Equity

CFA三级原版书课后题

讲师：

Reading 22

Overview of Equity Portfolio Management

Case: Albright

- Three years ago, the Albright Investment Management Company (Albright) added four new funds—the Barboa Fund, the Caribou Fund, the DoGood Fund, and the Elmer Fund—to its existing fund offering. Albright's new funds are described in Exhibit 1.
- Hans Smith, an Albright portfolio manager, makes the following notes after examining these funds:
- **Note 1:** The fee on the Caribou Fund is a 15% share of any capital appreciation above a 7% threshold and the use of a high-water mark.
- **Note 2:** The DoGood Fund invests in Fleeker Corporation stock, which is rated high in the ESG space, and Fleeker's pension fund has a significant investment in the DoGood Fund. This dynamic has the potential for a conflict of interest on the part of Fleeker Corporation but not for the DoGood Fund.

Case: Albright

Exhibit 1. Albright Investment Management Company New Funds	
Fund	**Fund Description**
Barboa Fund	Invests solely in the equity of companies in oil production and transportation industries in many countries.
Caribou Fund	Uses an aggressive strategy focusing on relatively new, fast-growing companies in emerging industries.
DoGood Fund	Investment universe includes all US companies and sectors that have favorable environmental, social, and governance (ESG) ratings and specifically excludes companies with products or services related to aerospace and defense.
Elmer Fund	Investments selected to track the S&P 500 Index. Minimizes trading based on the assumption that markets are efficient.

Case: Albright

- **Note 3:** The DoGood Fund's portfolio manager has written policies stating that the fund does not engage in shareholder activism. Therefore, the DoGood Fund may be a free-rider on the activism by these shareholders.
- **Note 4:** Of the four funds, the Elmer Fund is most likely to appeal to investors who want to minimize fees and believe that the market is efficient.
- **Note 5:** Adding investment-grade bonds to the Elmer Fund will decrease the portfolio's short-term risk.

Case: Albright

- Smith discusses means of enhancing income for the three funds with the junior analyst, Kolton Frey, including engaging in securities lending or writing covered calls. Frey tells Smith the following:
- **Statement 1:** Securities lending would increase income through reinvestment of the cash collateral but would require the fund to miss out on dividend income from the lent securities.
- **Statement 2:** Writing covered calls would generate income, but doing so would limit the upside share price appreciation for the underlying shares.

Case: Albright

- The Barboa Fund can be *best* described as a fund segmented by:
  A. size/style.
  B. geography.
  C. economic activity.

Case: Albright

- **Solution: C.**

  C is correct. The Barboa Fund invests solely in the equity of companies in the oil production and transportation industries in many countries. The fund's description is consistent with the production-oriented approach, which groups companies that manufacture similar products or use similar inputs in their manufacturing processes.

  A is incorrect because the fund description does not mention the firms' size or style (i.e., value, growth, or blend). Size is typically measured by market capitalization and often categorized as large cap, mid-cap, or small cap. Style is typically classified as value, growth, or a blend of value and growth. In addition, style is often determined through a "scoring" system that incorporates multiple metrics or ratios, such as price-to-book ratios, price-to-earnings ratios, earnings growth, dividend yield, and book value growth. These metrics are then typically "scored" individually for each company, assigned certain weights, and then aggregated.

Case: Albright

B is incorrect because the fund is invested across many countries, which indicates that the fund is not segmented by geography. Segmentation by geography is typically based upon the stage of countries' macroeconomic development and wealth. Common geographic categories are developed markets, emerging markets, and frontier markets.

Case: Albright

- The Caribou Fund is *most* likely classified as a:
  A. large-cap value fund.
  B. small-cap value fund.
  C. small-cap growth fund.

Case: Albright

- **Solution: C.**

  C is correct because the fund focuses on new funds that are generally classified as small firms, and the fund has a style classified as aggressive. A widely used approach to segment the equity universe incorporates two factors: size and style. Size is typically measured by market capitalization and often categorized as large cap, mid-cap, or small cap. Style is typically classified as value, growth, or a blend of value and growth.

Case: Albright

- The DoGood Fund's approach to the aerospace and defense industry is *best* described as:
  A. positive screening.
  B. negative screening.
  C. thematic investing.

Case: Albright

- **Solution: B.**

  B is correct. The DoGood fund excludes companies based on specified activities (e.g., aerospace and defense), which is a process of negative screening. Negative or exclusionary screening refers to the practice of excluding certain sectors or companies that deviate from accepted standards in areas such as human rights or environmental concerns

  A is incorrect because positive screening attempts to identify companies or sectors that score most favorably regarding ESG-related risks and/or opportunities. The restrictions on investing indicates that a negative screen is established.

  C is incorrect because thematic investing focuses on investing in companies within a specific sector or following a specific theme, such as energy efficiency or climate change. The DoGood Fund's investment universe includes all companies and sectors that have favorable ESG (no specific sectors or screens) but with specific exclusions.

Case: Albright

- The Elmer fund's management strategy is:
  A. active.
  B. passive.
  C. blended.

Case: Albright

- **Solution: B.**

  B is correct. The fund is managed assuming that the market is efficient, and investments are selected to mimic an index. Compared with active strategies, passive strategies generally have lower turnover and generate a higher percentage of long-term gains. An index fund that replicates its benchmark can have minimal rebalancing.

Case: Albright

- Based on Note 1, the fee on the Caribou Fund is *best* described as a:
  A. performance fee.
  B. management fee.
  C. administrative fee.

Case: Albright

- **Solution: A.**

  A is correct. Performance fees serve as an incentive for portfolio managers to achieve or outperform return objectives, to the benefit of both the manager and investors. Several performance fee structures exist, although performance fees tend to be "upward only"—that is, fees are earned by the manager when performance objectives are met, but fund investors are not reimbursed when performance is negative. Performance fees could be reduced following a period of poor performance, however. Fee calculations also reflect high-water marks. As described in Note 1, the fee for the Caribou Fund is a 15% share of any capital appreciation above a 7% threshold, with the use of a high-water mark, and is therefore a performance fee.

Case: Albright

B is incorrect because management fees include direct costs of research (such as remuneration and expenses for investment analysts and portfolio managers) and the direct costs of portfolio management (e.g., software, trade processing costs, and compliance). Management fees are typically determined as a percentage of the funds under management.

C is incorrect because administrative fees include the processing of corporate actions such as rights issues and optional stock dividends, the measurement of performance and risk of a portfolio, and voting at company meetings. Generally, these functions are provided by an investment management firm itself and are included as part of the management fee.

Case: Albright

- Which of the following notes about the DoGood Fund is *correct*?
  A. Only Note 2
  B. Only Note 3
  C. Both Note 2 and Note 3

Case: Albright

- **Solution: B.**

  B is correct because the fund becomes a free-rider if it allows other shareholders to engage in actions that benefit the fund, and therefore Note 3 is correct. In theory, some investors could benefit from the shareholder engagement of others under the so-called "free rider problem." Specifically, assume that a portfolio manager using an active strategy actively engages with a company to improve its operations and was successful in increasing the company's stock price. The manager's actions in this case improved the value of his portfolio and also benefitted other investors that own the same stock in their portfolios. Those investors that did not participate in shareholder engagement benefit from improved performance but without the costs necessary for engagement.

