companies. Last year, Castle acquired a controlling interest in Global Capital Management (Global), an investment banking and asset management firm. Two of Castle's subsidiary companies, Street Pharmaceuticals (STRX) and Appaloosa Biotech (APBX) went public recently although Castle maintains voting control of each of them.

David Plume, PhD, CFA, is a biopharmaceutical analyst for Global. Previously, he was a biochemist at Castle for many years and during that time, he developed close relationships with both the president and the chief executive. Plume's remuneration at Global includes an annual bonus of 0.10% of the gross proceeds raised for each initial public offering (IPO) with which he is involved.

Shortly after SRTX's and APBX's respective IPOs, Plume wrote highly favorable research reports on both companies and rated them both a *buy*. Several months after the APBX report was issued, he sold short APBX and did not disclose the transaction given that he had never been a beneficial owner of APBX.

In his research reports, Plume does not disclose that Castle controls Global, STRX, and APBX since that information is already disclosed in STRX's and APBX's offering prospectuses. He also does not disclose that he owns Class A preferred shares of Castle and options on Castle's common stock, both of which he acquired while employed at Castle.

DISCUSSION: CONFLICTS OF INTEREST AND PROFESSIONALISM

Plume violated Standard VI(A) Disclosure of Conflicts by not disclosing in his research report that Global is controlled by Castle. That fact would have been important in allowing the users of the report to assess the conflict of interest and determine how it may have impacted Plume's independence and objectivity in writing his research reports. The risk of impairment of his independence and objectivity was high given that he developed close relationships with two key members of Castle's management team.

Because of his ownership of preferred shares of Castle and options on Castle's common stock, Plume should have disclosed that Global is controlled by Castle. By not doing so, he violated Standard VI(A). Additionally, because he owns shares of Castle, he has a material beneficial

ownership interest in both STRX and APBX (and he issued 'buy' recommendations on them). That is a conflict of interest that he should have disclosed.

Plume's nondisclosure in his research report of his annual bonus is a violation of Standard I(B) Professionalism, Independence and Objectivity because he is being compensated based on a deal amount. Standard I(B) states, "Compensation arrangements should not link analyst remuneration directly to investment banking assignments in which the analysts may participate as a team member." Additionally, the bonus is calculated on the gross proceeds of the IPO, which makes it an additional compensation arrangement. As a result, the nondisclosure would be a violation of Standard VI(A).

Plume's short sale transaction of APBX violates Standard VI(A) because of the conflict of interest arising when he had previously issued a 'buy' recommendation. That conflict should have been disclosed.

Sandra Benning, CFA, was previously employed as an investment adviser at Kodiak Securities (Kodiak) and resigned from there recently to join Global in the same role. Immediately upon resignation from Kodiak, she used social media and personal email to encourage her clients to move with her to Global. Global paid Benning a substantial signing bonus calculated on the percentage of her clients from Kodiak who transferred their accounts to Global. Global's annual bonus for its investment advisers is calculated on the amount of their clients' IPO participation. Neither bonus was disclosed to Benning's clients.

DISCUSSION: DUTIES TO EMPLOYERS AND CONFLICTS OF INTEREST

Because there was not a noncompete agreement in place with Kodiak and her solicitation of her clients from Kodiak occurred after she resigned, Benning's actions do not constitute a violation of Standard IV(A) Loyalty.

Benning's signing bonus was based on the percentage of her former clients who switched over to Global. Clearly there is an actual or potential conflict of interest that should have been disclosed to her former clients. Knowing that Benning would be compensated for the percentage of clients switched over would have allowed her former clients to recognize that her independence and objectivity may be impaired. In short, it would have allowed them to make a more informed decision on whether they should switch their accounts over or not. Because she did not disclose the signing bonus to her former clients, Benning violated Standard VI(A) Disclosure of Conflicts.

Benning's annual bonus that is based on the level of her clients' participation in IPOs results in a conflict of interest because it brings into question whether she is recommending the IPOs because they are suitable for her clients or because she is trying to maximize her bonus. As a result, she was required to disclose the annual bonus to her former clients and by not doing so, Benning once again violated Standard VI(A).

Global is underwriting an upcoming IPO for Frontier Therapeutics (FTSX), one of the companies controlled by Castle. Global's IPO allocation policy is to allocate IPO shares only to those institutional clients who indicate they will buy more shares on the first day of trading.

DISCUSSION: Tie-In Agreement

A tie-in agreement exists when an underwriter requires the investing client to purchase additional shares of the new issue in the secondary market in exchange for the ability to purchase the IPO shares. The effect is to artificially increase demand and increase the share price on day one of trading. That is in direct violation of Standard II(B) Market Manipulation. It is also in violation of Standard III(B) Fair Dealing because Benning is not treating all her institutional clients fairly when she is only allocating IPO shares to those clients who will buy more shares once trading commences.

Benning's new client, Claris Deacon, makes a series of visits to Benning's office to open a series of accounts, including a brokerage account and a checking account. As well, Deacon signed an Option Account Application and Agreement on her final visit but subsequent to that visit, Benning amended some of the wording in the agreement regarding Deacon's suitability. Benning decides to initial the agreement for Deacon to save Deacon the time from having to make another visit.

Later Deacon contacts Benning to advise her that she cannot transfer funds between her brokerage and checking accounts. Benning investigates and determines that the links between the accounts were not activated. She calls Deacon and obtains her verbal authorization to sign the Account Linking form on her behalf.

Benning subsequently receives a call from Deacon's husband, Steve. He advises that his wife is having major health problems and requests that Benning redeem some mutual fund shares and transfer the proceeds over immediately. In response, Benning processes several redemptions and withdrawals from Deacon's account at Steve's request in the coming weeks.

DISCUSSION: PROFESSIONALISM AND LOYALTY, PRUDENCE, AND CARE

Changing the language and initialing the form on behalf of Deacon is a violation of Standard I(D) Misconduct in that there may have been elements of dishonesty or deceit in doing so. Although there was verbal approval from Deacon, it would have been necessary for her to provide written authorization.

Benning is also in violation of Standard III(A) Loyalty, Prudence, and Care when she redeemed shares and processed withdrawals in Deacon's account without Deacon's written consent. Benning did not demonstrate loyalty, prudence, or care with those actions. Deacon's husband was not listed as a joint account holder on any of the accounts and was not given any prior written authorization by Deacon to transact in any of her accounts.

Case Outline: Lionsgate Limited and Bank of Australia

Lionsgate Limited (LL) is a fund manager and its strongest fund is an equity mutual fund, the Victory Capital Fund (VCF) that is managed by Tony Hill and his group of analysts. In LL's marketing materials, statements include VCF being the best performing Australian equity fund for a 10-year period, earning returns of 28.7% gross of fees over the most recent 1-year period, and 13.2% annually since inception in 2005.

Hill often appears on talk shows to discuss the VCF and in lieu of any financial remuneration, the show sponsors offer him nonmonetary items such as wine, retail gift cards, and travel discounts. Hill does not disclose the receipt of those items to LL.

Nicole Martin, CFA, is an analyst on Hill's team. When Hill became less involved with VCF, Martin picked up more of the duties associated with VCF including security selection and investment decision-making. Over the past three years, VCF's performance was attributable only to Martin and the other analysts. However, Martin and Hill maintain publicly that he is the one in charge of all investment decision marking for the VCL.

During LL's most recent quarterly board meeting, Hill announced his resignation to the board and informed them that he will be establishing his own fund management firm. To minimize the negative impacts of his departure, the board requests that he not disclose his departure to anyone for the next two weeks while they attempt to search for his replacement. Hill promises not to do so. After the board meeting, Hill has a private

meeting with his team to announce his departure and establishment of his own firm. He asks his team to join him and 10 of his 16 analysts agree to do so. To those 10 analysts, he advises that they will have to use their time after work and on weekends to lease office space and register with the government authorities. Furthermore, he advises them that because there was no noncompetition agreement signed with LL, they are able to begin soliciting their clients from LL as soon as the new firm commences operations.

DISCUSSION: DUTIES TO CLIENTS, COMMUNICATION WITH CLIENTS AND PROSPECTIVE CLIENTS, DUTIES TO EMPLOYERS

Hill's statements about the performance of VCF are statements of fact and not opinions so there is no violation of Standard III(D) Performance Presentation. He is specific in stating that the performance is gross of fees or "pre-fees" and that complies with Standard III(D).

Hill's appearance on the talk shows is meant presumably to promote the interests of the VCF (and LL) so there is no conflict of interest with VCF and LL. Therefore, the acceptance of the nonmonetary items is not a violation of Standard IV(B) Additional Compensation Arrangements.

Both Martin and Hill violated Standard V(B)1: Communication with Clients and Prospective Clients because they did not disclose that Hill no longer has primary responsibility for the fund's performance. In other words, their public statement about Hill is false. The fact that Hill still worked at LL is not sufficient on its own.

Hill violated Standard IV(A) Loyalty. The board (and indirectly his employer) requested a two-week period of confidentiality on his pending departure and after promising such confidentiality, he immediately reneged on his promise when he met with his team to announce his departure from LL. Had Hill not made the promise to the board, it would have been acceptable for him to announce his departure to his team without violating Standard IV(A).

Simply asking his team to move with him away from LL is not a violation of Standard IV(A). The team members are free to make their own decisions; there is no breach of loyalty to LL by Hill.

Leasing space and registering with the government authorities prior to resigning from LL is not a violation of Standard IV(A) or Standard III(A) Loyalty, Prudence, and Care so long as the activities are performed outside of work hours (e.g. weekends and evenings).

In the absence of a noncompete agreement with LL, Hill does not violate Standard IV(A) when telling his team to solicit their former clients with LL only after his team ceases employment with LL.

Rob Portman, CFA, works at LL as a salesperson for the VCF and has set up a major event for prospective clients in hopes of meeting his annual sales targets. To clients and prospective clients he emphasizes Hill's stock-picking skills and Hill's role as the VCF's primary investment decision maker. Hill is always invited to important client meetings and when necessary, clients are directed to Martin (who is referred to as Hill's "assistant"). Portman speaks with LL's chief investment officer (CIO) to inquire about rumors regarding Hill and members of his team departing LL. The CIO advises him to disregard the rumors. However, Portman checks "Sky News Business Channel" and discovers that the CIO and some board members recently sold their shares in LL and in the VCF. In response, Portman does the same thing.

DISCUSSION: MISREPRESENTATION AND INTEGRITY OF CAPITAL MARKETS

Portman has misrepresented the VCF by inviting Hill to important client meetings and making his clients believe that Hill is in charge of stock selection and investment decision-making for the VCF. In fact, those activities are performed by Martin and the other team members. Furthermore, with clients he refers to Martin as Hill's "assistant". Therefore, Portman is in violation of Standard I(C) Misrepresentation.

LL's CIO and the board members sold their shares prior to the public announcement of Hill's departure. Hill's departure would be considered material nonpublic information in that reasonable investors would want to know such information prior to making an investment decision. By acting on the information, they violated Standard II(A) Material Nonpublic Information.

Portman does not have material nonpublic information about Hill's departure from LL and the VCF. Portman merely used a public source of information to determine the sale of the shares by the CIO and the board members. Therefore, Portman did not use material nonpublic information and did not violate Standard II(A).

LL is owned in part by Bank of Australia (BOA). Kirk Graeme, CFA, works as a financial adviser in BOA's wealth management group and is well-regarded for his work on new issues. He receives additional compensation for new issue purchases that are paid by the issuer. BOA has a capital markets group and the group is a member of the syndicate for the new issues purchased by Graeme. BOA's policy does not require disclosure of commissions on new issues since clients already receive such information in their prospectuses when they purchase new issues. However, Graeme discloses his new issue commissions to those clients who request it. In 2016 and 2017, Graeme and BOA earned commissions of \$477,000 and \$1,908,900, respectively, on the same transactions.

DISCUSSION: DISCLOSURE OF CONFLICTS

Graeme violated Standard VI(A) Disclosure of Conflicts by only informing those clients who asked about his commissions earned on new issues. In fact, Standard VI(A) requires him to advise all of his clients about the commissions in order for them to have all the information needed to determine the objectivity of the investment advice or actions taken by him on their behalf. It does not matter that the information is already included in the prospectuses of the new issues. The size of the commissions earned by Graeme is reasonably large (about 25% of the amount earned by BOA) so it is large enough to potentially impair his objectivity.

Graeme opened a \$250,000 joint account for Melissa and Rodney Delaney. The Delaneys mentioned that the account comprised most of their investable assets. They further stated that they had a long investment time horizon in excess of 15 years and a low risk tolerance. For the next 10 months, 50% Graeme's purchase recommendations were new issues and 75% of the dollar value of the purchases in the account were new issues. Five months was the longest holding period for any new issues in their account. During the same time, he conducted similar activities in many of his other client accounts.

At year end, his supervisor, Jane Balmer, met with him to discuss her concerns over his handling of his accounts over the past year. She referred her concerns to BOA's director of compliance. Graeme substantially curtailed the activity in his client accounts after the meeting with Balmer.

DISCUSSION: SUITABILITY AND RESPONSIBILITY OF SUPERVISORS

The Delaneys have low risk tolerance. Graeme's handling of their account with the frequent purchases of the new issues and short holding periods was inconsistent with the Delaneys' risk tolerance. As a result, Graeme is in violation of Standard III(C)1: Suitability in that the new issues were not suitable for his clients because of their low risk tolerance.

Balmer was not thorough enough in her duties as a supervisor in relation to Graeme's behavior. As a result, she is in violation of Standard IV(C) Responsibilities of Supervisors. Merely referring the situation to the director of compliance was insufficient; instead, she should have opened up a full investigation to determine the full severity of Graeme's violations. As well, she should not have relied on his subsequent curtailing of activity as an indication of the nonrecurrence of the violations.

Graeme opened an account for David Milgram five years ago. The investment policy statement (IPS) was drawn up together and has not been updated since. Recently, Milgram complained to Balmer about the decline in value of his account. Immediately afterwards, Balmer meets with Graeme to discuss the complaint and the account. Nothing is reported to the BOA's director of compliance. Graeme, Balmer, and Milgram meet the next day at BOA's offices to review the account and update the IPS. Graeme emphasizes the need to look at the nature of the investments and to focus on other factors in addition to the value of holdings.

DISCUSSION: SUITABILITY AND RESPONSIBILITIES OF SUPERVISORS

Standard III(C)1: Suitability requires that the IPS be updated at least annually. Because it was not updated for five years, then Graeme has violated Standard III(C)1.

Balmer immediately began an investigation as soon as she received the complaint by Milgram. She met with Graeme to discuss the complaint and the account as well as meeting with Graeme and the Milgram to review the account and IPS. As a result, Balmer was in compliance with Standard IV(C) Responsibilities of Supervisors. There was no requirement for her to report the complaint to the director of compliance as long as she began the investigation promptly, which she did.

Case Outline: Gabby Sim

Gabby Sim began working at Global Harvest Bank (GHB), an independent private bank offering a wide range of services. She first meets with her supervisor, Ahmad Yousoff, who is also the chief investment officer (CIO). Then she meets with the president, Irene Wong, and two board members, David Tan and Audrey Chuong, CFA. The four of them discuss a memorandum of understanding (MOU) signed with MGM2, a new institutional client. MGM2 is owned by the government of Sasparia and has the objective of promoting Sasparian economic development. Yousoff and Wong paid Tan and Chuong some of the advisory fees earned from MGM2 in recognition of the latter's efforts in assisting to bring MGM2 on as a client. Yousoff did not disclose the fee-sharing agreement to MGM2. Chuong then encourages Yousoff to meet Boe Hie, a businessman in Sasparia who was one of the founders of MGM2. Chuong did not disclose to Yousoff that Hie has given her son an executive position in MGM2.

DISCUSSION: CONFLICTS OF INTEREST

The compensation paid to Tan and Chuong is a reward to them for helping to bring MGM2 on as a client. It is not a referral fee since they did not refer MGM2 to GHB as a client. Therefore, it does not need to be disclosed to MGM2 and the lack of disclosure is not a violation of Standard VI(C) Referral Fees.

There is a potential impairment of Chuong's independence and objectivity when Hie hired her son into an executive position at MGM2. Her conflict situation could lead to her acting against her employer, GHB's, best interests. As a result, she should have disclosed to her employer that her son is an employee of the potential client. Therefore, her lack of disclosure is a violation of Standard VI(A) Disclosure of Conflicts.

Sim has been assigned by Yousoff to open an account for Hie in the name of Bad Moon Rising Ltd. (Bad Moon). Hie is the sole beneficial owner and authorized signatory on the account. Sim is not given the chance to ask Hie about his investment experience, objectives, and risk tolerance. Instead, Hie refuses to answer those questions and that for

confidence reasons, he asks her to destroy all notes of their meeting and replace them with the following information: *Self-employed consultant with a net worth of \$110 million. Long-term investment objective with annual return goal between 5% and 10% and a conservative risk profile.*

Hie advises Sim that there will be many large deposits going into his account from MGM2 in the coming months and some of those funds may need to be wired to his other accounts around the world. He requests that she process those transactions expediently and will pay her a year-end bonus for doing so. Hie advises that if Sim has any further questions about the account or its transactions, she should contact board members Tan and Chuong.

After the meeting, Sim uses the information provided by Hie to prepare his investment policy statement and destroys the meeting notes as requested by Hie. She later meets with Yousoff to discuss the meeting with Hie and makes no mention of the year-end bonus from Hie. Sim opens the account.

DISCUSSION: RECORD RETENTION, ADDITIONAL COMPENSATION ARRANGEMENTS, AND SUITABILITY

By destroying all meeting notes with Hie, Sim is not maintaining appropriate records to support her investment actions and therefore is in violation of Standard V(C) Record Retention. Supporting documents under Standard V(C) include notes from clients from meetings to review investment policy statements. Although Hie has stated that he requires confidentiality, keeping meeting notes would not be a violation of Standard III(E) Preservation of Confidentiality or Standard III(A) Loyalty, Prudence, and Care.

The bonus promised by Hie is considered additional compensation, therefore Sim violated Standard IV(B) Additional Compensation Arrangements when she failed to disclose the bonus to Yousoff. It is possible that processing Hie's transactions expediently may cause Sim to favor Hie over GHB's other clients. The existence of the bonus could likely impair her independence and objectivity, therefore she also violated Standard I(B) Professionalism, Independence and Objectivity by not disclosing the bonus. Standard I(B) states that bonuses from clients are permissible if they are disclosed to the employer. It is then up to the employer to determine if the bonus is acceptable and will not disadvantage the other clients.

Opening the account for Hie violates Standard III(C) Suitability because Sim was not provided with sufficient information by Hie to develop a reasonable IPS. The information provided was vague and would not have allowed Sim to formulate a proper IPS that consists of items such as risk tolerance, return requirements, time horizon, liquidity needs, and tax concerns.

Very shortly after the Bad Moon account is opened, a large sum is wired to the account from MGM2. Sim contacts Hie about the deposit and he faxes her a copy of an investment agreement between MGM2 and Bad Moon to support the deposit. However, Sim is not completely satisfied with the amount and description in the agreement, so she raises her concerns with Yousoff. Sim explains to Yousoff that she would like to meet with Hie and a representative from MGM2 to provide her with assurance over the validity of the deposit. Yousoff says the copy of the investment agreement is sufficient and that she should contact Tan and Chuong instead. Sim contacts them and they both confirm the validity of the investment agreement and Hie's interactions with MGM2.

DISCUSSION: RESPONSIBILITIES OF SUPERVISORS AND CONFIDENTIALITY

Yousoff has responsibilities as a supervisor and merely asking Sim to contact Tan and Chuong is a violation of Standard IV(C) Responsibilities of Supervisors. As part of his duties as a supervisor, he

should have agreed with Sim's idea to meet with Hie and a representative from MGM2 rather than telling her to contact Tan and Chuong instead. Contacting the latter is not as direct as obtaining firsthand knowledge of the transaction. As well, he should not have simply declared the agreement to be acceptable since Sim specifically raised concerns about it. Yousoff should have investigated it further to fulfill his supervisory duties to detect violations of the laws, rules, and the Code and Standards.

Because Yousoff specifically told Sim to contact Tan and Chuong with any further questions about the Bad Moon account, Sim is not in violation of Standard III(E) Preservation of Confidentiality.

In the subsequent months, MGM2 wires a substantial amount of money into the Bad Moon account over several transactions. Hie provides Sim with documentation in the form of agreements signed by Yousoff in his role as GHB's CIO. Most of the funds eventually end up in Hie's various personal bank accounts around the world. Sim continues to be suspicious of the account activity and again contacts Yousoff. She tells him that she suspects money laundering. Yousoff tells her to ignore her suspicions and merely focus on getting the transactions executed in an expedient manner.

DISCUSSION: PROFESSIONALISM

It is clear that Sim's repeated concerns about the account have produced inaction on the part of Yousoff in his role as a supervisor. Therefore, under Standard I(A) Knowledge of the Law, Sim must escalate the matter and obtain advice from compliance personnel or legal counsel.

Hie had recommended that Sim meet with his mother-in-law, Madam Tan Swee Neo. Sim meets with her and finds out that she is 70 years old and made her money through real estate although she has since moved that money into fixed deposits and low risk energy utility stocks. However, she has recently decided that she wants to earn more income from her investments and tells Sim that she wants to invest in more conservative equities with the return objective of paying for her grandchildren's educational expenses. She heard from her friends about oil-linked structured notes issued by GHB even though she does not know anything about oil futures. Sim provides Neo with a brochure on the structured note written in English, which Neo cannot read. Therefore, Sim verbalizes the summary of the product to Neo in Chinese. Sim does not translate all the fine print for Neo but does warn her that there is no guarantee of the 10% annual coupon and there is a penalty for early redemption. Sim does state that the coupon payments have been made for all three years of the product's existence. Neo invests \$50,000 (half of her life savings) in the notes and Sim processes the transaction.

DISCUSSION: SUITABILITY

In purchasing the structured notes for Neo, Sim violated Standard III(C) Suitability. Because Neo does not know anything about oil futures and such investments are inconsistent with her current investment portfolio of fixed deposits and low risk energy utility stocks, Sim should not have purchased the structured notes. Sim does not meet the requirements of Standard III(C) by merely providing Neo with a brochure in English (which Neo cannot read) and warning Neo that the annual 10% coupon is not guaranteed.

One year later, Neo does not receive any coupon payment from her investment. She also hears that oil prices are likely to continue falling in the coming years. As a result, she calls Sim to request that Sim promptly redeem her investment and move the funds into a fixed deposit. Sim advises Neo about the penalties involved with redemption, but Neo is

impatient, does not want to hear the details, and tells Neo to get the redemption done as soon as possible. Sim executes the redemptions. Because of the redemptions, the investment has decreased from \$50,000 to \$30,000 and Neo wants to know why. Sim reminds her of the penalty for early redemption and that Neo was warned about it. However, Neo says she did not expect the penalty to be so large and thought her investment would be low risk since coupon payments have been made every year for the three years the product has been in existence. Dissatisfied, Neo launches a complaint against Sim.

DISCUSSION: PRUDENCE AND CARE

Sim must demonstrate reasonable care or prudent judgment in dealing with her clients' requests. By executing the redemptions immediately and not fully explaining the penalties to Neo and not further researching the impact of the falling oil prices on the risk of the investment, Sim is in violation of Standard III(A) Loyalty, Prudence, and Care. Despite Neo's impatience, Sim should have insisted on thoroughly explaining to Neo the penalties involved with redemption. Sim should have also performed sufficient due diligence to determine if the falling oil prices would indeed increase the risk of the investment in oil futures.

Additionally, Sim could be in violation of Standard III(C) Suitability because Neo's request for immediate redemption indicated her lack of investment experience. The substantial redemption penalties would jeopardize Neo's return objective of providing sufficient funds for her grandchildren's education and Sim should have considered that prior to the redemption.

MODULE QUIZ 33.1



To best evaluate your performance, enter your quiz answers online.

1. Marcia Lopez, private wealth manager at BankGlobal, has several high net worth clients that have told her they would like to receive information about the overall economic and financial market outlook through her social media platform; this is in addition to the quarterly written reports they already receive from BankGlobal. With approval from the bank's technology and compliance departments, she establishes her social media group and requests her clients to join the group to receive the information. The platform makes it clear to all clients that if they post any comments, the comments will be public, so the platform is not the right place to communicate personal or confidential information. Nevertheless, one of her clients posts on the group page that he personally lost a lot of money in the stock market recently, and he proceeds to provide very personal and confidential details in the process. All clients in the group were able to view the client's comment until Lopez discovered it a few hours later, and promptly removed the comment. Did Lopez violate the Code and Standards in her conduct with the social media platform?
 - A. Yes, because Lopez should have screened the client's comment before it was posted.
 - B. Yes, because Lopez should not have set up such a group in the first place because of the high risks to client confidentiality.
 - C. No, because Lopez took reasonable steps to maintain client confidentiality by telling clients that all posts would be public, and she promptly deleted inappropriate posts.
2. Sandra Benning, CFA, is an investment adviser at Global Capital Management (Global) and has a client, Claris Deacon, who is recovering from health issues. Benning earns a portfolio return that is far superior to the target previously established with Deacon. As a result, Deacon offers to have Benning join her and her husband on an all-expense paid trip to the Bahamas for two weeks. It is a common occurrence for investment advisers at Global to receive gifts from clients, ranging from modest to substantial values. What should Benning do regarding the gift from Deacon?
 - A. Disclose Deacon's gift to her supervisor.

- B. Thank Deacon for the gift, but politely decline it because it is too lavish.
 - C. Accept the gift as it is a common occurrence to receive gifts from clients.
3. Tony Hill was employed as an equity mutual fund manager at Lionsgate Limited and played a key role in developing a highly successful quantitative model used within the Victory Capital Fund. Hill developed the model while working overtime hours into the late evenings, but was not paid for the work because his compensation is based solely on management and incentive fees. After Hill left the firm, Hill's former supervisor continues to authorize the use of Hill's model without his permission and without providing any attribution to him. By allowing the continued use of Hill's model after his departure from the firm, is there a violation of the Code and Standards?
- A. Yes, because the firm did not provide any attribution to Hill after Hill left the firm.
 - B. Yes, because the firm is no longer allowed to use the model after Hill leaves the firm.
 - C. No, because the model is the property of Lionsgate, and so they can continue using it and need not provide attribution to Hill.
4. Ahmad Yousoff is a supervisor at Global Harvest Bank (GHB) where Gabby Sim works. Sim has a client, Boe Hie, who has made some questionable transactions in his account. Being dissatisfied with Yousoff's response to her concerns with the suspicious transactions in Hie's account, Sim escalates her concerns to the firm's compliance department. They concur with Yousoff and advise her that she should do as he instructs since he is her supervisor. Sim is dissatisfied with the compliance department's response. What is the appropriate course of action for Sim to take at this point?
- A. Request that the firm disclose the information publicly.
 - B. Notify legal counsel at GHB or resign from her position.
 - C. Take no action since she has already escalated her concerns to the highest level within the firm.

KEY CONCEPTS

LOS 33.a, 33.b

Sovereign Investment Corporation

- Standard I(A): Knowledge of the Law makes members responsible for violations in which they knowingly participate or assist. A member who believes an activity is either unethical or unlawful must dissociate from the violations of others. Inaction is not sufficient to comply with the standard. Bribery of government officials is likely to breach local anti-bribery laws, resulting in a violation.
- Standard I(C): Misrepresentation requires not knowingly making any misrepresentations, which includes the reporting of the "deal fees" as legitimate operating expenses.
- Standard III(B): Fair Dealing provides that all investors be fairly treated and be provided with the same information (e.g., a standard investor disclosure package or regular investor updates).
- Standard III(C): Suitability requires members to make investment decisions that are consistent with the stated objectives and constraints of the portfolio, including a funds' mandate.
- Standard V(A): Diligence and Reasonable Basis requires members making investment decisions to have a reasonable and adequate basis to support their decisions, including exercising independence, thoroughness, and diligence. Members must review subadvisors as diligently as they review funds or securities, including

their knowledge and expertise. Additionally, members who are directly involved with the use of external advisors need to ensure that their firm has standardized criteria for reviewing external advisors.

- Standard V(B): Communication with Clients and Prospective Clients includes transparency as an important element, as well as reasonable and appropriate in providing information for an investor's due diligence.
- Standard VI(A): Disclosure of Conflicts requires members to make full and fair disclosure of all matters that could reasonably be expected to impair their independence and objectivity with respect to their clients, prospective clients, and employer.
- Standard VI(B): Priority of Transactions requires that investment transactions for clients and employers have priority over transactions where a member is a beneficial owner.
- Standard VII(A): Conduct as Participants in CFA Institute Programs prevents candidates from engaging in or members from soliciting any conduct that compromises the integrity of CFA Institute Programs, including discussing the specifics of the examination. Discussing how candidates perceived the difficulty of the examination would not violate the standard because it is non-specific subjective information.
- Standard VII(B): Reference to the CFA Institute, CFA Designation, and the CFA Program required that one must not refer to the designation as a university degree. To use the designation, members must satisfy the CFA Institute membership requirements, which include both annual payment of dues and submission of the Professional Conduct Statement.

Marcia Lopez

- Standard III(B) Fair Dealing requires all clients to be treated in a fair and impartial manner. For example, investment advisers cannot favor their discretionary accounts over their other accounts.
- Standard III(C) Suitability requires:
 - One to develop an investment policy statement for a client prior to making any investment recommendations for the client.
 - Investments to be consistent with the client's long-term objectives.
- Standard III(D) Performance Presentation does not allow the exclusion of the performance of terminated accounts.
- Standard III(E) Preservation of Confidentiality requires all information about a current, former, or prospective client to be kept confidential, including the name of the client.
- Standard VII(B) Reference to CFA Institute, the CFA designation, and the CFA Program, does not permit one to state he has earned a partial designation or to state an expected date of receipt of the CFA charter.

Castle Biotechnology

- Standard I(B) Independence and Objectivity, requires the disclosure of a bonus or any compensation arrangement by a researcher (e.g., in a relevant research report).
- Standard I(D) Misconduct does not permit an investment adviser to sign a form on behalf of a client.

- Standard II(B) Market Manipulation does not permit the use of tie-in agreements because of their intention to artificially increase demand and support a higher share price.
- Standard III(A) Loyalty, Prudence, and Care, requires a client to provide written authorization in order to allow another party to transact in the client's account.
- Standard IV(A) Loyalty does not prohibit former employees from contacting clients of their previous firm as long as there is no noncompete agreement.
- Standard VI(A) Disclosure of Conflicts requires:
 - The disclosure to clients of full ownership details of a related group of companies when there are potential conflicting activities, such as investment banking and research.
 - The disclosure of beneficial ownership interests where one is a researcher making investment recommendations.
 - Full disclosure where a researcher makes a personal investment decision that is contrary to what is stated publicly.
 - The disclosure of any bonuses received that were based on the level of client participation in investments.
- Standards VI(A) Disclosure of Conflicts and VI(C) Referral Fees requires one to disclose to clients the receipt of any signing bonuses related to bringing them in as new clients.

Lionsgate Limited and Bank of Australia

- Standard I(C) Misrepresentation does not allow for any misrepresentations of one's role in the investment process to clients.
- Standard II(A) Material Nonpublic Information does not:
 - Allow one to act on material nonpublic information; acting on such information before its public dissemination is a violation.
 - Prohibit one from acting on publicly reported information and on information that one does not reasonably believe is material nonpublic information.
- Standard III(C)1: Suitability requires:
 - The management of client accounts in a manner consistent with the clients' risk tolerances.
 - At least an annual updating of the client IPS.
- Standard III(D) Performance Presentation requires one to make only statements of fact when presenting performance and does not permit false or opinion-based statements.
- Standard IV(A) Loyalty:
 - Requires an employee to honor all requests made by the employer that were agreed upon by the employee; the employee must not be disloyal to the employer, even upon the announcement of resignation and before departure.
 - Allows a departing employee to solicit colleagues of the same firm to also depart with the employee to go into a competitive business.
 - Requires all activities related to the new competing business to be conducted outside of work hours.

- Allows the solicitation of former clients as long as there is no noncompete agreement and that the solicitation occurs only after departure from the former firm.
- Standard IV(B) Additional Compensation Arrangements does allow for the receipt of a gift by an employee as long as it does not create a conflict with her employer's interest.
- Standard IV(C) Responsibilities of Supervisors requires:
 - That the supervisor do more than merely escalate concerns to the director of compliance.
 - Supervisors to initiate an investigation to ascertain the extent of any wrongdoing by employees when there is reasonable suspicion of a violation of the law or the Code and Standards.
- Standard V(B)1: Communication With Clients and Prospective Clients requires proper and accurate disclosure of who is primarily responsible for the investment decision-making duties.
- Standard VI(A) Disclosure of Conflicts requires one to make full disclosure to clients of commissions received from investments made by those clients.

Gabby Sim

- Standard I(A) Knowledge of the Law, requires one to escalate one's concerns to compliance personnel or legal counsel if the initial reporting of the concerns to the supervisor does not result in any resolution.
- Standard III(A) Loyalty, Prudence, and Care, requires one to use reasonable care or prudent judgment in executing transactions for clients. Sufficient prior research and explanation to the client is necessary as opposed to merely executing a transaction immediately upon request by the client.
- Standard III(C) Suitability requires:
 - Full information of a potential client's investment experience, objectives, and risk tolerance before an account is opened.
 - Investments to be made that are consistent with the risk and return objectives noted in a client's IPS.
- Standard III(E) Preservation of Confidentiality allows a lapse in confidentiality if specific permission was granted by the client.
- Standards IV(B) Additional Compensation Arrangements and I(B) Professionalism, Independence and Objectivity, require the disclosure to the employer of any bonuses or other payments received from a client to prevent any preferential treatment of that client to the detriment of other clients.
- Standard IV(C) Responsibilities of Supervisors requires supervisors to make reasonable efforts to ensure compliance with laws, rules, regulations, and the Code and Standards when faced with a query from a subordinate. Merely accepting statements at face value without further investigation is not sufficient.
- Standard V(C) Record Retention does not permit the destruction of meeting notes with a client that support investment actions, even if the destruction is requested by the client.
- Standard VI(A) Disclosure of Conflicts requires the disclosure to one's employer of a potential conflict such as a family member being an employee of a potential

client.