Case: Albright

- Note 2 is incorrect because a conflict of interest arises on the part of the DoGood Fund if it owns shares of a company that invests in the fund. Conflicts of interest can result for a company. For example, a portfolio manager could engage with a company that also happens to be an investor in the manager's portfolio. In such a situation, a portfolio manager may be unduly influenced to support the company's management so as not to jeopardize the company's investment mandate with the portfolio manager.

Case: Albright

- Which of the notes regarding the Elmer Fund is *correct*?
  A. Only Note 4
  B. Only Note 5
  C. Both Note 4 and Note 5

Case: Albright

- **Solution: A.**

  A is correct. For passively managed portfolios, management fees are typically low because of lower direct costs of research and portfolio management relative to actively managed portfolios. Therefore, Note 4 is correct.

  Note 5 is incorrect because the predictability of correlations is uncertain.

Case: Albright

- Which of Frey's statements about securities lending and covered call writing is *correct*?
  A. Only Statement 1
  B. Only Statement 2
  C. Both Statement 1 and Statement 2

Case: Albright

➢ **Solution: B.**

B is correct. Writing covered calls also generates additional income for an equity portfolio, but doing so limits the upside from share price appreciation of the underlying shares. Therefore, Statement 2 is correct.

A is incorrect because dividends on loaned stock are "manufactured" by the stock borrower for the stock lender—that is, the stock borrower ensures that the stock lender is compensated for any dividends that the lender would have received had the stock not been loaned. Therefore, Statement 1 is incorrect. Frey is incorrect in stating that the funds would miss out on dividend income on lent securities.

Reading 23

Passive Equity Investing

Case: Evan Winthrop

➢ Evan Winthrop, a senior officer of a US-based corporation, meets with Rebecca Tong, a portfolio manager at Cobalt Wealth Management. Winthrop recently moved his investments to Cobalt in response to his previous manager's benchmark-relative underperformance and high expenses.

➢ Winthrop resides in Canada and plans to retire there. His annual salary covers his current spending needs, and his vested defined benefit pension plan is sufficient to meet retirement income goals. Winthrop prefers passive exposure to global equity markets with a focus on low management costs and minimal tracking error to any index benchmarks. The fixed-income portion of the portfolio may consist of laddered maturities with a home-country bias.

Case: Evan Winthrop

- Tong proposes using an equity index as a basis for an investment strategy and reviews the most important requirements for an appropriate benchmark. With regard to investable indexes, Tong tells Winthrop the following:
- **Statement 1:** A free-float adjustment to a market-capitalization weighted index lowers its liquidity.
- **Statement 2:** An index provider that incorporates a buffering policy makes the index more investable.

Case: Evan Winthrop

- Winthrop asks Tong to select a benchmark for the domestic stock allocation that holds all sectors of the Canadian equity market and to focus the portfolio on highly liquid, well-known companies. In addition, Winthrop specifies that any stock purchased should have a relatively low beta, a high dividend yield, a low P/E, and a low price-to-book ratio (P/B).
- Winthrop and Tong agree that only the existing equity investments need to be liquidated. Tong suggests that, as an alternative to direct equity investments, the new equity portfolio be composed of the exchange-traded funds (ETFs) shown in Exhibit 1.

Case: Evan Winthrop

Exhibit 1. Available Equity ETFs

Equity Benchmark	ETF Ticker	Number of Constituents	P/B	P/E	Fund Expense Ratio
S&P/TSX 60	XIU	60	2.02	17.44	0.18%
S&P 500	SPY	506	1.88	15.65	0.10%
MSCI EAFE	EFA	933	2.13	18.12	0.33%

Case: Evan Winthrop

- Winthrop asks Tong about the techniques wealth managers and fund companies use to create index-tracking equity portfolios that minimize tracking error and costs. In response, Tong outlines two frequently used methods:
- **Method 1:** One process requires that all index constituents are available for trading and liquid, but significant brokerage commissions can occur when the index is large.
- **Method 2:** When tracking an index with a large number of constituents and/or managing a relatively low level of assets, a relatively straightforward and technically unsophisticated method can be used to build a passive portfolio that requires fewer individual securities than the index and reduces brokerage commission costs.

Case: Evan Winthrop

- Tong adds that portfolio stocks may be used to generate incremental revenue, thereby partially offsetting administrative costs but potentially creating undesirable counterparty and collateral risks.
- After determining Winthrop's objectives and constraints, the CAD147 million portfolio's new strategic policy is to target long-term market returns while being fully invested at all times. Tong recommends quarterly rebalancing, currency hedging, and a composite benchmark composed of equity and fixed-income indexes. Currently the USD is worth CAD1.2930, and this exchange rate is expected to remain stable during the next month. Exhibit 2 presents the strategic asset allocation and benchmark weights.

Case: Evan Winthrop

Exhibit 2. Composite Benchmark and Policy Weights

Asset Class	Benchmark Index	Policy Weight
Canadian equity	S&P/TSX 60	40.0%
US equity	S&P 500	15.0%
International developed markets equity	MSCI EAFE	15.0%
Canadian bonds	DEX Universe	30.0%
Total portfolio		100.0%

Case: Evan Winthrop

- In one month, Winthrop will receive a performance bonus of USD5,750,000. He believes that the US equity market is likely to increase during this timeframe. To take advantage of Winthrop's market outlook, he instructs Tong to immediately initiate an equity transaction using the S&P 500 futures contract with a current price of 2,464.29 while respecting the policy weights in Exhibit 2. The S&P 500 futures contract multiplier is 250, and the S&P 500 E-mini multiplier is 50.
- Tong cautions Winthrop that there is a potential pitfall with the proposed request when it comes time to analyze performance. She discloses to Winthrop that equity index futures returns can differ from the underlying index, primarily because of corporate actions such as the declaration of dividends and stock splits.

Case: Evan Winthrop

- Which of Tong's statements regarding equity index benchmarks is (are) *correct*?
  A. Only Statement 1
  B. Only Statement 2
  C. Both Statement 1 and Statement 2

Case: Evan Winthrop

- **Solution: B.**

  B is correct. The three requirements for an index to become the basis for an equity investment strategy are that the index be (a) rules based, (b) transparent, and (c) investable. Buffering makes index benchmarks more investable (Statement 2) by making index transitions a more gradual and orderly process.

  A is incorrect because basing the index weight of an individual security solely on the total number of shares outstanding without using a free-float adjustment may make the index less investable. If a stock market cap excludes shares held by founders, governments, or other companies, then the remaining shares more accurately reflect the stock's true liquidity. Thus a free-float adjustment (Statement 1) to a market index more accurately reflects its actual liquidity (it does not lower its liquidity). Many indexes require that individual stocks have float and average shares traded above a certain percentage of shares outstanding.

Case: Evan Winthrop

- To satisfy Winthrop's benchmark and security selection specifications, the Canadian equity index benchmark Tong selects should be:
  A. small-capitalization with a core tilt.
  B. large-capitalization with a value tilt.
  C. mid-capitalization with a growth tilt.

Case: Evan Winthrop

- **Solution: B.**

  B is correct. To address Winthrop's concerns (sector diversification, liquidity, risk, dividend yield, P/E, and P/B), the Canadian equity index benchmark should consist of large-capitalization stocks with a value tilt. A large-capitalization index contains the largest-cap stocks, which tend to have the highest liquidity. Value stocks tend to exhibit high dividend yields and low P/E and P/B ratios.

  A is incorrect because small-capitalization stocks tend to be riskier than large-capitalization stocks. Winthrop has a preference for low-beta (risk) stocks.

  C is incorrect because a growth index will not address Winthrop's preference for a low P/E. Growth stocks exhibit characteristics such as high price momentum, high P/Es, and high EPS growth.

Case: Evan Winthrop

- Based on Exhibit 1 and assuming a full-replication indexing approach, the tracking error is expected to be *highest* for:
  A. XIU.
  B. SPY.
  C. EFA.

Case: Evan Winthrop

➢ **Solution: C.**

C is correct. An index that contains a large number of constituents will tend to create higher tracking error than one with fewer constituents. Based on the number of constituents in the three indexes (S&P/TSX 60 has 60, S&P 500 has 506, and MSCI EAFE has 933), EFA (the MSCI EAFE ETF) is expected to have the highest tracking error. Higher expense ratios (XIU: 0.18%; SPY: 0.10%; and EFA: 0.33%) also contribute to lower excess returns and higher tracking error, which implies that EFA has the highest expected tracking error.

Case: Evan Winthrop

➢ Method 1's portfolio construction process is *most* likely:

A. optimization.

B. full replication.

C. stratified sampling.

Case: Evan Winthrop

➢ **Solution: B.**

B is correct. Full replication occurs when a manager holds all securities represented by the index in weightings that closely match the actual index weightings. Thus it requires that all index constituents are liquid and available for trading, and the asset size of the mandate must also be sufficient. Significant brokerage commissions can occur, however, when the index is large.

Case: Evan Winthrop

- Method 2's portfolio construction process is *most* likely:
  - A. optimization.
  - B. full replication.
  - C. stratified sampling.

Case: Evan Winthrop

- **Solution: C.**

  C is correct. Stratified sampling methods are most frequently used when a portfolio manager is tracking an index that has a large number of constituents, or when managing a relatively low level of assets. Brokerage fees can become excessive when the number of constituents in the index is large.

  A is incorrect because optimization does not involve simple techniques. Optimization requires a high level of technical sophistication, including familiarity with computerized optimization software or algorithms, and a good understanding of the output.

  B is incorrect because full replication occurs when a manager holds all (not fewer) securities represented by the index in weightings that closely match actual index weightings. Full replication techniques require that the mandate's asset size is sufficient and that the index constituents are available for trading. Full replication can create significant brokerage commissions when the index is large.

Case: Evan Winthrop

- The method that Tong suggests to *add* incremental revenue is:
  - A. program trading.
  - B. securities lending.
  - C. attribution analysis.

Case: Evan Winthrop

- **Solution: B.**

  B is correct. Securities lending is typically used to offset the costs associated with portfolio management. By lending stocks, however, the investor is exposed to the credit quality of the stocks' borrower (counterparty or credit risk) and to risks involved with the posted collateral (market risk).

  A is incorrect because program trading is a strategy of buying or selling many stocks simultaneously. It is used primarily by institutional investors, typically for large-volume trades. Orders from the trader's computer are entered directly into the market's computer system and executed automatically.

  C is incorrect because attribution analysis is not a method of generating incremental revenue. Attribution analysis is a method that helps the manager understand the sources of return.

Case: Evan Winthrop

- In preparation for receipt of the performance bonus, Tong should immediately:
  A. buy two US E-mini equity futures contracts.
  B. sell nine US E-mini equity futures contracts.
  C. buy seven US E-mini equity futures contracts.

Case: Evan Winthrop

- **Solution: C.**

  C is correct. The amount of the performance bonus that will be received in one month (USD5,750,000) needs to be invested passively based upon the strategic allocation recommended by Tong. Using the strategic allocation of the portfolio, 15% (USD862,500.00) should be allocated to US equity exposure using the S&P 500 E-mini contract, which trades in US dollars. Because the futures price is 2,464.29 and the S&P 500 E-mini multiplier is 50, the contract unit value is USD123,214.50 (2,464.29 × 50).

  The correct number of futures contracts is (5,750,000.00 × 0.15)/123,214.50 = 7.00.

  Therefore, Tong will buy seven S&P 500 E-mini futures contracts.

Case: Evan Winthrop

- The risk that Tong discloses regarding the equity futures strategy is *most* likely:
  A. basis risk.
  B. currency risk.
  C. counterparty risk.

Case: Evan Winthrop

- **Solution: A.**

  A is correct. Basis risk results from using a hedging instrument that is imperfectly matched to the investment being hedged. Basis risk can arise when the underlying securities pay dividends, because the futures contract tracks only the price of the underlying index. Stock splits do not affect investment performance comparisons.

Case: Mackenzie Education Foundation funds

- The Mackenzie Education Foundation funds educational projects in a four-state region of the United States. Because of the investment portfolio's poor benchmark-relative returns, the foundation's board of directors hired a consultant, Stacy McMahon, to analyze performance and provide recommendations.
- McMahon meets with Autumn Laubach, the foundation's executive director, to review the existing asset allocation strategy. Laubach believes the portfolio's underperformance is attributable to the equity holdings, which are allocated 55% to a US large-capitalization index fund, 30% to an actively managed US small-cap fund, and 15% to an actively managed developed international fund.

Case: Mackenzie Education Foundation funds

- Laubach states that the board is interested in following a passive approach for some or all of the equity allocation. In addition, the board is open to approaches that could generate returns in excess of the benchmark for part of the equity allocation. McMahon suggests that the board consider following a passive factor-based momentum strategy for the allocation to international stocks.
- McMahon observes that the benchmark used for the US large-cap equity component is a price-weighted index containing 150 stocks. The benchmark's Herfindahl–Hirschman Index (HHI) is 0.0286.
- McMahon performs a sector attribution analysis based on Exhibit 1 to explain the large-cap portfolio's underperformance relative to the benchmark.