- Standard VI(C) Referral Fees specifically covers referral fees only and does not cover all fee-sharing arrangements.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 33.1

1. **C** Lopez is not in violation of Standard III(E) Preservation of Confidentiality. She took reasonable steps to maintain client confidentiality in the use of the social media platform. She specifically stated that all comments posted to the platform would be public so it was not the appropriate place to communicate personal or confidential information. Therefore, if a client discloses confidential information through a comment, then it is beyond Lopez's control. The fact that she promptly removed the comment once she found out about it further supports her compliance with Standard III(E). (LOS 33.a, 33.b)
2. **A** Under Standard I(B) Independence and Objectivity, members and candidates may accept bonuses or gifts from clients as long as they disclose them to their employer because gifts in a client relationship are deemed less likely to affect one's independence and objectivity than gifts in other situations. However, disclosure is required to allow supervisors to monitor such situations to prevent against employees favoring a gift-giving client over non-gift-giving clients. It is not necessary for Benning to decline the gift; it is her employer's prerogative to decide whether or not Benning should accept the gift. (LOS 33.a, 33.b)
3. **C** Research and models developed while employed at the firm are the property of the firm. The firm still has the right to use Hill's work after he leaves and need not provide any attribution to him. The firm has paid Hill for his work. It does not matter that he was not paid explicitly for working overtime to perform the work because he is implicitly paid for it through the management and incentive fees that he earns from his employer. Therefore, there is no violation of Standard I(C) Misrepresentation regarding plagiarism. (LOS 33.a, 33.b)
4. **B** Informing the firm's compliance department produced no action toward resolving the concerns of Sim; therefore, under Standard I(A) Knowledge of the Law, the next step for Sim is to seek the advice of legal counsel regarding her concerns. Another possibility would be to report the violation to governmental or regulatory organizations. The Guidance to Standard I(A) states, "Although the Code and Standards does not compel members and candidates to report violations to their governmental and regulatory organizations unless such disclosure is mandatory under applicable law . . . such disclosure may be prudent under certain circumstances." That was not one of the choices provided. The issue does not pertain to Standard II(A) Material Nonpublic Information; therefore, attempting to have her firm disclose the information publicly is not relevant. Although extreme, CFA members must dissociate from the activity which may result in her resigning from her position. (LOS 33.a, 33.b)

The following is a review of the Ethical and Professional Standards (2) principles designed to address the learning outcome statements set forth by CFA Institute. Cross-Reference to CFA Institute Assigned Reading #34.

READING 34: ASSET MANAGER CODE OF PROFESSIONAL CONDUCT

Study Session 16

EXAM FOCUS

The Asset Manager Code is specific to Level III. It applies to investment firms, not individuals. It largely duplicates and, in some cases, extends portfolio management-related requirements of the Standards of Professional Conduct.

MODULE 34.1: THE ASSET MANAGER CODE



LOS 34.a: Explain the purpose of the Asset Manager Code and the benefits that may accrue to a firm that adopts the Code.

Video covering this content is available online.

CFA® Program Curriculum, Volume 6, page 259

The Asset Manager Code (AMC) is global, voluntary, and applies to investment management firms. Firms are encouraged to adopt the AMC as a template and guidepost to ethical business practice in asset management. Adoption demonstrates that the firm is placing client interests first. The AMC is flexible and firms must develop their own policies and procedures, tailored to their business and clients, to ensure compliance with the AMC. The AMC provides guidance on risk management. Adoption benefits the firm as a step in gaining the trust and confidence of its clients.

LOS 34.b: Explain the ethical and professional responsibilities required by the six General Principles of Conduct of the Asset Manager Code.

LOS 34.c: Determine whether an asset manager's practices and procedures are consistent with the Asset Manager Code.

LOS 34.d: Recommend practices and procedures designed to prevent violations of the Asset Manager Code.

CFA® Program Curriculum, Volume 6, page 261



PROFESSOR'S NOTE

These three LOS are inseparable. We will cover the six general principals of the AMC. Meeting the principals and requirements puts the firm in compliance.

Under each principal, we will also list the recommended practices and procedures (P&P). The recommendations provide guidance on the type of policies and procedures the firm could use to meet the requirements and then claim compliance with the AMC. Adopting the recommended P&P (if relevant) will assist the firm in preventing violations of the AMC. The firm is still responsible for determining the specific P&P needed for their business. Not all sections of the AMC have recommendations.

There are many references to issues such as the client IPS, best execution, firm-wide risk management, and soft dollars that are covered elsewhere in the curriculum, so do not bog down on those. This is your initial study and the material makes more sense after you go through all the study sessions. You cannot know how pieces fit together until you see the whole curriculum. The intent of the Level III material is to be highly interconnected.

Once you read the material and/or watch our related videos, you should immediately work our questions and the end of chapter questions in the CFA reading for the AMC.

There are six components to the Asset Manager Code of Professional Conduct¹:

- A) Loyalty to Clients.
- B) Investment Process and Actions.
- C) Trading.
- D) Risk Management, Compliance, and Support.
- E) Performance and Valuation.
- F) Disclosures.

Related to these components are six general principles of conduct:

- Always act ethically and professionally.
- Act in the best interest of the client.
- Act in an objective and independent manner.
- Perform actions using skill, competence, and diligence.
- Communicate accurately with clients on a regular basis.
- Comply with legal and regulatory requirements regarding capital markets.

A) Loyalty to Clients

1. Place the client's interest ahead of the firm's.

Recommendations: Align manager compensation to avoid conflict with client best interests, such as avoiding an incentive for excessive risk taking in order to increase manager compensation.

2. Maintain client confidentiality.

Recommendations: Create a privacy policy to document how such information is gathered, stored, and used. Include an anti-money laundering policy (if needed) to prevent the firm's involvement in illegal activities.

3. Refuse business relationships and gifts that would compromise independence, objectivity, and loyalty to clients.

Recommendations: Refuse gifts and entertainment of more than minimal value from service providers. Establish written P&P to define appropriate limits for gifts from both service providers and clients. Require employees to disclose such gifts. Prohibit cash gifts. Managers may maintain other (significant) business relationships with clients as long as potential conflicts are managed and disclosed.

B) Investment Process and Actions

1. Use reasonable care and judgment in managing client assets. Managers should act as other knowledgeable professionals would act to balance risk and return for the client.
2. Do not manipulate price and volume in an effort to mislead market participants as this damages the integrity of markets to the detriment of all investors. Actions such as establishing large positions to distort prices or spreading false rumors are violations.
3. Deal fairly with all clients when providing information, advice, and taking actions. Managers may offer higher levels of service to some clients for higher compensation if the service levels are disclosed and available to all clients willing to pay for them. Managers can engage in secondary investment opportunities (that are offered as a result of other business activities) if the opportunity is fairly allocated to all suitable clients.
4. Have a reasonable and adequate basis for recommendations. The due diligence required will vary based on the complexity and risks of the strategy. Third-party research can be used if there is a reasonable basis to support it. Managers must be knowledgeable of the securities they recommend. This is particularly true for complex strategies and such strategies must be explained in understandable ways to the client.
5. For portfolios managed to a specific style or strategy, managers do not have to evaluate the suitability to a given client. Managers must provide suitable disclosure so clients can determine if the portfolio is suitable for their needs. The portfolio must then be managed in the manner intended. Flexibility and deviations from that intent must be expressly agreed to by clients.

Recommendations: Disclose permitted deviations from intent as they occur (or in normal reporting). If the strategy or style of the portfolio changes, allow clients to redeem the investment without undue penalty.

6. When managing portfolios of a specific client, understand the client's objectives and constraints in order to take suitable actions for that client.

Recommendations: Establish and update a written IPS for that client at least annually and as circumstances warrant. The IPS will specify the roles and responsibilities of the manager, and those will vary by situation. A performance benchmark to evaluate portfolio performance should be specified. Ideally, each investment decision will be made in the context of the client's total situation (but recognizing the client decides what information to share with the manager).

C) Trading

1. Do not act or cause others to act on material nonpublic information that could affect the value of public securities. Such actions are frequently illegal and damage the integrity of markets. Managers must adopt compliance procedures to segregate information between those with reasons to have such information and the rest of the firm.

Recommendations: Managers can use procedures such as firewalls between those with reasons to have such information and the rest of the firm. They should develop procedures to evaluate whether company-specific information is material and

nonpublic. Information on pending trades or holdings may be material nonpublic information.

2. Give clients priority over the firm. Managers cannot execute ahead of clients or to the detriment of clients' interests. Managers may invest their own capital along with clients if clients do not suffer.

Recommendations: Develop P&P to monitor and limit personal trading by employees, require prior approval of investment in private placements and IPOs, and provide the compliance officer with employee personal transaction and holdings information. Establish a watch list of companies in which employees may not personally trade without approval.

3. Use client commissions only to pay for investment-related products and services that directly benefit the client, not for the management of the firm.

Recommendations: Some managers have eliminated soft dollars. If soft dollars are used, disclose this to clients and adopt industry best practices such as the CFA Institute Soft Dollar Standards.

4. Seek best execution for all client trades.

Recommendations: If clients direct trading, advise the clients it may compromise the manager's ability to seek best execution and seek written acknowledgment of this from the client.

5. Establish policies for fair and equitable trade allocation. All clients for whom the trade is suitable should be given the opportunity to participate.

Recommendations: Group suitable accounts and trade as a block (all participate at the same price) and allocate partial trades pro rata. Specifically address how IPOs and private placements are handled.

D) Risk Management, Compliance, and Support

1. Develop detailed P&Ps to comply with the AMC and all legal/regulatory requirements.
2. Appoint a competent, knowledgeable, credible compliance officer with authority to implement the P&Ps.

Recommendations: The officer is independent of the investment and operations personnel. The officer reviews all firm and employee transactions. Require all employees to acknowledge they understand and comply with the AMC.

3. Use an independent third party to verify that information provided to clients is accurate and complete. Verification may be based on audit or reviews of pooled funds and account statements and transaction reports from the custodian bank for individual accounts (i.e., not just on internal records of the firm.)
4. Maintain records to document investment actions.

Recommendations: Retain compliance records and documentation of violations and corrective actions. Retain for at least seven years or as required by law and regulations.

5. Employ sufficient and qualified staff to meet all AMC requirements. Managers must have (pay for) the resources to deliver the services promised and to assure compliance with the P&Ps.
6. Establish a business continuity plan to deal with disasters or market disruptions. At minimum this should include:
 - Backup (preferably offsite) of account information.
 - Plans to monitor, analyze, and trade investments.
 - Communication plans with key vendors and suppliers.
 - Employee communication and coverage of key business functions when normal communications are out.
 - Client communication plans.
7. Establish a firm-wide risk management plan to measure and manage the risks taken. It must be objective and independent of the influence of the portfolio managers.

Recommendations: Consider outsourcing this process if needed. It may include stress and scenario testing. Be prepared to describe the process to clients.

E) Performance and Valuation



PROFESSOR'S NOTE

See the GIPS reading.

1. Present performance data that is fair, accurate, relevant, timely, and complete. Do not misrepresent performance of accounts or the firm.

Recommendations: Adopt GIPS.

2. Use fair market prices when available and fair valuation in other cases.

Recommendations: Independent third parties should be responsible for valuation to avoid conflicts of interest as manager fees are normally based on account value.

F) Disclosures

1. Ongoing, timely communication with clients using appropriate methods.
2. Ensure truthful, accurate, complete, and understandable communication. Use plain language. Determine what to disclose and how.
3. Include any (all) material facts regarding the firm, personnel, investments, and the investment process.
4. Disclose:
 - Any conflicts of interest such as those arising from relationships with brokers and other clients, fees, soft dollars, bundled fees, directed brokerage, manager or employee holdings in the same securities as clients, and any other material issues.
 - Regulatory and disciplinary actions related to professional conduct by the firm or employees.

- Investment process information including strategy, risk factors, lock-up period, derivatives, and leverage.
- Management fees and client costs including the method of their determination. Provide gross- and net-of-fee returns. Disclose any unusual expenses. Use plain language to explain how all fees are calculated. Disclose all fees charged and provide itemized charges if requested. Disclose average or expected fees to prospective clients.
- All soft dollar and bundled fees, what is received in return, and how they benefit the client.
- Regular and timely client investment performance reporting. Quarterly performance within 30 days of quarter end.
- Valuation methods used to make investment decisions and value client assets. Typical disclosure is by asset class.
- The P&Ps used for shareholder voting. These must address how controversial and unusual issues are handled, provide guidance for further actions when voting against corporate management recommendations, and disclose any delegation of voting. Provide clients details on votes cast for their holdings if requested.
- Trade allocation policies.
- Review and audit results of the client's funds and accounts.
- Significant personnel and organizational changes including mergers and acquisitions involving the firm.
- The firm's risk management process and changes to the process. Disclose what risk metrics the client will receive. Regular disclosure of client specific risk information is recommended.



MODULE QUIZ 34.1

To best evaluate your performance, enter your quiz answers online.

1. Terillium Traders is a small stock brokerage firm that specializes in buying and selling stocks on behalf of client accounts. Several of Terillium's brokers have recently been placing both a bid and an offer on the same security about two hours before the market opens for trading. This allows their trades to be one of the first ones made after the markets open. Just before the markets open, these brokers would then cancel one of the orders in anticipation that the market would move in favor of the other order. Which component, if any, of the Asset Manager Code of Professional Conduct has *most likely* been violated?
 - A. The component dealing with investment process and actions related to market manipulation.
 - B. The Trading section of the Code because this is an example of "front-running" client trades.
 - C. Loyalty to Clients, the section pertaining to placing client interests before their own.
2. Harriet Fields, an investment adviser specializing in selling municipal bonds, advertises on television explaining the safety and security of these bonds. The bonds she is currently selling are limited obligation bonds backed only by the revenue generated from the projects they fund, which include a housing project and a golf course. Fields tells her prospective clients that the bonds are safe, secure, and offer generous interest payments. Which of the following statements is *most correct* regarding Fields's actions?

- A. Fields did not violate the Code because municipal bonds are generally regarded as being safe investments.
 - B. Fields violated the part of the Code dealing with performance and valuation.
 - C. Fields violated the Code when she misrepresented the bonds by not explaining their inherent risks.
3. World Investment Advisers (WIA) is a large sales force of registered investment representatives which has affiliations with many firms that produce investment-related products. One of the affiliated firms is a mutual fund company called Life Investors, which has a special agreement with WIA in which WIA has identified Life Investors as a “preferred product provider” in their internal marketing materials to their investment representatives. In return for this preferential treatment by WIA, Life Investors has reimbursed WIA for the cost of these marketing materials out of the trading commissions generated from the sale of Life Investors mutual funds by WIA sales representatives. Which of the following statements regarding any violations of the Code is *most correct*? WIA violated the Code relating to:
- A. accepting gifts of minimal value because Life Investors is paying for the marketing materials that could influence WIA’s representatives.
 - B. having a reasonable and adequate basis for making investment decisions.
 - C. soft commissions by using client brokerage to pay for marketing materials.
4. Liz Jenkins, CFA, is an asset manager for Gray Financial, a financial services firm that has adopted the Asset Manager Code in managing client accounts. Jenkins has a client who has recently been depositing into his account bearer bonds (coupon bonds) issued by Gas Tech, a natural gas exploration company. Shortly after depositing the bonds, the client has then been requesting disbursement of funds from these bonds. Jenkins suspects this client may be using the firm in an illegal money laundering scheme. Which of the following items regarding how the firm should act is *most correct*?
- A. The firm must monitor the suspicious activity without the client knowing he is being investigated.
 - B. The firm must disassociate from the client.
 - C. A report must be filed with the appropriate legal authorities.
5. Kendall Asset Managers has branch offices in several different geographical locations spread out by hundreds of miles, and in some instances, located in remote areas. Due to their remote locations and small staffs, some offices do not have a compliance officer, and brokers working in these offices have sometimes had to take on the responsibility of hiring the branch manager. Some brokers work out of their homes and use their own personal email to contact clients. Some branches only keep records in electronic form for seven years. Which of the following is *least likely* a breach of the Code regarding Kendall Asset Managers?
- A. Keeping records in electronic form for seven years.
 - B. Communicating with clients via personal email.
 - C. Having the brokers in a remote office hire the branch manager.
6. As part of the Asset Manager Code, the firm must adopt policies that:
- A. prohibit managers from engaging in outside business interests with clients separate from the portfolio management relationship.
 - B. establish guidelines for when confidential client information will be disclosed to others.
 - C. prohibit managers from accepting lavish gifts from clients and service providers.

KEY CONCEPTS

LOS 34.a

The purpose of AMC is to assist the firm in developing ethical business and risk management practices while gaining the trust of clients.

LOS 34.b

The AMC covers:

1. Loyalty to Clients.
2. Investment Process and Actions.
3. Trading.
4. Risk Management, Compliance, and Support.
5. Performance and Valuation.
6. Disclosures.

General principles of conduct:

- Always act ethically and professionally.
- Act in the best interest of the client.
- Act in an objective and independent manner.
- Perform actions using skill, competence, and diligence.
- Communicate accurately with clients on a regular basis.
- Comply with legal and regulatory requirements regarding capital markets.

LOS 34.c

Review the cases and work the questions in the Schweser and CFA material to practice applying the ethics requirements.

LOS 34.d

Loyalty to Clients

- Always put the client's interests before your own by designing appropriate compensation arrangements for managers.
- Determine how confidential client information should be collected, utilized, and stored.
- Determine the amount of which token gifts can be accepted.

Investment Process and Actions

- Take reasonable care when dealing with client accounts.
- Don't engage in market manipulation.
- Deal fairly with all clients.
- Have a reasonable basis for all investment recommendations.

Trading

- Do not trade on material nonpublic information.
- Always place client trades before your own.
- Use soft dollars to aid the manager in the investment decision-making process.
- Seek best execution and allocate trades equitably among all clients.

Risk Management, Compliance, and Support

- Ensure compliance with the Asset Manager Code and legal and regulatory requirements.
- Appoint a compliance officer.
- Disseminate portfolio information in an accurate manner.

- Have an independent third party review client accounts.
- Appropriately maintain records.
- Hire qualified staff with sufficient resources.
- Have a contingency plan in place.

Performance and Valuation

- Report results in an accurate manner using fair market values.

Disclosures deal with any kind of material information disclosed to the client, such as conflicts of interest, regulatory disciplinary actions, the investment decision-making process, and strategies including inherent risks, fee schedules, calculation of performance results, proxy voting issues, allocating shares of stock, and the results of any audits.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 34.1

- A** This is an example of trying to manipulate price and/or volume. There is no indication of trying to execute for personal or firm benefit ahead of clients, making the other two choices not relevant. (LOS 34.d)
- C** Fields violated the Disclosures section of the Code by misrepresenting the bonds as being safe and secure. She must provide a more balanced discussion of reward and risk. Performance and valuation deals with presenting the track record of the manager and disseminating client account values to the client. Fields violated at least two of the ethical responsibilities related to the Code, which are (1) to always act in an ethical manner and (2) to act for the benefit of your clients. (LOS 34.b)
- C** This is a violation of the Code dealing with trading, specifically related to the use of soft dollar commissions, also referred to as client brokerage, which are trading commissions paid to WIA by Life Investors. Soft commissions are assets of the client and should only be used to purchase goods or services to aid in the investment decision-making process (e.g., purchasing research) and should not be used to pay for marketing materials. (LOS 34.d)
- A** Potential illegal or unethical activity cannot be ignored. The firm must take action, such as investigating. There is no requirement to disassociate merely due to suspicion and no requirement to go to the authorities. (LOS 34.d)
- A** Record retention for seven years is only a suggestion if no other regulations or laws exist, but it is the least likely violation here. Using personal emails for client communication would compromise the ability to maintain and review records. Allowing the brokers to hire their supervisor would compromise any effective supervision. Communicating with clients using personal email is not acceptable because this type of communication may be difficult to monitor as mandated by the Compliance and Support part of the Code. Part of an effective compliance system is to have a designated compliance officer who can develop and implement written compliance policies. Allowing the brokers in an office to hire and presumably fire the person who is responsible for supervising them does not allow for effective internal controls, which need to be present to prevent fraudulent behavior. (LOS 34.d)

- 6. B** The firm must develop policies and procedures to maintain client information, including how to deal with the rare cases it must disclose. Lavish gifts from service providers are prohibited, but not from clients. Gifts from clients are a disclosure issue. Outside business relationships with clients are not prohibited, but are another potential for conflicts of interests (like lavish client gifts), which require disclosure to the employer. (LOS 34.d)
-

¹Reading 34, CFA Program Curriculum, Volume 6, Level III (CFA Institute, 2021).

The following is a review of the Ethical and Professional Standards (2) principles designed to address the learning outcome statements set forth by CFA Institute. Cross-Reference to CFA Institute Assigned Reading #35.

READING 35: OVERVIEW OF THE GLOBAL INVESTMENT PERFORMANCE STANDARDS

EXAM FOCUS

GIPS is now considered part of ethics, which is 10–15% of the exam. Historically, GIPS was 0–5% of the exam and tested in the item set format. On rare occasions, it has been tested as a constructed response question.

GIPS falls pretty far down the list of favorite topics for most candidates. Like ethics, you must know the concepts and principles, then apply them to specific situations to identify compliance or non-compliance. There are a surprising number of calculation issues. To prepare for GIPS:

- **It is strongly advised you watch the videos that go with each module for this reading.**
- **Work practice questions.**

There are a couple of pitfalls to watch out for:

- This year's reading is revised from last year's GIPS reading to reflect the 2020 edition of the GIPS standards, which have been updated from the 2010 standards.
- CFA Institute indicates that candidates are required to have knowledge from two CFA Institute readings: the curriculum reading, as well as a separate document on its website. This SchweserNotes reading provides the key components from both in a single reading.
- A popular myth is to read the actual GIPS document from the CFA Institute website instead of the assigned material. It will not provide the end-of-chapter questions you are expected to have worked and can mislead you on what is actually in the assigned material.
- Like ethics, it is easy to make up questions that cannot be answered. Exam questions are designed to test your understanding of the assigned material and not hypothetical real-world situations that would require additional research or delve into the sub-issues that can arise in GIPS.

Read the assigned material, work the practice questions, and there is every reason to do well on this section of the exam.

MODULE 35.1: GIPS OVERVIEW

GIPS Standards

The Global Investment Performance Standards (GIPS®) contain ethical and professional standards for the presentation of investment



Video covering this content is available online.

performance results. The GIPS are a *voluntary* set of standards. They are based on the fundamental principles of full disclosure and fair representation of performance results. When investment management firms comply with the GIPS, clients, prospective clients, and consultants are better equipped to fairly assess historical investment performance.

The GIPS are not all-encompassing because there is no practical way for a set of standards to address every possible situation a firm may face. The GIPS should, therefore, be viewed as a *minimum* set of investment performance presentation standards.

Investment management firms should always include additional information in their performance presentations that would help current and prospective clients better understand the reported performance results.

The 2020 edition of the GIPS standards is delineated into three sections: standards for investment management firms, for asset owners, and for verifiers. Asset owners who manage assets for an organization, participants, or beneficiaries and *compete for business* would use the GIPS standards for firms. Asset owners who *do not compete for business* would use the GIPS standards for asset owners. Verifiers are third parties who provide **verification** that an investment firm is in compliance with GIPS standards. The LOS focus on the standards for investment management firms.

The GIPS standards provide a globally accepted method for calculating and presenting investment results to **prospective clients** and **prospective investors**. The definition includes those clients or investors who currently have funds at the firm, as well as those who don't. Clients are those that invest in a firm's strategies via a segregated account, whereas investors are those that invest in a firm's pooled funds. In the discussion of the GIPS standards, the terms *client* and *investor* are often used interchangeably.

When a firm claims compliance with the GIPS standards, the firms must calculate and present compliant returns in a **GIPS report**, which must be provided to all, not just some, of its prospective clients and investors. The GIPS report provides the firm's previous investment performance, as well as required and additional disclosures. It should be up to date and comparable to reports from other firms with similar strategies that also claim compliance.

Objectives, Scope, and Benefits of the GIPS

LOS 35.a: Discuss the objectives and scope of the GIPS standards and their benefits to prospective clients and investors, as well as investment managers.

CFA® Program Curriculum, Volume 6, page 288

Objectives

The objectives of GIPS are as follows:

- Advance the interests of investors and increase their confidence in the investment industry.
- Provide accurate and comparable data to investors.
- Create a globally accepted standard for the determination and presentation of investment performance.
- Facilitate fair competition among global investment managers.
- Encourage self-regulation in the global investment industry.

Scope

Only investment management firms and asset owners who compete for business may claim compliance to the GIPS standards for firms. With respect to the terminology used to refer to a firm's assets under management, a composite is a collection of portfolios with similar investment mandates, objectives, or strategies. A segregated account is a portfolio owned by a single investor and is sometimes referred to as a separately managed account (SMA). A pooled fund is also a portfolio, but it is not owned by a single investor. Whereas broad distribution pooled funds are subject to regulation and are available to the general public (e.g., mutual funds), limited distribution pooled funds are not available to the general public (e.g., hedge funds).

The scope of the GIPS standards is as follows:

- GIPS compliance can only be claimed on a firm-wide basis.
 - GIPS compliance cannot be claimed for just some of an investment firm's products.
 - GIPS compliance cannot be claimed for only specific composites, pooled funds, or portfolios.
- To claim GIPS compliance, a firm must comply with all, not just some, of the applicable GIPS standards requirements.
 - The GIPS standards also include recommendations, which are optional but following them is consistent with best practices.
 - The GIPS standards will evolve over time as strategies and technologies change.
- A claim of GIPS compliance indicates, among other things, that:
 - A firm's data inputs, processes, and return calculations are compliant.
 - All the firm's fee-paying segregated accounts have been assigned to at least one composite.
 - All the firm's limited distribution pooled funds are included in a composite appropriate to their characteristics.
 - *Note:* Broad distribution pooled funds are only required to be in a composite if their strategy is also offered in separate accounts.



PROFESSOR'S NOTE

One way of thinking about the scope of the GIPS is that it can't be halfway. To be GIPS compliant, all customers should be provided a report, all the firm's products must be compliant, and all GIPS standards must be followed. Compliance with GIPS can't be halfway.

The exception to this is broad distribution pooled funds, which often do not have to be included in a composite, as noted above. Why are they different? Think of it this way: Broad distribution pooled funds are typically government regulated such that investor protections have already been established.

Benefits to Prospective Clients and Investors

GIPS helps investors make sound decisions when choosing an investment manager because:

- GIPS compliance standardizes the determination and presentation of investment results, thereby making manager performance more comparable.

- Manager performance is more reliable when the firm is GIPS compliant.
- The **benchmark** requirements of GIPS can facilitate a discussion with the manager about the proposed investment strategy's past and targeted future performance.

Benefits to Investment Managers

Firms incur costs to ensure GIPS compliance. In return, GIPS may provide the following benefits:

- GIPS increase investor confidence in both the investment industry and the firm.
 - This is especially true if the firm is verified by a third party.
- GIPS compliance helps attract new investors who prefer or require their managers to be GIPS compliant.
- GIPS helps firms compete internationally because firm performance is comparable across borders.
- GIPS helps firms strengthen and maintain internal controls due to the recordkeeping and reporting required by GIPS.
- Firms may gain additional information about their operations due to the technology often adopted by firms to comply with GIPS.

MODULE 35.2: COMPLIANCE FUNDAMENTALS



Video covering this content is available online.

LOS 35.b: Explain the fundamentals of compliance with the GIPS standards, including the definition of the firm and the firm's definition of discretion.

CFA® Program Curriculum, Volume 6, page 294

Definition of the Firm¹

A **firm** is defined as:

"an investment firm, subsidiary, or division held out to clients or potential clients as a distinct business entity."

A **distinct business entity** is defined as:

"a unit, division, department, or office that is organizationally or functionally separated from other units, divisions, departments, or offices and that retains discretion over the assets it manages and that should have autonomy over the investment decision-making process."

What are some characteristics for identifying a distinct business entity? An organization is more likely to be characterized as a distinct business entity if it has a distinct:

- Legal organization (e.g., as a separate subsidiary).
- Market.
- Client base.
- Investment process.
- Investment strategy.

- Investment staff such as portfolio managers and analysts.
- Physical location.
- Chain of command.



PROFESSOR'S NOTE

Why is the delineation of the firm and a distinct business entity important? Recall from LOS a that compliance with GIPS can't be halfway. Consider a national bank with two investment management divisions: one for high net worth investors (HNWI) and another for retail investors (RI). If the RI division wishes to become GIPS compliant but the HNWI division does not, the RI can only claim GIPS compliance if RI is held out to the public as a distinct business entity and could be characterized as a separate firm.

Note, however, that judgment is required to make the determination as to whether an organization should be characterized as a distinct business entity. Suppose a firm has two separate divisions but they use the same trading desk to execute their order. If all the desk does is buy and sell securities, then an argument could be made that both divisions are distinct business entities. If however, the trading desk helps value securities, then it is less likely that the divisions could be characterized as distinct business entities.

The definition of the firm affects the initial implementation of GIPS compliance and continuing compliance activities. It is also used to determine the **fair value of total firm assets**, which for the defined firm:

- Include discretionary and nondiscretionary assets.
- Include fee-paying and non-fee-paying assets.
- Are net of leverage used.
- Are only actual (not simulated) assets.
- Exclude advisory-only assets.
- Exclude uncalled, **committed capital** (i.e., capital that investors have pledged but which the firm has not yet drawn).

Fair value is defined as the value at which willing and knowledgeable parties would exchange an asset. It is most easily determined as the market value of identical assets in liquid markets. Discretionary assets are those where the manager has control of the investment strategy and include those assets managed by a subadvisor if the manager selects the sub-advisor. Nondiscretionary assets are those where client constraints materially affect the manager's ability to execute the strategy.

Note, however, that when calculating *composite* assets, not *total firm* assets, nondiscretionary assets are **not** included. Logically, this makes sense because when calculating composite performance, performance not controlled by the manager should not be attributed to the manager.

In the case of the excluded advisory-only client assets, the firm only offers investment advice and does not have trading authority for the assets.

Other Compliance Fundamentals

In addition to these basic concepts regarding compliance, there are also the following fundamentals.

- To initially claim compliance with the GIPS standards, the firm must attain compliance for a minimum of five years or for the period since firm inception if the

firm has been in existence for less than five years.

- Firms must establish, update on a timely basis, and document policies and procedures for meeting GIPS. This includes policies for any GIPS recommendations voluntarily adopted and any error corrections.
- If the GIPS standards conflict with local laws and regulations, the firm must comply with local laws and regulations and disclose the conflict.
- The firm must not present performance-related information that is false or misleading, whether the information pertains to GIPS or not.
- The firm must provide an annual GIPS-compliant report to all existing clients for the composites in which that client's performance is included.
- Benchmarks must reflect the corresponding investment strategy and must be total return benchmarks, not price-only benchmarks.
- The firm must disclose all **material errors** and disclose corrected reports to current clients and verifiers.
- The firm must maintain data needed for GIPS compliance and must maintain a list of composites for the last five years.

MODULE 35.3: RETURN CALCULATIONS



LOS 35.c: Discuss requirements of the GIPS standards with respect to return calculation methodologies, including the treatment of external cash flows, cash and cash equivalents, and expenses and fees.

Video covering this content is available online.

CFA® Program Curriculum, Volume 6, page 296

GIPS requires comparable calculation methods by all firms to facilitate comparison of results. For non-private market investment portfolios, returns must be calculated monthly. Portfolio returns must be calculated on a total return basis using beginning (BV) and ending fair value (EV). If there are no interim external cash flows, the return (R_t) during a time period is simply:

$$R_t = \frac{EV - BV}{BV}$$

In many cases, however, there are interim external cash flows (ECF), such as client withdrawals (outflows) or additional client contributions (inflows). Large interim ECFs can distort return calculations because the EVs are affected and it would be unclear how much of the return is due to client cash flows and how much is due to manager performance.

Ideally, to eliminate the potential distortion in returns due to ECFs, the investment would be valued each time an interim ECF occurs. The sub-period returns must then be geometrically linked to create a time-weighted rate of return (TWRR):

$$R_{twrr} = (1 + R_1) \times (1 + R_2) \times (1 + R_3) \times \dots \times (1 + R_t).$$

This computation is illustrated in the example below.

EXAMPLE: TIME-WEIGHTED RATE OF RETURN

The Rooney account was \$2,500,000 at the start of the month and \$2,700,000 at the end. During the month, there was a cash inflow of \$45,000 on day 7 and \$25,000 on day 19. The values of the Rooney account are \$2,555,000 and \$2,575,000 (inclusive of the cash flows for the day) on day 7 and day 19, respectively. Calculate the time-weighted rate of return (assuming 30 days in the month).

Answer:

First, calculate three subperiod returns using the rate of return calculation when external cash flows occur at the end of the evaluation period:

Subperiod 1 (days 1–7)

$$r_{t,1} = \frac{[(\$2,555,000 - \$2,500,000) - 45,000]}{\$2,500,000} = 0.004 = 0.4\%$$

Subperiod 2 (days 8–19)

$$r_{t,2} = \frac{[(\$2,575,000 - \$2,555,000) - 25,000]}{\$2,555,000} = -0.002 = -0.2\%$$

Subperiod 3 (days 20–30)

$$r_{t,3} = \frac{(\$2,700,000 - \$2,575,000)}{\$2,575,000} = 0.049 = 4.9\%$$

Second, compound the returns together (chain-link) to calculate an overall time-weighted rate of return:

$$\text{TWRR} = (1 + 0.004)(1 - 0.002)(1 + 0.049) - 1 = 0.051 = 5.1\%$$

In the example above, the account was valued every day there was an interim ECF. Calculating a TWRR this way is referred to as a true or exact TWRR because, due to the interim valuations, the TWRR is not distorted by the ECFs.

However, sometimes a firm does not value its portfolios every day. Furthermore, if the ECFs are relatively small, then approximations of the monthly return will provide a close estimate of the true TWRR. The methods of calculating an approximate return under the GIPS standards are as follows.

Approximations

Modified Dietz Return

The Modified Dietz return method adjusts the simple return formula as follows:

$$R_{MD} = \frac{EV - BV - ECF}{BV + \text{adjusted ECF}}$$

For example, assume a portfolio experienced cash inflows from client contributions. The cash inflows are subtracted from the ending value and adjusted cash inflows are added to the beginning value. The numerator's logic is that a manager should not get credit for a client's contribution while in the denominator it is recognized that the manager had use of that cash inflow for part of the period, as demonstrated below.

In the previous Rooney account example, the adjusted ECFs are calculated using partial month weightings (W) as follows:

ECF	Weight (W)	Adjusted ECF
\$45,000	$(30 - 7) / 30 = 23 / 30$	$23 / 30 \times \$45,000 = \$34,500$
\$25,000	$(30 - 19) / 30 = 11 / 30$	$11 / 30 \times \$25,000 = \9167

The 1st ECF was received on Day 7, meaning that the manager had use of it for 23 days. The manager had use of the 2nd ECF for 11 days. Using these in the formula for the Modified Dietz return (RMD):

$$R_{MD} = \frac{\$2,700,000 - \$2,500,000 - \$45,000 - \$25,000}{\$2,500,000 + \$34,500 + \$9,167} = 5.1\%$$

In the example, if the ECFs were cash outflows such as client withdraws, they would have been denoted with a negative sign.