Case: Mackenzie Education Foundation funds

Exhibit 1. Trailing 12-Month US Large-Cap Returns and Foundation/Benchmark Weights

Sector	Sector Returns	Foundation Sector Weights	Benchmark Sector Weights
Information technology	10.75%	18.71%	19.06%
Consumer staples	12.31%	16.52%	16.10%
Energy	8.63%	9.38%	9.53%
Utilities	–3.92%	8.76%	8.25%
Financials	7.05%	6.89%	6.62%

Case: Mackenzie Education Foundation funds

- The board decides to consider adding a mid-cap manager. McMahon presents candidates for the mid-cap portfolio. Exhibit 2 provides fees and cash holdings for three portfolios and an index fund.

Exhibit 2. Characteristics of US Mid-Cap Portfolios and Index Fund

	Portfolio 1	Portfolio 2	Portfolio 3	Index Fund
Fees	0.10%	0.09%	0.07%	0.03%
Cash holdings	6.95%	3.42%	2.13%	0.51%

Case: Mackenzie Education Foundation funds

- Compared with broad-market-cap weighting, the international equity strategy suggested by McMahon is *most* likely to:
  A. concentrate risk exposure.
  B. be based on the efficient market hypothesis.
  C. overweight stocks that recently experienced large price decreases.

Case: Mackenzie Education Foundation funds

- **Solution: A.**

  A is correct. Compared with broad-market-cap weighting, passive factor-based strategies tend to concentrate risk exposure, leaving investors vulnerable during periods when the risk factor (e.g., momentum) is out of favor.

Case: Mackenzie Education Foundation funds

- The international strategy suggested by McMahon is *most* likely characterized as:
  A. risk based.
  B. return oriented.
  C. diversification oriented.

Case: Mackenzie Education Foundation funds

- **Solution: B.**

  B is correct. McMahon suggests that the foundation follow a passive factor-based momentum strategy, which is generally defined by the amount of a stock's excess price return relative to the market during a specified period. Factor-based momentum strategies are classified as return oriented.

Case: Mackenzie Education Foundation funds

- The initial benchmark used for the US large-cap allocation:
  A. is unaffected by stocks splits.
  B. is essentially a liquidity-weighted index.
  C. holds the same number of shares in each component stock.

Case: Mackenzie Education Foundation funds

- **Solution: C.**

  C is correct. The initial benchmark used for the US large-cap allocation is a price-weighted index. In a price-weighted index, the weight of each stock is its price per share divided by the sum of all the share prices in the index. As a result, a price-weighted index can be interpreted as a portfolio composed of one share of each constituent security.

Case: Mackenzie Education Foundation funds

- Based on its HHI, the initial US large-cap benchmark *most* likely has:
  - A. a concentration level of 4.29.
  - B. an effective number of stocks of approximately 35.
  - C. individual stocks held in approximately equal weights.

Case: Mackenzie Education Foundation funds

- **Solution: B.**

  B is correct. The HHI measures stock concentration risk in a portfolio, calculated as the sum of the constituent weightings squared:

$$\text{HHI} = \sum_{i=1}^{n} w_i^2$$

  Using the HHI, one can estimate the effective number of stocks, held in equal weights, that would mimic the concentration level of the respective index. The effective number of stocks for a portfolio is calculated as the reciprocal of the HHI. The HHI is 0.0286; the reciprocal (1/0.0286) is 34.97. Therefore, the effective number of stocks to mimic the US large-cap benchmark is approximately 35.

Case: Mackenzie Education Foundation funds

- Using a sector attribution analysis based on Exhibit 1, which US large-cap sector is the *primary* contributor to the portfolio's underperformance relative to the benchmark?
  - A. Utilities
  - B. Consumer staples
  - C. Information technology

Case: Mackenzie Education Foundation funds

➢ **Solution: C.**

C is correct. Below is the attribution analysis for selected sectors of the US large-cap portfolio.

Sector		US Large-Cap Core Portfolio		Large-Cap Benchmark		Attribution Analysis
	Sector Return (A)	Sector Weight (B)	Contribution To Return (C)=(A)×(B)	Sector Weight (D)	Contribution To Return (E)=(A)×(D)	Difference (F)=(C)-(E)
Information technology	10.75%	18.71%	2.01%	19.06%	2.05%	–0.04%
Consumer staples	12.31%	16.52%	2.03%	16.10%	1.98%	0.05%
Energy	8.63%	9.38%	0.81%	9.53%	0.82%	–0.01%
Utilities	–3.92%	8.76%	–0.34%	8.25%	–0.32%	–0.02%
Financials	7.05%	6.89%	0.49%	6.62%	0.47%	0.02%

Case: Mackenzie Education Foundation funds

Based on this analysis, the US large-cap portfolio's information technology sector is the primary contributor to the portfolio's disappointing equity returns because it provided the largest negative differential relative to the benchmark, with a differential of –0.04%. Although the information technology sector had a positive return, this sector was underweighted relative to the benchmark, resulting in a negative contribution to the portfolio's returns.

Case: Mackenzie Education Foundation funds

➢ Based on Exhibit 2, which portfolio will *most* likely have the *lowest* tracking error?

A. Portfolio 1

B. Portfolio 2

C. Portfolio 3

Case: Mackenzie Education Foundation funds

➢ **Solution: C.**

C is correct. Of the three portfolios, Portfolio 3 has the lowest cash holding and the lowest fees. As a result, Portfolio 3 has the potential for the lowest tracking error compared with the other proposed portfolios.

Reading 24

Active Equity Investing: Strategies

Case: James Leonard

➢ James Leonard is a fund-of-funds manager with Future Generation, a large sovereign fund. He is considering whether to pursue more in-depth due diligence processes with three large-cap long-only funds proposed by his analysts. Although the funds emphasize different financial metrics and use different implementation methodologies, they operate in the same market segment and are evaluated against the same benchmark. The analysts prepared a short description of each fund, presented in Exhibit 1.

Case: James Leonard

Exhibit 1. Description of Each Candidate Fund	
Fund	**Description**
Furlings	Furlings Investment Partners combines sector views and security selection. The firm's head manager uses several industry and economic indicators identified from his own experience during the last two decades, as well as his personal views on market flow dynamics, to determine how to position the fund on a sector basis. Sector deviations from the benchmark of 10% or more are common and are usually maintained for 12 to 24 months. At the same time, sector managers at Furlings use their expertise in dissecting financial statements and their understanding of the corporate branding and competitive landscape within sectors to build equally weighted baskets of securities within sectors. Each basket contains their 7 to 10 highest-conviction securities, favoring firms that have good governance, strong growth potential, competitive advantages such as branding, and attractive relative valuations. The Furlings master fund holds approximately 90 securities.

Case: James Leonard

Exhibit 1. Description of Each Candidate Fund	
Fund	**Description**
Asgard	Asgard Investment Partners is a very large asset manager. It believes in investing in firms that have a strong business model and governance, reasonable valuations, solid capital structures with limited financial leverage, and above-average expected earnings growth for the next three years. Although the Asgard master fund invests in fewer than 125 securities, each sector analyst builds financial models that track as many as 50 firms. To support them in their task, analysts benefit from software developed by the Asgard research and technology group that provides access to detailed market and accounting information on 5,000 global firms, allowing for the calculation of many valuation and growth metrics and precise modeling of sources of cash-flow strengths and weaknesses within each business. Asgard analysts can also use the application to back-test strategies and build their own models to rank securities' attractiveness according to their preferred characteristics. Security allocation is determined by a management team but depends heavily on a quantitative risk model developed by Asgard. Asgard has a low portfolio turnover.