MIRR

A second approximation is the modified internal rate of return (MIRR). It is simply an internal rate of return (IRR) that adjusts for the timing of the ECFs. It can be solved for by trial and error or spreadsheet to find the interest rate (r) that equates the EV to the future value of the BV and ECFs. Like Modified Dietz, each ECF is weighted by the days of the month.

In the calculation that follows, the ending three zeros (000) are dropped to simplify, and the remainder-of-month periods are calculated to two decimal places.

$$2,700 = 2,500(1 + r) + 45(1 + r)^{0.77} + 25(1 + r)^{0.37}$$

$$\text{MIRR} = 5.1\%$$

Since both the Modified Dietz and MIRR use the number of days in the month, they are said to be methods that adjust for daily-weighted ECFs. The Modified Dietz and MIRR typically provide similar values.

Regardless of whether the exact method or the approximations (Modified Dietz or MIRR) are used, GIPS requires that the monthly returns be geometrically linked to calculate an annual return. The larger the ECFs and the more volatile the market, the greater the discrepancy will be between the true TWRR and the approximations.



PROFESSOR'S NOTE

The previously calculated exact TWRR was 5.1%, making the approximations very close. This is not surprising, given that the ECFs were relatively small. If the ECFs are relatively small and the path of returns does not vary significantly by subperiod, the methods will produce similar results.

Solving for the MIRR by trial and error is not an LOS and not covered in the CFA reading. Note that the MIRR defined here is not the same as the MIRR you may have encountered in a corporate finance class. Although they are both IRRs, they differ in how they "modify" the IRR.

To recap, under the GIPS requirements:

- Firms must calculate monthly returns for non-private market investment portfolios.
- If a firm calculates daily valuations and returns, the daily return must be geometrically linked to create a monthly true TWRR.
- If a firm does not calculate daily returns and the ECFs are not large, approximations to the true TWRR that do not require an interim valuation can be used.
- If the ECFs are large, the portfolio must be valued at the time of the ECFs to calculate a subperiod return.

- Regardless of how the monthly return is calculated, the monthly return must be geometrically linked to create an annual return.

For portfolios other than non-private market investment portfolios, what are the GIPS requirements?

- Private market investment portfolios values and returns must be calculated quarterly (e.g., real estate, private equity, and other illiquid, not publicly traded, investments).
- Pooled funds not in a composite must be valued and returns calculated at least annually.
 - The fund must also be valued and a subperiod return calculated at the time of subscriptions or redemptions.

What constitutes a **large cash flow**?

- The definition of a large ECF is determined by each firm for each composite.
- Generally, a large ECF is that which is large enough to affect the return calculation.
- The firm's policy for the determination of a large cash flow must be documented.

Other Return Calculation Topics

LOS 35.c: Discuss requirements of the GIPS standards with respect to return calculation methodologies, including the treatment of external cash flows, cash and cash equivalents, and expenses and fees.

CFA® Program Curriculum, Volume 6, page 302

In addition to the return calculations discussed previously, the GIPS standards have other requirements.

There are some investment strategies where the firm controls the timing and size of the ECFs. In these cases, a money-weighted return (MWR) will be more representative of the manager's skill than the TWRR. MWRs can be used instead of TWRRs if:

- The firm has control of the timing of ECFs.
- The portfolios are closed-end, or fixed life, or fixed commitment, or have a significant amount of illiquid assets.

The MWR (which is an IRR calculation) must be calculated and the portfolios valued at least annually.

Other return calculation requirements are as follows.

- Trade date, not settlement date, prices must be used to calculate returns.
- Partial year returns cannot be annualized.
 - This would be equivalent to representing simulated returns as actual returns, which is not allowed under GIPS.
- Total returns, which include income and capital gains/losses, must be used.
 - For investments that generate income, such as bonds, accrual accounting must be used.
 - Returns must reflect the manager's allocations to cash and cash equivalents.
 - This is true even if the firm uses an outside firm to manage the cash.

- Cash equivalents include money market instruments and fixed-income securities with maturities less than a year.



PROFESSOR'S NOTE

Once again, we can think of GIPS as not being half- or partway. Total, not just price, returns must be used and one can't assume that a partial-year return would continue for the entire year (i.e., it can't be annualized). Also, it makes sense that returns must reflect cash returns. A manager may not want to, given the low returns to cash, but this would not be consistent with the fair representation of the manager's returns.

- Under GIPS, the presented **gross-of-fees** return must have been calculated after the deduction of transactions costs.
- **Transactions costs** reflect the costs of buying and selling securities.
 - Examples include brokerage commissions, spreads, exchange fees.
 - For private market investments, they can also include legal, advisory, and other fees.
 - **Custody fees** should not be included.
 - Transactions costs can be estimated but only if they are unknown.
- In some cases, portfolios pay **bundled** or **all-in-fees**, which can include trading costs, as well as **investment management**, custody, **administrative**, and other fees.
 - In this case, the presented gross-of-fees return must be reduced by:
 - the portion of the bundled fee due to transactions costs; or
 - the entire bundled fee if the transactions costs cannot be separated out.



PROFESSOR'S NOTE

The emphasis here on returns that are reduced by trading costs but not investment management costs might seem surprising, given that management fees reduce investors' returns. However, it is recommended that net-of-fees returns, reflecting management fees (4.B.1), are also presented. It is also the case that different investors pay different fees. For example, those with more assets often pay lower management fees in percentage terms. Not surprisingly, then, it is required that investors be provided with a fee schedule (4.C.11).

MODULE QUIZ 35.1, 35.2, 35.3



To best evaluate your performance, enter your quiz answers online.

1. Assume that Firm Z is the investment manager for 15 retail clients and has full discretion over the investment of the clients' assets. At the end of each day, any excess cash in the portfolios is swept into a money market fund. Firm Z does not manage the money market fund, so it does not include the cash portion of the portfolio in its total return performance calculation. Discuss whether it is an acceptable practice for Firm Z to claim compliance with the GIPS.
2. Consider the total quarterly returns for the growth and income composite of the investment firm ADA: Q1 = 3.00%, Q2 = 4.15%, Q3 = 3.75%, and Q4 = 3.15%. Calculate the appropriate total annual return under the calculation methodology under the GIPS.
3. For promotional purposes, the Jaspre Investment Management firm (JIM) wants to take advantage of the prestige associated with presenting performance results that are in compliance with the GIPS. To save time and expense, JIM decides to create five composites for marketing purposes. These portfolios represent 60% of the firm's fee-paying discretionary portfolios. Recognizing that the firm cannot claim compliance for all of its portfolios, JIM plans to include the following compliance statement with its

performance presentation: “*The investment results presented in this report have been prepared and presented in compliance with the Global Investment Performance Standards (GIPS®) for the majority of the assets under management by Jaspre Investment Management, Incorporated.*” Discuss whether JIM’s claim of compliance is acceptable under the GIPS.

4. Kenzo Fund Managers (KFM) manages a fund that has the following cash flows and valuations (in U.S.\$ millions) for the month of September:

Date	Value (Before Cash Flow)	Cash Flow	Value (After Cash Flow)
1 September	50.0	N/A	50.0
10 September	51.5	5.0	56.5
20 September	59.0	-2.0	57.0
30 September	55.0	N/A	55.0

- (a) Calculate the approximate TWRR for September using the Modified Dietz method.
 (b) Calculate the exact TWRR for September revaluing the portfolio at every ECF.

MODULE 35.4: COMPOSITES



LOS 35.d: Explain requirements of the GIPS standards with respect to composite return calculations, including methods for asset-weighting portfolio returns.

Video covering this content is available online.

CFA® Program Curriculum, Volume 6, page 305

Global Investment Performance Standards (GIPS®) for Firms, page 13

Composites are groupings of one or more portfolios with similar investment mandates, objectives, or strategy. Because composite returns are an essential part of the firm’s communication with investors, the GIPS standards require that composite return calculations be calculated at least monthly, except for private market investments and pooled funds not in a composite, which must be calculated at least quarterly and annually, respectively. Composite returns must be calculated in one of three ways:

1. Asset-weighting portfolio returns by beginning-of-period values
2. Asset-weighting portfolio returns by both beginning-of-period values and ECFs
3. The aggregate method

The first method is perhaps the simplest as each portfolio return is just multiplied by its beginning of period weight. The second method is similar except that we also adjust for the ECFs. The third method uses total composite values at the beginning and end of period. The weighting of ECFs in the second and third methods will look familiar to you from the Modified Dietz method covered previously.

EXAMPLE: A U.S. manager’s equity composite contains three portfolios. The values below for the month of October show the external cash flows and the beginning and ending portfolio values. The values are in \$ millions.

Portfolio	30-Sep	3-Oct	13-Oct	19-Oct	31-Oct
A	\$110.00			\$10.10	\$109.20
B	\$167.80		-\$11.10		\$166.90
C	\$344.20	\$22.00			\$345.10
Total	\$622.00	\$22.00	-\$11.10	-\$10.10	\$621.20

Questions:

- Calculate the Modified Dietz return for each portfolio.
- Calculate the composite return using beginning of period portfolio values.
- Calculate the composite return using beginning of period portfolio values with external cash flows.
- Calculate the composite return using the aggregate return method.

Answers:

- a) Positive signs for the ECF denote cash inflows such as client contributions, and negative signs denote cash outflows such as client withdraws. The adjustments to the ECFs result in partial month weightings (W) of each cash flow as follows:

Portfolio	ECF	Weight (W)	Adjusted ECF
A	-\$10.10	(31 - 19) / 31 - 12 / 31	12 / 31 × -\$10.10 = -\$3.91
B	-\$11.10	(31 - 13) / 31 - 11 / 31	18 / 31 × -\$11.10 = -\$6.45
C	\$22.00	(31 - 3) / 31 = 28 / 31	28 / 31 × \$22.00 = \$19.87

Using these in the formula for the Modified Dietz return (RMD):

$$\text{Portfolio A : } R_{MD} = \frac{\$109.20 - \$110 - -\$10.10}{\$110 - \$3.91} = \frac{\$9.30}{\$106.09} = 8.77\%$$

$$\text{Portfolio B : } R_{MD} = \frac{\$166.90 - \$167.80 - \$11.10}{\$167.80 - \$6.45} = \frac{\$10.20}{\$161.35} = 6.32\%$$

$$\text{Portfolio C : } R_{MD} = \frac{\$345.10 - \$344.20 - \$22}{\$344.20 + \$19.87} = \frac{\$21.10}{\$364.07} = -5.80\%$$

Notice that for Portfolio A, even though the ending value of \$109.20 was lower than the beginning value of \$110.00, the return was positive because the client withdrew \$10.10 from the portfolio during the month. The same pattern holds for Portfolio B.

The opposite is true for Portfolio C. Although the ending value was greater than the beginning value, the return is negative. The client had contributed additional capital of \$22.00 during the month, and once we factor this additional contribution in, the return is negative.

- b) To calculate the composite return using beginning of period values, first find the weights of each portfolio in the composite:

$$A: \frac{110.00}{622.00} = 17.68\%; B: \frac{167.80}{622.00} = 26.98\%; C: \frac{344.20}{622.00} = 55.34\%.$$

The composite return is the sum of the weights times the returns:

$$\begin{aligned} &= 0.1768 \times 8.77\% + 0.2698 \times 6.32\% + 0.5534 \times -5.80\% \\ &= 1.5505\% + 1.7051\% + -3.2097\% = 0.05\%. \end{aligned}$$

- c) To calculate the composite return using beginning of period portfolio values with external cash flows, first find the weights of each portfolio in the composite. Since the denominator of the Modified Dietz formula for each portfolio factors in the beginning values and weighted cash flows, it can be used to obtain the weightings. Using the figures above, the total for the composite is \$106.09 + \$161.35 + \$364.07 = \$631.51. The weights are then:

$$A: \frac{106.09}{631.51} = 16.80\%; B: \frac{161.35}{631.51} = 25.55\%; C: \frac{364.07}{631.51} = 57.65\%.$$

The composite return is the sum of the weights times the returns:

$$\begin{aligned} &= 0.1680 \times 8.77\% + 0.2555 \times 6.32\% + 0.5765 \times -5.80\% \\ &= 1.4734\% + 1.6148\% + -3.3437\% = -0.25\%. \end{aligned}$$

Notice that under this method, the composite return is slightly negative, whereas in the previous method, the return was positive. This is because under this method, the weighted cash flows are figured in and Portfolio C's early in the month cash flow results in a larger Portfolio C weighting. Thus, Portfolio C's negative return has more influence in the composite's return than under the previous method.

d) In the aggregate return method, the composite is treated as a single portfolio of its constituents and the return is calculated using the Modified Dietz formula. In the numerator, we use the total of the portfolio values and cash flows from the bottom of the table. In the denominator, the total of the portfolios' Modified Dietz values from the previous method are used.

$$R_{MD} = \frac{\$621.20 - \$22 - \$11.10 - \$10.10 - \$622}{\$631.51} = \frac{-\$1.60}{\$631.51} = -0.25\%$$

In many cases, the second and third method for calculating the composite return will produce the same result.

Discretion and Composite Construction

LOS 35.e: Explain the meaning of “discretionary” in the context of composite construction and, given a description of the relevant facts, determine whether a portfolio is likely to be considered discretionary.

CFA® Program Curriculum, Volume 6, page 308

Global Investment Performance Standards (GIPS®) for Firms, page 18

As mentioned above, composites are groupings of similar portfolios. The GIPS standards specify requirements for composite construction so that investors are provided a fair and accurate representation of manager performance. The intent of the requirements is to, in part, prevent managers from excluding poorly performing portfolios from composites.

A key determinant in whether a portfolio is included in a composite is whether the manager has discretion. Whether a portfolio is discretionary hinges on the manager's ability to implement the investment strategy. If the performance of a portfolio does not reflect a manager's decisions (i.e., the portfolio is nondiscretionary), then that portfolio would be excluded from the calculation of composite returns.

Generally speaking, the requirements for what **must** be included in at least one composite are as follows:

- All actual, fee-paying, discretionary segregated accounts.
- Pooled funds that are also offered as segregated accounts.
 - These include limited distribution pooled funds, as well as broad distribution pooled funds that have strategies also offered to individuals through a separate account.

In general, the requirements for what must not be included in a composite are as follows:

- Nondiscretionary accounts.
- Pooled funds that are not also offered as segregated accounts (e.g., a broad distribution pooled fund—which is typically government regulated).

- Simulated portfolios.

Non-fee-paying, discretionary segregated accounts may be included with additional disclosures.

While these general guidelines are succinctly stated, their implementation is subject to judgment, which necessitates discussion as provided below.



PROFESSOR'S NOTE

It might seem strange that a portfolio could be in more than one composite. However, consider a value portfolio. The portfolio must be included in both the value composite and the small cap value composite (assuming that the portfolio meets the inclusion criteria for both composites). Note, however, that the firm should be careful to not double count the portfolio's assets when determining total firm value.

Discretion

- Given its importance, a firm must maintain and apply a clear, written definition of discretion.
- A client's investment policy statement (IPS) will specify risk preferences and constraints.
 - These include:
 - The benchmark the manager is measured against.
 - Risk controls such as limits on equity sector weights, bond credit quality, and the use of derivatives.
 - Environmental, social, and governance (ESG) preferences.
 - Restrictions on the sale of company stock.
 - Limits on the sale of low basis stocks to avoid high taxation.
 - Legal restrictions (e.g., a government fund can only hold domestic securities).
 - However, none of these *automatically* make a portfolio nondiscretionary (i.e., there are degrees of discretion).
 - Guidance is based on whether the manager's ability to use professional judgment is materially constrained.
 - For example: If an IPS constraint limits the use of derivatives and the manager does not normally use derivatives anyway, the portfolio would likely be deemed discretionary.
 - If the constraint is deemed immaterial, the manager can:
 - Place the portfolio in a composite with similar, unconstrained portfolios.
 - If the constraint is deemed material, the manager should:
 - Group the portfolio with similar, constrained portfolios.
 - Exclude the portfolio from all composites.
 - In some cases, there may be restrictions for particular assets (as in the sale of low basis stock above). In these cases, a manager may:
 - Consider the entire portfolio nondiscretionary; or
 - Remove these assets and place the remainder of the portfolio in a composite; or

- Consider the entire portfolio discretionary if the restricted assets value is below a certain percentage of the portfolio, as stated in their policy.
- In some cases, its ECFs might indicate that a portfolio is nondiscretionary.
 - For example: A client makes large withdraws that necessitates a large cash balance, restricting the manager's ability to invest in equity positions to the degree as with other portfolios in the composite.

Model Portfolios

- Simulated portfolios cannot be in a composite.
- These portfolios are called hypothetical, model, or theoretical portfolios.
- They are often based on the backtesting of data.
- Their performance can be provided in supplemental information, but not in composite results.
 - Note that any information the firm provides that is supplemental to the GIPS requirements must be labeled as such and must not contradict or conflict with required GIPS disclosures.
- However, sometimes a firm will use its own funds (seed money) to create a new strategy.
 - The performance for these actual portfolios can be included in existing or new composites.
 - These portfolios would be subject to the disclosure requirements for non-fee-paying portfolios.

Non-Fee-Paying Portfolios

- Non-fee-paying portfolios may be included in a composite, but the firm is not required to.
- If included, firms are required to disclose the percentage of composite assets represented by non-fee-paying portfolios.

Composite Construction

LOS 35.f: Explain the role of investment mandates, objectives, or strategies in the construction of composites.

CFA® Program Curriculum, Volume 6, page 310

Global Investment Performance Standards (GIPS®) for Firms, page 18

A critical step in achieving an accurate and comparable representation of a firm's performance is the defining and construction of composites. As per the GIPS standards, composites must:

- Be determined by investment mandate, objective, or strategy.
- Contain all portfolios that match the composite definition.
- Be based on criteria that is documented in the firm's policies and procedures.
- Be defined such that clients are able to compare the performance of one firm to another.

- Be representative of the firm's products and be consistent with the firm's marketing strategy.

The list just described is straightforward, but applying the list items in practice is more difficult. A starting point in composite construction might be competitors' composite classifications and/or the styles requested by potential investors. A composite's construction will have lasting presentation consequences and should thus be constructed carefully. A composite definition too narrow (e.g., small cap value frontier market stocks) results in too few portfolios in each, creates unnecessary costs, and potentially jeopardizes client confidentiality. A composite definition that is too broad results in disparate performance among composite portfolios.

The following are examples on which to base composite construction:

- Equity style.
- The benchmark.
- Equity or bond sector.
- Risk/return profile using measures such as tracking error.
- Whether active, passive, or core plus management is used.
- Investment strategy such as sector rotation, fundamental analysis, etc.

The Inclusion and Exclusion of Composite Portfolios

LOS 35.g: Explain requirements of the GIPS standards with respect to composite construction, including switching portfolios among composites, the timing of the inclusion of new portfolios in composites, and the timing of the exclusion of terminated portfolios from composites.

CFA® Program Curriculum, Volume 6, page 313

Global Investment Performance Standards (GIPS®) for Firms, page 18

Over time, a portfolio manager will gain new clients, lose others, and have clients who change their objectives. The treatment of these portfolios will affect the composite's return. Because unethical managers may be tempted to move their best-performing portfolios to a particular composite, the GIPS standards specify requirements regarding the movement of portfolios in and out of composites. As such, the GIPS standards require firms to have policies for:

- When portfolios are included in composites.
- When portfolios are excluded from composites.
- Switching a portfolio from one composite to another.
- Cash flows from new investments or liquidations.
- The minimum asset level for a composite.

The firm's policy should be established on a composite-by-composite basis and applied in a timely, consistent manner. We discuss each of these as follows.

Portfolio Inclusion

- New portfolios should be included in a composite at the beginning of the next full measurement period.

- For example: If a portfolio is funded with cash on July 6 and the firm calculates composite returns monthly, the new portfolio should be included in the composite on August 1).
- However, the firm has discretion on the timing of portfolio inclusion because it may take time to invest new funds. This is often the case when:
 - The investment is made in illiquid securities such as in emerging markets; or
 - The investment is funded with other securities that must be sold before new securities are bought.
- Thus, the firm's documented policy may vary by composite, with some composites allowing for longer periods prior to portfolio inclusion.

Portfolio Exclusion

- Terminated portfolios should be included in a composite through the last full measurement period in which the firm had discretion.
- Clients sometimes direct a firm to stop trading an account or transfer control to a new manager before the portfolio is fully liquidated.
 - For example: Suppose on June 4 a client notifies a firm to stop trading because they will be leaving the firm on July 9. In this case, the portfolio should be included in the composite only through May 31.

Switching Portfolios

- A portfolio can be switched to a new composite due to actions by the client or by the firm.
 - A client may change the portfolio's mandate, objective, or strategy.
 - For example: A client now allows the use of derivatives, so the portfolio is switched to a composite that allows such.
 - The firm may redefine the composite such that the portfolio is no longer appropriate for the composite.
 - Redefining a composite by a firm should be highly unusual.
 - In most cases, a firm should create a new composite instead.
- When a portfolio is switched to a new composite, the portfolio's performance must remain in the old composite's historical performance.

Significant Cash Flows

- **Significant cash flows** are those large enough such that it impedes the firm from implementing the strategy on a timely basis.
 - For example: A client contribution/withdrawal may be so large that it can't be invested/divested quickly in an illiquid market.
 - The firm should document what constitutes "significant" in its policies.
- To prevent composite performance from being affected by cash inflows/outflows in the event of significant cash flows, a firm can:
 - Temporarily exclude the portfolio from the composite; or
 - Create and report on a **temporary new account** (outside of the composite), which would contain:
 - Cash contributions until they can be invested; or

- Securities until they can be divested.

Minimum Asset Levels

- A portfolio may be excluded from a composite if its size is so small that it can't be invested appropriately by a firm.
- As portfolios change in size, they must be added to or removed from a composite as per firm policy regarding the size limits for adding and removing portfolios.
 - For example: A portfolio must be added to a composite if its size rises above €5 million but removed if it falls below €4.5 million.
- The minimum asset level must be specified in advance and portfolios that are removed cannot have their prior performance removed from the composite's historical record.

Example: Account #207 invests in illiquid, fixed income securities. The account receives a large cash infusion on April 12 that cannot be invested quickly at reasonable prices. It is expected to take 60 days for the funds to be reasonably invested.

Best Solution:

Place the funds in a new, temporary, subaccount (call it 207T) until the funds are invested. Continue to report results for 207 in its appropriate composite. Results for 207T will not be reported in any composite. Once 207T is invested in accord with account objectives, 207T will be merged into 207 and affect future results for 207. (Note that the client will need to receive reports showing the results of 207T and 207 to comply with general reporting requirements under the Standards of Professional Conduct. Subaccount 207T is only excluded from GIPS reporting.)

Alternative Solution:

The funds could be placed directly into 207 and 207 results would be excluded from the composite results until the funds are invested in accord with client objectives. GIPS composite results are based on monthly results so if the investments are completed by June 15, account 207 will be excluded from the composite for months April, May, and June. (Note that the client will need to receive reports showing the results of 207 to comply with general reporting requirements under the Standards of Professional Conduct. Account 207 is temporarily excluded from GIPS reporting.)

MODULE QUIZ 35.4



To best evaluate your performance, enter your quiz answers online.

1. Alan Tribon, compliance officer at Frankfurt Investment Management, has scheduled a meeting with one of Frankfurt's portfolio managers, Ashon Guptar, to discuss an investment performance presentation that he recently prepared.

The following are excerpts from the conversation between Tribon and Guptar:

Excerpt 1

Tribon: "I see that the returns in the presentation are reported gross of return of investment management fees. I seem to recall that the GIPS require firms to present performance on a net of management fees basis."

Guptar: "You are correct, and I will promptly see that the performance results are recalculated and the presentation is changed to reflect net-of-fees performance."

Excerpt 2

Tribon: "I notice that there is disclosure of total firm assets for each period. I know this has always been a GIPS requirement, but must we disclose the assets that we direct to sub-advisers under client mandate?"

Guptar: "Yes, unfortunately, the GIPS require that the firm include as total assets under management those assets managed by client-appointed sub-advisers."

Using the template provided, identify whether each of the statements is correct or incorrect. If incorrect, briefly explain why.

Template for Question 1

Comments	Correct or Incorrect (Circle One)	If Incorrect, State Reason
"I seem to recall that the GIPS require firms to present performance on a net-of-management fees basis."	<input type="radio"/> Correct <input type="radio"/> Incorrect	
"...the GIPS require that the firm include as total assets under management those assets managed by client-appointed sub-advisers."	<input type="radio"/> Correct <input type="radio"/> Incorrect	

2. The investment management firm of Rangan, Rollins, and Cramer (RRC) manages portfolios using a long-short strategy. However, RRC does not ever intend to market this strategy and, thus, does not include the performance of these portfolios in any of the firm's composites. Discuss whether this practice is acceptable if RRC claims that its performance presentation results are compliant with the GIPS.
3. The Teletron Investment Management firm (TIM) plans to market an aggressive growth investment strategy using a newly developed proprietary prediction model. To test the model, TIM created an aggressive growth composite and produced a years of returns history using hypothetical assets and a back-tested asset allocation strategy. TIM intends to show the model composite results in its performance presentation. Discuss whether this practice is acceptable under the GIPS.
4. It would be **most likely** that the money-weighted returns could be used instead of time-weighted returns if:
 - A. the account is large.
 - B. the account is non-discretionary.
 - C. the manager can control the timing of external cash flows into and out of the portfolio.
5. Indicate whether *may be included* or *must be excluded* describes the GIPS with respect to the handling of a portfolio with the indicated characteristics. Circle the appropriate indicator in the following template and explain your decision.

Template for Question 5

Characteristic	May Be Included in a Composite Must Be Excluded From Composite	Explanation
Client has significant liquidity needs with an accompanying significant cash position.	May be included Must be excluded	
Client does not pay fees.	May be included Must be excluded	
Client requests strictly following an index.	May be included Must be excluded	

6. Johnson Investment Management (JIM) uses monthly valuation. Assuming the general provisions of GIPS apply, discuss when it would be appropriate to remove a portfolio from JIM's composite if the portfolio is terminated on July 15, 2015.
7. A U.K. manager's composite contains two portfolios. The values below for April show the external cash flows and the beginning and ending portfolio values. The values are in £ millions.

Portfolio	31-Mar	12-Apr	20-Apr	22-Apr	30-Apr
A	£400.00	£25.00		£10.00	£467.00
B	£200.00		-£13.00		£224.00
Total	£600.00	£25.00	-£13.00	£10.00	£691.00

- (a) Calculate the Modified Dietz return for each portfolio.
- (b) Calculate the composite return using beginning of period portfolio values.
- (c) Calculate the composite return using beginning of period portfolio values with external cash flows.
- (d) Calculate the composite return using the aggregate return method.

MODULE 35.5: GIPS PRESENTATION AND REPORTING



LOS 35.h: Explain requirements of the GIPS standards with respect to presentation and reporting.

Video covering this content is available online.

LOS 35.i: Explain the conditions under which the performance of a past firm or affiliation may be linked to or used to represent the historical performance of a

new or acquiring firm.

CFA® Program Curriculum, Volume 6, page 315

Global Investment Performance Standards (GIPS®) for Firms, page 21

GIPS requires that, when marketing a particular investment strategy, firms must make every reasonable effort to provide a GIPS report to prospective clients and limited distribution pooled fund investors. There are two types of GIPS reports, **GIPS Composite Reports** and **GIPS Pooled Fund Reports**. The curriculum focuses specifically on the requirements for Composite Time-Weighted Return Reports. As such, that should be your focus too. The requirements for Composite Time-Weighted Return Reports include the following.

Performance History

Upon GIPS adoption, firms are required to present annual performance for:

- At least 5 years.
 - Unless the firm has been in existence for less than 5 years.
- And then extended each year until the firm builds a 10-year GIPS compliant history.

Returns and Size Measures

The report must include the following:

- Time-weighted returns for the composite and benchmark.
- The amount of firm assets.
- The amount of composite assets.
 - The number of portfolios in the composite if there are six or more.
 - Note that there is no minimum number of portfolios for a composite to be formed.

Risk

The report must include annual measures of internal composite dispersion, benchmark dispersion, and composite dispersion as a whole. **Internal dispersion** measures the variability of portfolio returns within the composite, whereas the latter two measures allow the client to compare the composite's historical risk against a benchmark. It might be useful to think of the first as a micro measure and the latter two as macro measures.

Internal dispersion

- This allows the client to determine how consistent portfolio performance is within the composite.
- A very large internal dispersion may indicate that:
 - The firm was not successful in consistently implementing the composite strategy; and/or
 - The composite definition is too broad.
- Only portfolios in existence for the entire year can be included in internal dispersion calculations.
- Acceptable methods of calculating internal dispersion include:

- High and low returns.
- Range.
- Equal-weighted standard deviation.
- Asset-weighted standard deviation.
- Or another measure chosen by the firm that fairly represents the composite's internal dispersion.

EXAMPLE: Internal dispersion

The following figure illustrates the structure of a composite during 2020. An X indicates that the portfolio was included in the composite for the quarter. If a cell is blank, the portfolio was not included in the composite for the entire quarter. **Determine** which portfolios should be contained in the internal dispersion measure for 2020.

Figure 35.1: Composite Structure, 2020

Portfolio	Quarter 1	Quarter 2	Quarter 3	Quarter 4
A	X	X	X	X
B	X	X	X	
C	X	X	X	X
D		X	X	X
E	X	X	X	X
F			X	X

Answer:

Based on the information contained in the previous figure, Portfolios A, C, and E would be included in the internal dispersion measure for 2020. Portfolios B, D, and F should be excluded from the calculation of the composite's 2020 internal dispersion because they do not have an entire year of performance results. Note that this is only three portfolios to include in the dispersion calculation. Unless there are other portfolios with a full year of data to include in the calculation, no dispersion will be reported. Six or more are required to report dispersion.

The measures of dispersion suggested by the reading include the following:

- The range of annual returns.
- The high and low annual returns.
- The standard deviation of equal-weighted annual return.
- The asset-weighted standard deviation of annual returns.

The **range** of annual returns and the **high and low** annual returns are the simplest and most easily understood measures of dispersion. The advantages of these measures include simplicity, ease of calculation, and ease of interpretation. Disadvantages include the fact that an extreme value can skew the data, and they do not stand alone as adequate risk measures.

The **standard deviation** across equally weighted portfolios is the most widely accepted measure of dispersion within a composite. It is calculated as:

$$\sigma_C = \sqrt{\frac{\sum_{i=1}^n [R_i - \text{MEAN}(R)]^2}{n - 1}}$$

where:

- R_i – return on portfolio i
- $\text{MEAN}(R)$ – equal weighted mean (composite) return
- n – number of portfolios



PROFESSOR'S NOTE

The use of either n or $n - 1$ in the denominator can be supported, and firms are encouraged to disclose how they calculate standard deviation.

The *standard deviation with asset-weighted composite* returns is calculated in the following manner:

$$\text{dispersion} = \sqrt{\sum_{i=1}^n w_i(R_i - C_{\text{ASSET}})^2}$$

where:

R_i = unweighted return on portfolio i

w_i = market weight of portfolio i relative to the market value of the composite

C_{ASSET} = composite's asset-weighted return, or $C_{\text{ASSET}} = \sum w_i R_i$

Composite and benchmark dispersion

The firm should also present the historical dispersion for the benchmark and the composite as a whole, using the **ex post** standard deviation.

The standard deviation must be presented:

- For each annual period.
- For the composite and benchmark.
- Using the previous three years of data on an annualized basis.

Portability

When one firm acquires or joins with another firm, group of managers, or manager, the new firm can link their performance to the previous firm's historical performance if:

1. Substantially all the investment decision makers are retained by the new firm.
2. The decision-making process remains substantially intact and independent within the new firm.
3. The new firm has records that document the previous firm's historical performance.
4. There is no break in the performance record between the new and previous firm.

If only the first three conditions are met, then the previous firm's historical performance can be used to represent that of the new firm, but the records may not be linked. For example, if the previous firm's employees take a garden (temporary) leave at the time of acquisition, the composite assets will not be managed for that period and there will be a break in the presented performance for that time period.

Last, if the new firm is GIPS compliant but the previous firm is not, then the new firm has one year to bring the assets into compliance for future reporting.

Advisory-Only Assets and Uncalled, but Committed Capital

Recall from above that advisory-only assets and uncalled, but committed, capital cannot be included in total firm assets. However, the firm can report information on them on a separate basis or combined with composite or firm assets. If reported on a combined basis, the firm must also report on that for the advisory only and for the uncalled, but committed, assets. In any case, the firm must clearly label the assets that are advisory-only and uncalled, but committed.

MODULE 35.6: THE VALUATION HIERARCHY

LOS 35.j: Explain the recommended valuation hierarchy of the GIPS standards.



Video covering this content is available online.

CFA® Program Curriculum, Volume 6, page 304

Global Investment Performance Standards (GIPS®) for Firms, page 16

Fair value is the amount an asset would be sold in an arm's-length transaction between willing and knowledgeable parties. The GIPS standards provide a recommended valuation hierarchy for determining fair value. Fair value should include accrued income for bonds and other income-generating assets. In the case of cash, income may be accounted for on a cash or accrual basis. Firms must document their valuation process and methodologies, which should be composite—or pooled fund specific.

The GIPS recommended valuation hierarchy is in descending order of usage. A method lower in the hierarchy is used only when all methods higher in the hierarchy are unavailable. The fair value hierarchy is as follows:

1. The quoted price for an identical asset in a liquid market on the same day.
2. The quoted price for a similar asset in a liquid market on the same day.
3. The quoted price for identical or similar assets in markets that are not active.
 - a. For example: A stock trades infrequently such that the last available price is days old.
4. A value based on market inputs.
 - a. For example: Applying the P/E ratio for comparable securities to the firm's earnings.
5. A subjective value that is unobservable.
 - a. This is a last resort and should only be used to measure fair value when observable inputs and prices are not available or appropriate.
 - b. If used, the firm must disclose the assets valued this way as a percentage of composite assets.



MODULE QUIZ 35.5, 35.6

To best evaluate your performance, enter your quiz answers online.

1. If a security does not have an observable, quoted market price available from an active market, the next *best* valuation basis, according to the GIPS valuation hierarchy, is:
 - A. subjective, unobservable inputs.
 - B. observable market-based inputs other than quoted prices.
 - C. quoted prices from an inactive market for the same or a similar security.

MODULE 35.7: GIPS VERIFICATION



LOS 35.k: Discuss the purpose, scope, and process of verification.

Video covering this content is available online.