Case: James Leonard

Exhibit 1. Description of Each Candidate Fund	
Fund	**Description**
Tokra	Tokra Capital uses a factor-based strategy to rank securities from most attractive to least attractive. Each security is scored based on three metrics: price to book value (P/B), 12-month increase in stock price, and return on assets. Tokra's managers have a strong risk management background. Their objective is to maximize their exposure to the most attractive securities using a total scoring approach subject to limiting single-security concentration below 2%, sector deviations below 3%, active risk below 4%, and annual turnover less than 40%, while having a market beta close to 1. The master fund holds approximately 400 positions out of a possible universe of more than 2,000 securities evaluated.

Case: James Leonard

- When Leonard's analysts met with Asgard, they inquired whether its managers engage in activist investing because Asgard's portfolio frequently holds significant positions, because of their large asset size, and because of their emphasis on strong governance and their ability to model sources of cash-flow strengths and weaknesses within each business. The manager indicated that Asgard engages with companies from a long-term shareholder's perspective, which is consistent with the firm's low portfolio turnover, and uses its voice, and its vote, on matters that can influence companies' long-term value.
- Leonard wants to confirm that each manager's portfolios are consistent with its declared style. To this end, Exhibit 2 presents key financial information associated with each manager's portfolio and also with the index that all three managers use.

Case: James Leonard

Exhibit 2. Key Financial Data

Fund	Index	Furlings	Asgard	Tokra
Dividend/price (trailing 12-month)	2.3%	2.2%	2.2%	2.6%
P/E (trailing 12-month)	26.5	24.7	26.6	27.3
Price/cash flows (12-month forward)	12.5	13.8	12.5	11.6
P/B	4.8	4.30	4.35	5.4
Average EPS growth (three to five years forward)	11.9%	11.0%	13.1%	10.8%
Net income/assets	2.8%	4.5%	4.3%	3.2%
Average price momentum (trailing 12 months)	10.5%	14.0%	10.0%	12.0%

Case: James Leonard

- Which fund manager's investing approach is *most* consistent with fundamental management?
  - A. Furlings
  - B. Asgard
  - C. Tokra

Case: James Leonard

➢ **Solution: A.**

A is correct. Furlings combines a top-down and bottom-up approach, but in both cases, the allocation process is significantly determined according to the managers' discretion and judgement. There is a strong emphasis on understanding financial reporting, and the sector managers focus on a relatively small number for firms. They also extend their analysis to other areas associated with fundamental management, such as valuation, competitive advantages, and governance. Finally, Furlings's top-down process depends largely on the views and experience of its head manager.

Case: James Leonard

B is incorrect. Asgard has many of the attributes associated with a fundamental manager. It invests in a relatively small number of securities and focuses on the companies' business model, valuations, and future growth prospects. Because of the scope of the securities coverage by each manager, however, Asgard depends heavily on technology and tools to support screening and ranking of securities attractiveness. Each manager can use his judgement to build his own quantitative models. Furthermore, the allocation process, although overlaid by a management team, also depends heavily on technology. Asgard has characteristics of both fundamental and quantitative managers.

C is incorrect. Tokra exhibits the characteristics of a quantitative manager. The firm uses quantitative metrics to rank securities based on valuation, profitability, and momentum criteria and uses portfolio optimization to determine the final allocation. Tokra holds many positions typical of quantitative approaches.

Case: James Leonard

➢ Which of the following statements about the approaches and styles of either Furlings, Asgard, or Tokra is *incorrect*?

A. Furlings is a top-down sector rotator with a value orientation within sectors.

B. Asgard is a bottom-up manager with a GARP (growth at a reasonable price) style.

C. Tokra is a factor-based manager using value, growth, and profitability metrics.

Case: James Leonard

➢ **Solution: C.**

C is an incorrect statement. Although Tokra is a factor manager, and although it uses a value proxy such as P/B and a profitability proxy such as return on assets, it does not use a growth proxy such as earnings growth over the last 12 or 36 months but rather a price momentum proxy.

A is a correct statement. Furlings is a top-down manager. It makes significant sector bets based on industry and economic indicators derived from the head manager's experience, and it does select its securities within sectors while considering relative valuation.

B is a correct statement. Asgard favors securities that have reasonable valuations and above-average growth prospects. It has a bottom-up approach and builds its portfolio starting at the security level.

Case: James Leonard

➢ Which manager is *most* likely to get caught in a value trap?

A. Furlings

B. Asgard

C. Tokra

Case: James Leonard

➢ **Solution: C.**

C is the correct answer. A value trap occurs when a stock that appears to have an attractive valuation because of a low P/E and/or P/B multiple (or other relevant value proxies) appears cheap only because of its worsening growth prospects. Although a pitfall such as value trap is more common in fundamental investing, a quantitative process that relies on historical information and does not integrate future expectations about cash flows or profitability may be unable to detect a value trap.

Case: James Leonard

A is an incorrect answer. Although Furlings is a top-down manager, its sector portfolios are built through investing in a small number of high-conviction securities after its analysts have dissected the financial statements and analyzed the competitive landscape and growth prospects. Managers at Furlings are more likely than managers at Tokra to be aware of the significant deteriorating prospects of a security they are considering for investment.

B is an incorrect answer. One of Asgard's investment criteria is identifying firms that have good potential cash flow growth over the next three years. The firm has access to database and support tools, allowing its analysts to evaluate many potential growth metrics. Managers at Asgard are more likely than managers at Tokra to be aware of the significant deteriorating prospects of a security they are considering for investment.

Case: James Leonard

- Which activist investing tactic is Asgard *least* likely to use?
  - A. Engaging with management by writing letters to management, calling for and explaining suggested changes, and participating in management discussions with analysts or meeting the management team privately
  - B. Launching legal proceedings against existing management for breach of fiduciary duties
  - C. Proposing restructuring of the balance sheet to better utilize capital and potentially initiate share buybacks or increase dividends

Case: James Leonard

- **Solution: B.**

B is the correct answer. Asgard invests in firms that have strong business models and good governance. Also, it approaches investing as a long-term investor looking to use its voice to improve the company's asset management. Asgard is unlikely to use an aggressive posturing or to invest or stay invested in companies with weak governance or where managers may be in breach of fiduciary duties.

A is an incorrect answer. Engaging in positive conversations with management of companies with which Asgard has invested reflects a use of its voice to improve these companies' long-term value.

C is an incorrect answer. Because Asgard is strong at modeling sources of cash flows and is known for investing in companies with a strong capital structure, it would be consistent for Asgard to propose ways to optimize the capital structure and shareholders' compensation.

Case: James Leonard

- Based on the information provided in Exhibits 1 and 2, which manager's portfolio characteristics is *most* likely at odds with its declared style?
  A. Furlings
  B. Asgard
  C. Tokra

Case: James Leonard

- **Solution: C.**

  C is the correct answer. Tokra indicates that it emphasizes three metrics: P/B, 12-month price momentum, and return on assets. Although the portfolio consists of securities that have stronger momentum than those of the index on average, and although the ratio of net income to assets is also favorable, the average P/B is somehow higher than that of the index. Although this scenario could normally be explained by an emphasis on specific sectors with a higher P/B than other sectors, the low level of sector deviation tolerated within the strategy weakens that explanation. This should be explored with Tokra's managers.

Case: James Leonard

A is an incorrect answer. Furlings is a top-down sector rotator with a value orientation within sectors. The lower P/B and P/E and higher net income over assets are consistent with a relative value orientation. Because Furlings can take significant positions in specific sectors, however, there could be other circumstances in which the portfolio would have a higher P/B and/or P/E and or a lower net income /assets than the index if the fund were to emphasize sectors having such characteristics. Yet, this would not necessarily imply that the firm does not favor the most attractive relative valuations within sectors.

Case: James Leonard

B is an incorrect answer. Asgard invests in firms that offer reasonable valuations and above-average expected cash flow growth during the next three years. The data, such as P/B and average expected three-year profit growth, are consistent with its declared style. Again, it is not necessarily inconsistent to emphasize these aspects while investing in a portfolio that has a lower dividend yield, slightly higher P/E, and lower price momentum.

Case: James Leonard

- Leonard is looking at the style classification from Asgard as reported by Morningstar and Thomson Reuters Lipper. He is surprised to find that Asgard is classified as a blend fund by Morningstar and a value fund by Lipper. Which of the following statements is *correct*?
  - A. Although the Morningstar methodology classifies securities as either value, growth, or core, the Lipper methodology assumes a stock can have the characteristics of many styles. This approach can result in a different classification for the same portfolio.
  - B. The Lipper methodology can only lead to a value or growth classification. It does not offer a core/blend component.
  - C. The Morningstar methodology classifies securities as either value, growth, or core by looking at the difference between their respective growth and value scores. It is possible that the Asgard funds hold a balanced exposure to both value and growth and/or core stocks.

Case: James Leonard

- **Solution: C.**

C is a correct answer. Morningstar calculates a score for value and growth on a scale of 0 to 100 using five proxy measures for each. The value score is subtracted from the growth score. A strongly positive net score leads to a growth classification, and a strongly negative score leads to a value classification. A score relatively close to zero indicates a core classification. To achieve a blend classification, the portfolio must have a balanced exposure to stocks classified as value and growth, a dominant exposure to stocks classified as core, or a combination of both.

Case: James Leonard

A is an incorrect answer. Both Morningstar and Lipper classify individual stocks in a specific style category. Neither assumes a security can belong to several styles in specific proportion.

B is an incorrect answer. The Lipper methodology does have a core classification. It sums the Z-score of six portfolio characteristics over several years to determine an overall Z-score that determines either a value, core, or growth classification.

Case: Aleksy Nowacki

- Aleksy Nowacki is a new portfolio manager at Heydon Investments. The firm currently offers a single equity fund, which uses a top-down investment strategy based on fundamentals. Vicky Knight, a junior analyst at Heydon, assists with managing the fund.
- Nowacki has been hired to start a second fund, the Heydon Quant Fund, which will use quantitative active equity strategies. Nowacki and Knight meet to discuss distinct characteristics of the quantitative approach to active management, and Knight suggests three such characteristics:

Case: Aleksy Nowacki

Characteristic 1 The focus is on factors across a potentially large group of stocks.

Characteristic 2 The decision-making process is systematic and non-discretionary.

Characteristic 3 The approach places an emphasis on forecasting the future prospects of underlying companies.

- Nowacki states that quantitative investing generally follows a structured and well-defined process. Knight asks Nowacki:

Case: Aleksy Nowacki

- "What is the starting point for the quantitative investment process?"
- The new Heydon Quant Fund will use a factor-based strategy. Nowacki assembles a large dataset with monthly standardized scores and monthly returns for the strategy to back-test a new investment strategy and calculates the information coefficient. FS(t) is the factor score for the current month, and FS(t + 1) is the score for the next month. SR(t) is the strategy's holding period return for the current month, and SR(t + 1) is the strategy's holding period return for the next month.

Case: Aleksy Nowacki

- As an additional step in back-testing of the strategy, Nowacki computes historical price/book ratios (P/Bs) and price/earnings ratios (P/Es) using calendar year-end (31 December) stock prices and companies' financial statement data for the same calendar year. He notes that the financial statement data for a given calendar year are not typically published until weeks after the end of that year.
- Because the Heydon Quant Fund occasionally performs pairs trading using statistical arbitrage, Nowacki creates three examples of pairs trading candidates, presented in Exhibit 1. Nowacki asks Knight to recommend a suitable pair trade.

Case: Aleksy Nowacki

Exhibit 1 Possible Pairs Trades Based on Statistical Arbitrage

Stock Pair	Current Price Ratio Compared with Long-Term Average	Historical Price Ratio Relationship	Historical Correlation between Returns
1 and 2	Not significantly different	Mean reverting	High
3 and 4	Significantly different	Mean reverting	High
5 and 6	Significantly different	Not mean reverting	Low

Case: Aleksy Nowacki

- Knight foresees a possible scenario in which the investment universe for the Heydon Quant Fund is unchanged but a new factor is added to its multifactor model. Knight asks Nowacki whether this scenario could affect the fund's investment-style classifications using either the returns-based or holdings-based approaches.

Case: Aleksy Nowacki

- Which of the following asset allocation methods would not likely be used by Nowacki and Knight to select investments for the existing equity fund?
  A. Sector and industry rotation
  B. Growth at a reasonable price
  C. Country and geographic allocation

Case: Aleksy Nowacki

- **Solution: B.**

  The firm currently offers a single equity fund, which uses a top-down investment strategy. Country and geographic allocation and sector and industry rotation are both top-down strategies that begin at the top or macro level and are consistent with the fund's top-down investment strategy. Growth at a reasonable price (GARP), however—a growth-based approach—is a bottom-up asset selection strategy that begins with data at the company level. Therefore, Nowacki and Knight likely would not use the GARP approach to select investments for the existing equity fund, which uses a top-down investment strategy. A is incorrect because sector and industry rotation is a top-down strategy, consistent with the fund's top-down approach. C is incorrect because country and geography selection is a top-down strategy, consistent with the fund's top-down approach.

Case: Aleksy Nowacki

- Relative to Heydon's existing fund, the new fund will most likely:
  A. hold a smaller number of stocks.
  B. rebalance at more regular intervals.
  C. see risk at the company level rather than the portfolio level.