CFA® Program Curriculum, Volume 6, page 321

Verification can be characterized as the process whereby an independent, outside party assesses the firm's:

- Policies and procedures for composite or pooled fund construction and maintenance.
- Performance calculation.
- Performance presentation.
- Distribution of performance.

The purpose of verification is to provide greater confidence to investors and to the firm in its claim of GIPS compliance. Verification is based on the GIPS principle of fair presentation and full disclosure. Verification, however, does not assure that the construction, calculation, and presentation for any particular portfolio or composite is accurate. Although not required, verification is recommended and consistent with best practices.

The Benefits of Verification to the Firm

Besides providing confidence in its claim of GIPS compliance, other benefits to the firm from GIPS verification include:

- Increased knowledge of performance presentation personnel.
- Better quality presentations.
- Better internal processes and procedures.
- Possible marketing benefits.

Selecting a GIPS Verifier

A firm should consider its operations, products, and needs when choosing a verifier. For example, the needs of the following pairs of firms will differ and as a result, the best verifier for each may differ:

- A large global firm versus a small local firm.
- A tax exempt investor (e.g., a pension fund) versus a firm that focuses on managing portfolio taxes.
- A quantitative manager utilizing derivatives versus a direct real estate investor.

A firm should request that potential verifiers provide the following information:

- A description of the verifier including its personnel and organizational structure.
- Services offered and previous projects completed.
- The verifier's project management, sampling, and testing procedures.
- References from previous clients,
- Fees, proposal, and timeline.

The Scope of GIPS Verification

Verification must be carried out in accordance with the GIPS Standards for Verifiers and must be issued firmwide. Verification cannot be provided for just a single portfolio, composite, or pooled fund. A firm cannot say that a portfolio, fund, or strategy is "in compliance." Verification can only be claimed for the entire firm. A firm must meet all the requirements of GIPS, it cannot claim that it is in compliance "except for."



PROFESSOR'S NOTE

Once again, as in the reading earlier, we see that GIPS can't be halfway or partway. Verification can only be claimed for an entire firm, not just part of it.

However, a firm can have the verifier perform a detailed **performance examination** on one or more composites or pooled funds and then state that a performance examination has been issued on that specific composite or fund.

The GIPS Verification Process

The GIPS Standards for Verifiers provides the various procedures that verifiers must follow. The reading focuses on the planning, sample selection, and testing components of verification. In planning for the verification process, the verifier must gather information about the firm, including all the firm's products, calculation methodologies, and GIPS policies and procedures.

Although verification must be asserted on a firmwide basis, verifiers often use samples of the firm's products to do so. When choosing samples, the verifier must consider the size of the firm and composites, the firm's internal controls and methods, the number of years being verified, and other factors. If the verifier discovers deficiencies, larger samples or additional verification procedures may be necessary.

Verifiers should also perform testing to determine if the firm satisfies requirements in areas including the following:

- Recordkeeping.
- Policies and procedures.
- Firm definition.
- The thoroughness of the firm's list of composites and limited distribution pooled funds.
- Calculation of total firm assets.
- Input data such as portfolio inflows and outflows.
 - These can often be verified with custodial statements and other third party documents.
- The construction and maintenance of composites including:
 - The classification of portfolios as discretionary or nondiscretionary.
 - The assignment of portfolios to appropriate composites.
 - Portfolios with outlier returns may indicate calculation errors or a misassignment to a composite.
- The content of the firm's GIPS Report and any marketing material.



MODULE QUIZ 35.7

To best evaluate your performance, enter your quiz answers online.

1. In July 2007, Edith Poloski, Jason Masserelli, and Rajesh Granta formed PMG Investment Management (PMG). Poloski has considerable experience in the area of security analysis, and Masserelli and Granta have expertise in fixed income and equity portfolio management, respectively.

Initially, PMG exclusively managed the portfolios of high-net-worth individuals with a minimum investment requirement of \$3 million. However, recently, PMG has decided to broaden its client base by lowering its minimum investment requirement. To attract

new clients and improve the information that its current clients receive, PMG has prepared a performance presentation that reflects the results of its major investment styles. Performance results are presented for a fixed income, an equity, and a balanced composite. The following list contains the actions that PMG took when preparing its current performance presentation.

Action 1: The S&P 500 Index was used as the benchmark for comparison with all three composite styles.

Action 2: PMG used accrual accounting, and book values are used for computations of fixed-income returns.

Action 3: For fixed-income return calculations, accrued income is included.

Action 4: Due to the change in the firm's client base, PMG did not include its fee schedule.

Action 5: Asset-weighted composite returns were calculated using end-of-period weightings.

Action 6: All composites included only assets under management and were not linked with simulated or model portfolio performance.

Action 7: Equal-weighted rates of return that adjust for cash flows are used for portfolio returns.

Action 8: Performance calculations were made after the deduction of actual trading expenses.

Using the template provided, cite five actions in the list of actions that PMG took that are not in compliance with the GIPS, and describe how the actions you select are not compliant with the GIPS.

	Action Number	Explanation of Why Action is Not GIPS Compliant
1.		
2.		
3.		
4.		
5.		

KEY CONCEPTS

LOS 35.a

The Global Investment Performance Standards (GIPS®) contain ethical and professional standards for the presentation of investment performance results. The GIPS are a voluntary set of standards.

The LOS focus on the standards for investment management firms.

Asset owners who manage assets for an organization, participants, or beneficiaries and compete for business would also use the GIPS standards for firms.

The objectives of GIPS are to:

- Advance the interests of investors and increase their confidence in the investment industry.
- Provide accurate and comparable data to investors.
- Create a globally accepted standard for the determination and presentation of investment performance.
- Facilitate fair competition among global investment managers.
- Encourage self-regulation in the global investment industry.

The scope of the GIPS standards is as follows:

- GIPS compliance can only be claimed on a firmwide basis.
- To claim GIPS compliance, a firm must comply with all, not just some, of the applicable GIPS standards requirements.
- A claim of GIPS compliance indicates, among other things, that:
 - A firm's data inputs, processes, and return calculations are compliant.
 - All the firm's fee-paying segregated accounts and limited-distribution pooled funds have been assigned to at least one composite.

LOS 35.b

- A firm is held out to clients or potential clients as a distinct business entity.
- A distinct business entity is that which is separated from other parts of the firm and retains discretion over asset management.
- Judgment is required to determine what qualifies as a distinct business entity.

The definition of the firm is used to determine the fair value of total firm assets, which for the defined firm:

- include discretionary and nondiscretionary assets.
- include fee-paying and non-fee-paying assets.
- are net of leverage used.
- are only actual (not simulated) assets.
- exclude advisory-only assets.
- exclude uncalled, but committed, capital.

Other Compliance Fundamentals

- When calculating composite assets (not total firm assets), nondiscretionary assets are not included, (i.e., only include discretionary assets when calculating composite performance).
- To initially claim compliance with the GIPS standards, the firm must attain compliance for a minimum of five years or for the period since firm inception if the

firm has been in existence for less than five years.

- Firms must establish, update, and document GIPS policies and procedures.
- If the GIPS standards conflict with local laws and regulations, the firm must comply with local laws and regulations and disclose the conflict.
- The firm must not present performance-related information that is false or misleading.
- The firm must provide an annual GIPS compliant report to all existing clients for relevant composites.
- Benchmarks must reflect the corresponding investment strategy and be total return benchmarks.
- The firm must disclose all material errors and disclose corrected reports to current clients and verifiers.
- The firm must maintain GIPS compliance data and a list of composites for the last five years.

LOS 35.c

GIPS requires comparable return calculation methods to facilitate comparison of results. In many cases, there are interim external cash flows (ECF), such as client withdrawals (outflows) or additional client contributions (inflows) that can distort return calculations.

Ideally, to eliminate these potential distortions, the investment would be valued each time an interim ECF occurs. The subperiod returns must then be geometrically linked to create a true time-weighted rate of return (TWRR):

$$R_{twrr} = (1 + R_1) \times (1 + R_2) \times (1 + R_3) \times \dots \times (1 + R_t).$$

The methods of calculating an approximate return that do not require interim valuations are the Modified Dietz and MIRR methods.

Modified Dietz return: $R_{MD} = \frac{EV - BV - ECF}{BV + \text{adjusted ECF}}$

The modified internal rate of return (MIRR) is simply an internal rate of return (IRR) that adjusts for the timing of the ECFs.

Since both the Modified Dietz and MIRR use the number of days in the month, they are said to be methods that adjust for daily-weighted ECFs. The Modified Dietz and MIRR typically provide similar values.

Under the GIPS requirements:

- Firms must calculate monthly returns for non-private market investment portfolios.
- If a firm calculates daily valuations and returns, the daily return must be geometrically linked to create a monthly true TWRR.
- If a firm does not calculate daily returns and the ECFs are not large, approximations to the true TWRR that do not require an interim valuation can be used.
- If the ECFs are large, the portfolio must be valued at the time of the ECFs to calculate a subperiod return.

- Regardless of how the monthly return is calculated, the monthly return must be geometrically linked to create an annual return.

For portfolios other than non-private market investment portfolios, the GIPS requirements are as follows:

- Private market investment portfolios values and returns must be calculated quarterly.
- Pooled funds not in a composite must be valued and returns calculated at least annually.
 - The fund must also be valued and a subperiod return calculated at the time of subscriptions or redemptions.

Large Cash Flows

- The definition of a large ECF is determined by each firm for each composite.
- Generally, a large ECF is large enough to affect the return calculation.
- The firm's policy for the determination of a large cash flow must be documented.

There are some investment strategies where the firm controls the timing and size of the ECFs. In these cases, a money-weighted return (MWR) will be more representative of the manager's skill than the TWRR. MWRs can be used instead of TWRRs if:

- The firm has control of the timing of ECFs.
- The portfolios are closed-end, or fixed life, or fixed commitment, or have a significant amount of illiquid assets.

The MWR (which is an IRR calculation) must be calculated and the portfolios valued at least annually.

Other return calculation requirements are as follows.

- Trade date, not settlement date, prices must be used to calculate returns.
- Partial-year returns cannot be annualized.
- Total returns, which include income and capital gains/losses, must be used.
 - For investments that generate income, such as bonds, accrual accounting must be used.
 - Returns must reflect the manager's allocations to cash and cash equivalents.
- Under GIPS, the presented gross-of-fees return must have been calculated after the deduction of transactions costs.
- Transactions costs reflect the costs of buying and selling securities.
 - Examples include brokerage commissions, spreads, exchange fees.
 - For private market investments, they can also include legal, advisory, and other fees.
 - Custody fees should not be included.
 - Transactions costs can be estimated but only if they are unknown.
- In some cases, portfolios pay bundled or all-in fees, which can include trading costs, as well as investment management, custody, administrative, and other fees.
 - In this case, the presented gross-of-fees return must be reduced by:
 - The portion of the bundled fee due to transactions costs; or

- The entire bundled fee if the transaction costs cannot be separated out.

LOS 35.d

Composite returns must be calculated in one of three ways:

1. Asset-weighting portfolio returns by beginning-of-period values.
2. Asset-weighting portfolio returns by both beginning-of-period values and ECFs.
3. The aggregate method.

The first method is perhaps the simplest as each portfolio return is just multiplied by its beginning of period weight. The second method is similar except that we also adjust for the ECFs. The third method uses total composite values at the beginning and end of period.

LOS 35.e

Composites must be constructed so that investors are provided a fair and accurate representation of manager performance. The requirements should prevent managers from excluding poorly performing portfolios from composites.

A key determinant in whether a portfolio is included in a composite is whether the manager has discretion. If the performance of a portfolio does not reflect a manager's decisions (i.e., the portfolio is nondiscretionary), then that portfolio would be excluded from the calculation of composite returns.

Generally speaking, the requirements for what must be included in at least one composite are as follows:

- All actual, fee-paying, discretionary segregated accounts.
- Pooled funds that are also offered as segregated accounts.

In general, the requirements for what must not be included in a composite are as follows:

- Nondiscretionary accounts.
- Pooled funds that are not also offered as segregated accounts.
- Simulated portfolios.

Non-fee-paying, discretionary segregated accounts may be included with additional disclosures.

Discretion

- Given its importance, a firm must maintain and apply a clear, written definition of discretion.
- A client's investment policy statement (IPS) will specify risk preferences and constraints.
 - However, none of these **automatically** make a portfolio nondiscretionary.
 - Guidance is based on if the manager's ability to use professional judgment is materially constrained.
 - If the constraint is deemed immaterial, the manager can:
 - Place the portfolio in a composite with similar, unconstrained portfolios.
 - If the constraint is deemed material, the manager should:

- Group the portfolio with similar, constrained portfolios.
- Exclude the portfolio from all composites.
- In some cases, there may be restrictions for particular assets. In these cases, a manager may:
 - Consider the entire portfolio nondiscretionary; or
 - Remove these assets and place the remainder of the portfolio in a composite; or
 - Consider the entire portfolio discretionary if the restricted assets are below a certain percentage of the portfolio, as stated in their policy.
- In some cases, its ECFs might indicate that a portfolio is nondiscretionary.

Model Portfolios

- Simulated portfolios cannot be in a composite.
- These portfolios are called hypothetical, model, or theoretical portfolios.
- They are often based on the backtesting of data.
- Their performance can be provided in supplemental information, but not in composite results.
- However, sometimes a firm will use its own funds (seed money) to create a new strategy.
 - The performance for these actual portfolios can be included in existing or new composites.

Non-Fee-Paying Portfolios

- Non-fee-paying portfolios may be included in a composite but, if included, firms are required to disclose the percentage of composite assets represented by non-fee-paying portfolios.

LOS 35.f

A critical step in achieving an accurate and comparable representation of a firm's performance is the defining and construction of composites. As per the GIPS standards, composites must:

- Be determined by investment mandate, objective, or strategy.
- Contain all portfolios that match the composite definition.
- Be based on criteria that is documented in the firm's policies and procedures.
- Be defined such that clients are able to compare the performance of one firm to another.
- Be representative of the firm's products and be consistent with the firm's marketing strategy.

Regarding composite construction:

- A starting point in composite construction might be competitors' composite classifications and/or the styles requested by potential investors.
- A composite definition that is too narrow results in too few portfolios in each, creates unnecessary costs, and potentially jeopardizes client confidentiality.
- A composite definition that is too broad results in disparate performance among composite portfolios.

- Examples on which to base composite construction include:
 - Style; sector, strategy, benchmark, risk/return profile, etc.

LOS 35.g

Regarding the movement of portfolios in and out of composites, the GIPS standards require firms to have policies for:

- When portfolios are included in composites.
- When portfolios are excluded from composites.
- Switching a portfolio from one composite to another.
- Cash flows from new investments or liquidations.
- The minimum asset level for a composite.

The firm's policy should be established on a composite-by-composite basis and applied in a timely, consistent manner.

Portfolio Inclusion

- New portfolios should be included in a composite at the beginning of the next full measurement period.
- However, the firm has discretion on the timing of portfolio inclusion because it may take time to invest new funds if the funding is other securities or if illiquid markets are being invested in.
- Thus the firm's documented policy may vary by composite, with some composites allowing for longer periods before portfolio inclusion.

Portfolio Exclusion

- Terminated portfolios should be included in a composite through the last full measurement period in which the firm had discretion.
- Clients sometimes direct a firm to stop trading an account or transfer control to a new manager before the portfolio is fully liquidated.

Switching Portfolios

- A portfolio can be switched to a new composite due to actions by the client or by the firm.
 - A client may change the portfolio's mandate, objective, or strategy.
 - The firm may redefine the composite such that the portfolio is no longer appropriate for the composite.
 - Redefining a composite by a firm should be highly unusual.
- When a portfolio is switched to a new composite, the portfolio's performance must remain in the old composite's historical performance.

Significant Cash Flows

- Significant (as defined in the firm's documentation) cash flows are those large enough such that it impedes the firm from implementing the strategy on a timely basis.
- To prevent composite performance from being affected by cash inflows/outflows in the event of significant cash flows, a firm can temporarily exclude the portfolio from the composite or create and report on a temporary new account (outside of the composite).

Minimum Asset Levels

- As portfolios change in size, they may be added to or removed from a composite as per firm policy.
- The minimum asset level must be specified in advance, and portfolios that are removed cannot have their prior performance removed from the composite's historical record.

LOS 35.h, LOS 35.i

GIPS requires that firms must make every reasonable effort to provide a GIPS report to prospective clients and limited-distribution pooled fund investors.

The requirements for Composite Time-Weighted Return Reports include the following.

- At least 5 years of performance history upon GIPS adoption:
 - Unless the firm has been in existence for less than 5 years.
 - And then extended each year until the firm builds a 10-year GIPS compliant history.
- Time-weighted returns for the composite and benchmark.
- The amount of firm assets.
- The amount of composite assets.
- The number of portfolios in the composite if there are six or more.
- Internal composite dispersion to show how consistent portfolio performance is within the composite.
 - The firm can choose which measure to use as long as it fairly represents the composite's internal dispersion.
- Historical dispersion for the benchmark and the composite as a whole, using the **ex post** standard deviation, which must be:
 - For the previous three years of data on an annualized basis.

Portability

When one firm acquires or joins with another firm, group of managers, or manager, the new firm can link their performance to the previous firm's historical performance if:

1. Substantially all the investment decision makers are retained by the new firm.
2. The decision-making process remains substantially intact and independent within the new firm.
3. The new firm has records that document the previous firm's historical performance.
4. There is no break in the performance record between the new and previous firm.

If only the first three conditions are met, then the previous firm's historical performance can be used to represent that of the new firm, but the records may not be linked.