Case: Aleksy Nowacki

- **Solution: B.**

  Portfolios managed using a quantitative approach are usually rebalanced at regular intervals, such as monthly or quarterly. In contrast, portfolios managed using a fundamental approach usually monitor the portfolio's holdings continuously and may increase, decrease, or eliminate positions at any time.

  Also, the focus of a quantitative approach is on factors across a potentially large group of stocks, whereas fundamental strategies focus on a relatively small group of stocks. Consequently, Heydon's new quantitative fund will likely hold a larger number of stocks than the existing equity fund.

Case: Aleksy Nowacki

Finally, managers following a fundamental approach typically select stocks by performing extensive research on individual companies; thus, fundamental investors see risk at the company level. In contrast, with a quantitative approach, the risk is that factor returns will not perform as expected. Because the quantitative approach invests in baskets of stocks, the risks lie at the portfolio level rather than at the level of specific stocks (company level). Consequently, Nowacki's new quantitative fund will likely see risk at the portfolio level, rather than the company level as the existing equity fund does.

Case: Aleksy Nowacki

- Which characteristic suggested by Knight to describe the quantitative approach to active management is incorrect?
  A. Characteristic 1
  B. Characteristic 2
  C. Characteristic 3

Case: Aleksy Nowacki

- **Solution: C.**

  Quantitative analysis uses a company's history to arrive at investment decisions. The quantitative decision-making process is systematic and non-discretionary (whereas the fundamental decision-making process is more discretionary), and the focus of the quantitative approach is on factors across a potentially large group of stocks (whereas fundamental strategies focus on a relatively small group of stocks). In contrast, fundamental analysis (not quantitative analysis) emphasizes forecasting future prospects, including the future earnings and cash flows of a company.

Case: Aleksy Nowacki

- Nowacki's most appropriate response to Knight's question about the quantitative investment process is to:
  A. back-test the new strategy.
  B. define the market opportunity.
  C. identify the factors to include and their weights.

Case: Aleksy Nowacki

- **Solution: B.**

  The first step in creating a quantitative, active strategy is to define the market opportunity or investment thesis. Then, relevant data is acquired, processed, and transformed into a usable format. This step is followed by back-testing the strategy, which involves identifying the factors to include as well as their weights. Finally, the strategy performance should be evaluated using an out-of-sample back-test.

Case: Aleksy Nowacki

- In Nowacki's back-testing of the factor-based strategy for the new fund, the calculated information coefficient should be based on:

  A. FS(t) and SR(t).

  B. FS(t) and SR(t +1).

  C. SR(t) and FS(t + 1).

Case: Aleksy Nowacki

- **Solution: B.**

  The purpose of back-testing is to identify correlations between the current period's factor scores, FS(t), and the next period's holding period strategy returns, SR(t + 1).

Case: Aleksy Nowacki

- Nowacki's calculated price/book ratios (P/Bs) and price/earnings ratios (P/Es), in his back-testing of the new strategy, are a problem because of:
  A. data mining.
  B. look-ahead bias.
  C. survivorship bias.

Case: Aleksy Nowacki

- **Solution: B.**

  Look-ahead bias results from using information that was unknown or unavailable at the time the investment decision was made. An example of this bias is using financial accounting data for a company at a point before the data were actually released by the company. Nowacki computed historical P/Bs and P/Es using calendar year-end (31 December) stock prices and companies' financial statement data for the same calendar year, even though the financial statement data for that calendar year were likely unavailable at year-end.

  Data mining refers to automated computational procedures for discovering patterns in large datasets, which can introduce a bias known as overfitting. Survivorship bias occurs when back-testing uses companies that are in business today but ignores companies that have left the investment universe.

Case: Aleksy Nowacki

- Based on Exhibit 1, which stock pair should Knight recommend as the best candidate for statistical arbitrage?
  A. Stock 1 and Stock 2
  B. Stock 3 and Stock 4
  C. Stock 5 and Stock 6

Case: Aleksy Nowacki

- **Solution: B.**

  Knight should recommend the Stock 3 and Stock 4 pair trade. Two stocks make for an ideal pairs trade if (1) the current price ratio differs from its long-term average and shows historical mean reversion and (2) the two stocks' returns are highly correlated. The relationship between Stock 3 and Stock 4 meets these conditions.

Case: Aleksy Nowacki

- The most appropriate response to Knight's question regarding the potential future scenario for the Heydon Quant Fund is:
  A. only the returns-based approach.
  B. only the holdings-based approach.
  C. both the returns-based approach and the holdings-based approach.

Case: Aleksy Nowacki

- **Solution: C.**

  Because the Heydon Quant Fund would be changing its factor model by adding a new factor, the correlations of the fund's returns with the factors would likely change and the returns-based style would change. Even though the investment universe is unchanged, the portfolio holdings would likely change and the holdings-based style classification would also will be affected.

Case: Jack Dewey

- Jack Dewey is managing partner of DC&H, an investment management firm, and Supriya Sardar is an equity analyst with the firm. Dewey recently took over management of the firm's Purity Fund. He is developing a fundamental active investment process for managing this fund that emphasizes financial strength and demonstrated profitability of portfolio companies. At his previous employer, Dewey managed a fund for which his investment process involved taking active exposures in sectors based on the macroeconomic environment and demographic trends.

Case: Jack Dewey

- Dewey and Sardar meet to discuss developing a fundamental active investment process for the Purity Fund. They start by defining the investment universe and market opportunity for the fund, and then they pre-screen the universe to obtain a manageable set of securities for further, more detailed analysis. Next, Dewey notes that industry and competitive analysis of the list of securities must be performed. He then asks Sardar to recommend the next step in development of the fundamental active management process.

Case: Jack Dewey

- During the next few months, Dewey rebalances the Purity Fund to reflect his fundamental active investment process. Dewey and Sardar meet again to discuss potential new investment opportunities for the fund. Sardar recommends the purchase of AZ Industrial, which she believes is trading below its intrinsic value, despite its high price-to-book value (P/B) relative to the industry average.
- Dewey asks Sardar to perform a bottom-up style analysis of the Purity Fund based on the aggregation of attributes from individual stocks in the portfolio. Dewey plans to include the results of this style analysis in a profile he is preparing for the fund.

Case: Jack Dewey

- In managing the fund at his previous employer, Dewey's investment process can be best described as:
  A. an activist strategy.
  B. a top-down strategy.
  C. a bottom-up strategy.

Case: Jack Dewey

- **Solution: B.**

  At his previous firm, Dewey managed a fund for which his investment process involved taking active exposures in sectors based on the macroeconomic environment and demographic trends. An investment process that begins at a top, or macro level, is a top-down strategy. Top-down portfolio strategies study variables affecting many companies or whole sectors, such as the macroeconomic environment, demographic trends, and government policies. This approach differs from bottom-up strategies, which focus on individual company variables in making investment decisions. It also differs from activist strategies, which take stakes in listed companies and advocate changes for the purpose of producing a gain on the investment.