If the new firm is GIPS compliant but the previous firm is not, then the new firm has one year to bring its assets into compliance for future reporting.

Advisory-Only Assets and Uncalled, But Committed, Capital

- The firm can report information on advisory-only assets and uncalled, but committed, capital on a separate basis or combined with composite or firm assets.

- If reported on a combined basis, the firm must also report on that for the advisory-only and for the uncalled, but committed, assets.

LOS 35.j

Fair value is the amount an asset would be sold in an arm's-length transaction between willing and knowledgeable parties.

- Fair value should include accrued income for bonds and other income-generating assets.
 - For cash, income may be accounted for on a cash or accrual basis.
- Firms must document their valuation process and methodologies, which should be composite- or pooled fund-specific.
- A method lower in the GIPS recommended valuation hierarchy is used only when all methods higher in the hierarchy are unavailable. The fair value hierarchy is:
 1. The quoted price for an identical asset in a liquid market on the same day.
 2. The quoted price for a similar asset in a liquid market on the same day.
 3. The quoted price for identical or similar assets in markets that are not active.
 4. A value based on market inputs.
 5. A subjective value that is unobservable.

LOS 35.k

The purpose of verification is to provide greater confidence to investors and to the firm in its claim of GIPS compliance. Verification is based on the GIPS principle of fair presentation and full disclosure. Although not required, verification is recommended and consistent with best practices.

Verification can be characterized as the process whereby an independent, outside party assesses the firm's:

- Policies and procedures for composite or pooled fund construction and maintenance.
- Performance calculation.
- Performance presentation.
- Distribution of performance.

Verification must be carried out in accordance with the GIPS Standards for Verifiers and must be issued firmwide.

- Verification cannot be provided for just a single portfolio, composite, or pooled fund.
- A firm must meet all the requirements of GIPS; it cannot claim that it is in compliance "except for."
- However, a firm can have the verifier perform a detailed performance examination on one or more composites or pooled funds and then state that a performance examination has been issued on that specific composite or fund.

The GIPS Standards for Verifiers provides the various procedures that verifiers must follow, which include planning, sample selection, and testing.

In planning for the verification process, the verifier must gather information about the firm, including all the firm's products, calculation methodologies, and GIPS policies and procedures.

Although verification must be asserted on a firmwide basis, verifiers often use samples of the firm's products to do so.

- When choosing samples, the verifier must consider the size of the firm and composites, the firm's internal controls and methods, the number of years being verified, and other factors.
- If the verifier discovers deficiencies, larger samples or additional verification procedures may be necessary.

Verifiers should also perform testing to determine whether the firm satisfies requirements in areas including the following:

- Recordkeeping.
- Policies and procedures.
- Firm definition.
- The thoroughness of the firm's list of composites and limited distribution pooled funds.
- Calculation of total firm assets.
- Input data such as portfolio inflows and outflows.
- The construction and maintenance of composites, including:
 - The classification of portfolios as discretionary or nondiscretionary.
 - The assignment of portfolios to appropriate composites.
 - Portfolios with outlier returns may indicate calculation errors or a misassignment to a composite.
- The content of the firm's GIPS Report and any marketing material.

ANSWER KEY FOR MODULE QUIZZES

Module Quiz 35.1, 35.2, 35.3

1. GIPS require the returns from cash and cash equivalents held in portfolios must be included in total-return calculations as long as the portfolio manager has control over the amount of the portfolio allocated to cash. This requirement stands even if the manager does not actually invest the cash, as is the case when it is held in a money market sweep account. This would not be an acceptable practice. (Module 35.3, LOS 35.c)

2. GIPS require periodic returns to be geometrically linked. Thus, the annual return is computed as follows:

$$R_{\text{annual}} = [(1 + R_{Q1}) \times (1 + R_{Q2}) \times (1 + R_{Q3}) \times (1 + R_{Q4})] - 1 = \\ [(1.0300)(1.0415)(1.0375)(1.0315)] - 1 = 14.8\%.$$

(Module 35.3, LOS 35.c)

3. JIM may not claim compliance with the GIPS. A firm must be in full compliance with the GIPS in order to claim GIPS compliance. There is no such thing as *partial* compliance under the GIPS. (Module 35.1, LOS 35.a)

4. (a) The Modified Dietz method is calculated as:

$$\begin{aligned}
 R_{MDietz} &= \frac{EMV - BMV - CF}{BMV + \sum_{i=1}^n W_i \times CF_i} \\
 &= \frac{55 - 50 - 3}{50 + \left(\frac{20}{30} \times 5\right) + \left(\frac{10}{30} \times (-2)\right)} \\
 &= 3.80\%
 \end{aligned}$$

(b) The exact TWRR values the portfolio at every ECF.

The month divides into three periods:

$$\text{period 1 return} = (51.5 - 50.0) / 50 = 1.5 / 50 = 3.00\%$$

$$\text{period 2 return} = (59.0 - 56.5) / 56.5 = 2.5 / 56.5 = 4.42\%$$

$$\text{period 3 return} = (55.0 - 57.0) / 57.0 = -2 / 57.0 = -3.51\%$$

$$\text{geometric linking for the month} = (1.0300 \times 1.0442 \times 0.9649) - 1 = 3.78\%$$

(Module 35.3, LOS 35.c)

Module Quiz 35.4

1. Comment: I seem to recall that the GIPS require firms to present performance on a net of management fees basis.

Incorrect. Under the GIPS, firms may present performance net or gross of fees, but gross-of-fees performance is recommended. The GIPS do require firms to disclose whether performance results are calculated gross or net of investment management and other fees paid by clients to the firm or to the firm's affiliates.

Comment: GIPS require that the firm include as total assets under management those assets managed by client-appointed sub-advisers.

Incorrect. Total firm assets include all discretionary and non-discretionary assets under management within the defined firm. They do not include assets assigned to a sub-adviser unless the firm has discretion over the selection of the sub-adviser. (LOS 35.b)

2. All actual fee-paying discretionary portfolios must be included in at least one composite. This requirement prevents firms from *cherry-picking* their best performing portfolios for presentation purposes. It does not matter if the firm ever plans to market the particular strategy to which a portfolio is being managed; if the portfolio is fee-paying and discretionary, it must be included in a composite. (LOS 35.e)

3. TIM cannot include model performance results in its presentation and claim compliance with the GIPS. Composites must include only assets under management and may not link simulated or model portfolios with actual performance. Simulated, back-tested, or model portfolio results do not represent the returns of actual assets under management and, thus, may not be included in the composites' GIPS-compliant performance results. The model results must be presented as simulated rather than real assets. (LOS 35.e)
4. C It is most likely that money-weighted returns could be used instead of time-weighted returns if the manager has control of the timing of ECFs. The portfolios must also be closed-end, or fixed life, or fixed commitment, or have a significant amount of illiquid assets. (LOS 35.c)

Characteristic	May Be Included in a Composite	Explanation*
	Must Be Excluded From Composite	
Client has significant liquidity needs with an accompanying significant cash position.	Must be excluded	With both a significant liquidity requirement and cash position, <i>the manager's actions are limited to the point that the portfolio would probably not qualify as discretionary and thus should not be included.</i>
5.		
Client does not pay fees.	May be included	Fee-paying portfolios are required to be in a composite. <i>Non-fee-paying portfolios that are discretionary may be included.</i>
Client requests strictly following an index.	Must be excluded	<i>If the client significantly restricts a manager's ability to implement their investment strategy, then the portfolio is likely nondiscretionary and must be excluded from a composite.</i>

*Italics indicate an answer that would be sufficient for the exam. (LOS 35.e)

6. The GIPS require terminated portfolios to be included in the historical record of the appropriate composite(s) through the last full reporting period that the portfolio was under management. This prevents the inclusion of the returns from a terminated portfolio for partial periods in a composite's return. Also, retaining the performance of a terminated portfolio in a composite's historical performance avoids survivorship bias. In the case of JIM, the terminated portfolio should be included in the composite until June 30 (i.e., the end of the month preceding July 15). (Module 35.4, LOS 35.f)
7. (A) The adjustments to the ECFs result in partial month weightings (W) of each cash flow as follows:

Portfolio	ECF	Weight (W)	Adjusted ECF
A	£25	$(30 - 12) / 30 = 18/30$	$18 / 30 \times £25 = £15$
A	£10	$(30 - 22) / 30 = 8/30$	$8 / 30 \times £10 = £2.67$
B	-£13	$(30 - 20) / 30 = 10/30$	$10 / 30 \times -£13 = -£4.33$

Using these in the formula for the Modified Dietz return (R_{MD}):

$$\text{Portfolio A: } R_{MD} = \frac{\text{£467} - \text{£400} - \text{£25} - \text{£10}}{\text{£400} + \text{£15} + \text{£2.67}} = \frac{\text{£32}}{\text{£417.67}} = 7.66\%$$

$$\text{Portfolio B: } R_{MD} = \frac{\text{£224} - \text{£200} - \text{£13}}{\text{£200} - \text{£4.33}} = \frac{\text{£37}}{\text{£195.67}} = 18.91\%$$

(b) To calculate the composite return using beginning of period values, first find the weights of each portfolio in the composite:

$$A: \frac{400}{600} = 66.67\%$$

$$B: \frac{200}{600} = 33.33\%$$

The composite return is the sum of the weights times the returns:

$$= 0.6667 \times 7.66\% + 0.3333 \times 18.91\%$$

$$= 5.1069\% + 6.3027\% = 11.41\%.$$

(c) To factor in the beginning values and weighted cash flows, the total for the denominators of the Modified Dietz formula above is:

$$\text{£417.67} + \text{£195.67} = \text{£613.34}$$

Using these figures, the weights are:

$$A: \frac{417.67}{613.34} = 68.1\%$$

$$B: \frac{195.67}{613.34} = 31.9\%$$

The composite return is the sum of the weights times the returns:

$$= 0.681 \times 7.66\% + 0.319 \times 18.91\%$$

$$= 5.2165\% + 6.0323\% = 11.25\%.$$

Notice that under this method, the composite return is slightly lower than in the previous method. This is because portfolio A had a lower return (7.66%) than portfolio B (18.91%). The larger ECFs for portfolio A gave it a larger weight in this method and hence this reduced the overall composite return to 11.25%.

(d) In the aggregate return method, the numerator uses the total of the portfolio values and cash flows from the bottom of the table. In the denominator, the total of the portfolios' Modified Dietz values from the previous method are used.

$$R_{MD} = \frac{\text{£691} - \text{£25} - \text{£13} - \text{£10} - \text{£600}}{\text{£613.34}} = \frac{\text{£69}}{\text{£613.34}} = 11.25\%$$

(Module 35.3, LOS c; Module 35.4, LOS d)

Module Quiz 35.5, 35.6

1. C The GIPS valuation hierarchy is as follows:

1. Quoted prices from an active market for the same or a similar security.
2. Quoted prices from an inactive market for the same or a similar security.
3. Observable market-based inputs other than quoted prices.
4. Subjective, unobservable inputs.

Based on this hierarchy, if observed market prices from an active market are not available, the next best valuation basis is to use quoted prices from an inactive market. (LOS 35.j)

Module Quiz 35.7

1.	Action Number	Explanation of Why Action is Not GIPS Compliant
1.	1	The total return for the benchmark (or benchmarks) that reflects the investment strategy or mandate represented by the composite must be presented for the same periods for which the composite return is presented. The S&P 500 Index should not be used as a benchmark for the fixed-income and balanced composites.
2.	2	Portfolio valuations must be based on fair values (not cost basis or book values).
3.	4	The GIPS requires the disclosure of an appropriate fee schedule.
4.	5	Composites must be asset-weighted using beginning-of-period weightings or another method that reflects both beginning market value and cash flows.
5.	7	Time-weighted rates of return that adjust for cash flows must be used. Periodic returns must be geometrically linked.

Actions 3, 6, and 8 are in compliance with GIPS. (LOS b-d, h, j)

TOPIC QUIZ: ETHICAL AND PROFESSIONAL STANDARDS

You have now finished the Ethical and Professional Standards topic section. On your Schweser online dashboard, you can find a Topic Quiz that will provide immediate feedback on how effective your study of this material has been. The test is best taken timed; allow three minutes per question. Topic Quizzes are more exam-like than typical QBank questions or module quiz questions. A score less than 70% suggests that additional review of the topic is needed.

FORMULAS

Implementation shortfall (IS)—at the highest level, the absolute value is:

$$IS = \text{paper return} - \text{actual return}$$

IS can be decomposed into the following parts:

- Execution cost:
 - Delay cost = shares executed × (arrival price – decision price)
 - Trading cost = shares executed × (average purchase price – arrival price)
- Opportunity cost = portion of order not filled × (closing price – decision price)
- Fixed fees = shares executed × commission per share

$$\text{total IS value (\$)} = \text{delay cost} + \text{trading cost} + \text{opportunity cost} + \text{fixed fees}$$

All of the components of and total IS can be expressed in terms of basis points (bps) of the original cost of the paper portfolio. A basis point is 1/100th of 1%. A decimal number is multiplied by 10,000 to convert it to basis points.

Trade costs represent costs relative to the benchmark; a positive value represents underperformance:

$$\text{absolute cost (\$)} = \text{side} \times (\text{execution price} - \text{benchmark price}) \times \text{shares executed}$$

$$\text{trade cost (bps)} = \text{side} \times \frac{(\text{execution price} - \text{benchmark price})}{\text{benchmark price}} \times 10,000$$

where:

side = +1 for a buy order, -1 for a sell order

Market-adjusted cost is used to remove the impact of market movements on trade cost, which ensures a trader is not penalized or rewarded for general market movements over the trade horizon.

$$\text{index cost (bps)} = \text{side} \times \frac{(\text{index VWAP} - \text{index arrival price})}{\text{index arrival price}} \times 10,000$$

$$\text{market-adjusted cost (bps)} = \text{arrival cost (bps)} - \beta \times \text{index cost (bps)}$$

where:

arrival cost = the arrival cost of the trade based on an arrival price benchmark

β = beta of the security versus the index used to calculate index cost

Added value is a different method of trade cost analysis comparing the arrival cost of the trade with the estimated pretrade cost calculated using a model that incorporates key trade cost variables such as order size and liquidity of the market. If a fund executes at a cost *lower* than the pretrade cost estimate, then the trader has added value.

$$\text{added value (bps)} = \text{arrival cost (bps)} - \text{estimated pretrade cost (bps)}$$

A negative cost is a benefit—this trader has added value through their trading decisions.

Allocation effect BHB model—the contribution to the i th sector is equal to the portfolio's

sector weight minus the benchmark's sector weight, times the benchmark sector return:

$$A_i = (w_i - W_i)B_i$$

Allocation effect Brinson-Fachler model—the contribution to the i th sector is equal to the portfolio's sector weight minus the benchmark's sector weight, times the benchmark sector return minus the overall benchmark return: $A_i = (w_i - W_i)(B_i - B)$

Security selection—the contribution to selection in the i th sector is equal to the benchmark sector weight times the portfolio's sector return minus the benchmark's sector return: $S_i = W_i(R_i - B_i)$

Interaction effect—the contribution to the i th sector is equal to the portfolio sector weight minus the benchmark sector weight, times the portfolio sector return minus the benchmark sector return: $I_i = (w_i - W_i)(R_i - B_i)$

Carhart model:

$$R_p - R_f = a_p + b_{p1}RMRF + b_{p2}SMB + b_{p3}HML + b_{p4}WML + E_p$$

where:

$RMRF$ = portfolio's sensitivity to a market index

SMB = market capitalization factor

HML = book-to-price factor

WML = momentum factor

For fixed income:

$$\% \text{ total return} = \% \text{ income return} + \% \text{ price return}$$

where:

$\% \text{ price return} \approx -\text{duration} \times \text{change in YTM}$

Factor-model-based benchmark:

$$R_p = a_p + b_1F_1 + b_2F_2 + \dots + b_KF_K + \varepsilon$$

where:

R_p = periodic return on an account

a_p = “zero factor” term, representing the expected value of R_p if all factor values were zero

F_i = factors that have a systematic effect on the portfolio's performance; $i = 1$ to K

b_i = sensitivity of the returns on the account to the returns generated from factor i

ε = error term; portfolio return not explained by the factor model

Benchmark quality of a portfolio:

$$P = M + S + A$$

where:

P = investment manager's portfolio return

M = return on the market index

$S = B - M$ = excess return to style; difference between the manager's style index (benchmark) return and the market return— S can be positive or negative

$A = P - B$ = active return; difference between the manager's overall portfolio return and the style benchmark return

Sharpe ratio:

$$S_A = \frac{\bar{R}_A - \bar{r}_f}{\hat{\sigma}_A}$$

Treynor ratio:

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

Information ratio:

$$IR = \frac{E(r_p) - E(r_B)}{\sigma(r_p - r_B)}$$

Appraisal ratio:

$$AR = \frac{\alpha}{\sigma_\varepsilon}$$

Sortino ratio:

$$SR_D = \frac{E(r_p) - r_T}{\sigma_D}$$

$$\widehat{SR}_D = \frac{\bar{r}_p - \bar{r}_T}{\hat{\sigma}_D}$$

Capture ratios are calculated as portfolio return divided by benchmark return. The capture ratio is calculated as upside capture divided by downside capture.

$$R_{twrr} = (1 + R_1) \times (1 + R_2) \times (1 + R_3) \times \dots \times (1 + R_t).$$

$$R_{MD} = \frac{EV - BV - ECF}{BV + \text{adjusted ECF}}$$

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