Case: Jack Dewey

- Sardar's recommendation for the next step should be to:
  A. review results from back-testing the strategy.
  B. make recommendations for rebalancing the portfolio.
  C. forecast companies' performances and convert those forecasts into valuations.

Case: Jack Dewey

- **Solution: C.**

The steps to developing a fundamental active investment process are as follows:

1 Define the investment universe and the market opportunity—the perceived opportunity to earn a positive risk-adjusted return to active investing, net of costs—in accordance with the investment mandate. The market opportunity is also known as the investment thesis.

2 Prescreen the investment universe to obtain a manageable set of securities for further, more detailed analysis.

Case: Jack Dewey

3 Understand the industry and business for this screened set by performing industry and competitive analysis and analyzing financial reports.

4 Forecast company performance, most commonly in terms of cash flows or earnings.

5 Convert forecasts to valuations and identify ex ante profitable investments.

6 Construct a portfolio of these investments with the desired risk profile.

Case: Jack Dewey

7 Rebalance the portfolio with buy and sell disciplines.

So, Sardar should recommend that the next step in the development of the fundamental active management process be forecasting companies' performances and converting those forecasts into valuations.

Case: Jack Dewey

- Based upon Dewey's chosen investment process for the management of the Purity Fund, rebalancing of the fund will most likely occur:
  A. at regular intervals.
  B. in response to changes in company-specific information.
  C. in response to updated output from optimization models.

Case: Jack Dewey

- **Solution: B.**

  Managers using an active fundamental investment process, like Dewey's, usually monitor the portfolio's holdings continuously and may rebalance at any time. In contrast, portfolios using a quantitative approach are usually rebalanced at regular intervals, such as monthly or quarterly, or in response to updated output from optimization models. A is incorrect because portfolios using a quantitative (not fundamental) active approach are usually rebalanced at regular intervals, such as monthly or quarterly. C is incorrect because construction of a quantitative portfolio (not a fundamental portfolio) typically involves using a portfolio optimizer, which controls for risk at the portfolio level in arriving at individual stock weights and leads to rebalancing decisions.

Case: Jack Dewey

- Which investment approach is the most likely basis for Sardar's buy recommendation for AZ Industrial?
  A. Relative value
  B. High-quality value
  C. Deep-value investing

Case: Jack Dewey

- **Solution: B.**

  Dewey has developed a fundamental active investment process for the Purity Fund that emphasizes financial strength and demonstrated profitability. High-quality value investors focus on companies' intrinsic values that are supported by attractive valuation metrics, with an emphasis on financial strength and demonstrated profitability. In their view, investors sometimes behave irrationally, making stocks trade at prices very different from intrinsic value based on company fundamentals. A is incorrect because investors who pursue a relative value strategy evaluate companies by comparing their value indicators (e.g., P/E or P/B multiples) with the average valuation of companies in the same industry sector, in an effort to identify stocks that offer value relative to their sector peers.

Case: Jack Dewey

AZ Industrial is trading at a high P/B relative to the industry average, which is contrary to relative value and suggests that the relative value approach was not the basis for Sardar's buy recommendation. C is incorrect because a deep-value investing approach focuses on undervalued companies that are available at extremely low valuation relative to their assets. Such companies are often those in financial distress, which is not reflective of financial strength or demonstrated profitability. Therefore, Sardar's buy recommendation was not based on a deep-value investing orientation.

Case: Jack Dewey

- The analysis performed by Sardar on the Purity Fund can be best described as being based on:

  A. a holdings-based approach.

  B. manager self-identification.

  C. a returns-based style analysis.

Case: Jack Dewey

- **Solution: A.**

  Dewey asks Sardar to perform a bottom-up style analysis of the Purity Fund based on the aggregation of attributes from individual stocks in the portfolio, which describes a holdings-based approach to style analysis. The overall equity investment style is an aggregation of attributes from individual stocks in the portfolio, weighted by their positions.

Reading 25

Active Equity Investing:
Portfolio Construction

Case: Monongahela Ap

- Monongahela Ap is an equity fund analyst. His manager asks him to evaluate three actively managed equity funds from a single sponsor, Chiyodasenko Investment Corp. Ap's assessments of the funds based on assets under management (AUM), the three main building blocks of portfolio construction, and the funds' approaches to portfolio management are presented in Exhibit 1. Selected data for Fund 1 is presented in Exhibit 2.

Case: Monongahela Ap

Exhibit 1. Ap's Assessments of Funds 1, 2, and 3				
Fund	**Fund Category**	**Fund Size (AUM)**	**Number of Securities**	**Description**
1	Small-cap stocks	Large	Small	Fund 1 focuses on skillfully timing exposures to factors, both rewarded and unrewarded, and to other asset classes. The fund's managers use timing skills to opportunistically shift their portfolio to capture returns from factors such as country, asset class, and sector. Fund 1 prefers to make large trades.
2	Large-cap stocks	Large	Large	Fund 2 holds a diversified portfolio and is concentrated in terms of factors. It targets individual securities that reflect the manager's view that growth firms will outperform value firms. Fund 2 builds up its positions slowly, using unlit venues when possible.
3	Small-cap stocks	Small	Large	Fund 3 holds a highly diversified portfolio. The fund's managers start by evaluating the risk and return characteristics of individual securities and then build their portfolio based on their stock-specific forecasts. Fund 3 prefers to make large trades.

Case: Monongahela Ap

Exhibit 2. Selected Data for Fund 1				
Factor	**Market**	**Size**	**Value**	**Momentum**
Coefficient	1.080	0.098	–0.401	0.034
Variance of the market factor return and covariances with the market factor return	0.00109	0.00053	0.00022	–0.00025
Portfolio's monthly standard deviation of returns				3.74%

Case: Monongahela Ap

- Ap learns that Chiyodasenko has initiated a new equity fund. It is similar to Fund 1 but scales up active risk by doubling all of the active weights relative to Fund 1. The new fund aims to scale active return linearly with active risk, but implementation is problematic. Because of the cost and difficulty of borrowing some securities, the new fund cannot scale up its short positions to the same extent that it can scale up its long positions.

Case: Monongahela Ap

- Ap reviews quarterly holdings reports for Fund 3. In comparing the two most recent quarterly reports, he notices differences in holdings that indicate that Fund 3 executed two trades, with each trade involving pairs of stocks. Initially, Fund 3 held active positions in two automobile stocks—one was overweight by 1 percentage point (pp), and the other was underweight by 1pp. Fund 3 traded back to benchmark weights on those two stocks. In the second trade, Fund 3 selected two different stocks that were held at benchmark weights, one energy stock and one financial stock. Fund 3 overweighted the energy stock by 1pp and underweighted the financial stock by 1pp.

Case: Monongahela Ap

- In Fund 3's latest quarterly report, Ap reads that Fund 3 implemented a new formal risk control for its forecasting model that constrains the predicted return distribution so that no more than 60% of the deviations from the mean are negative.

Case: Monongahela Ap

- Based on Exhibit 1, the main building block of portfolio construction on which Fund 1 focuses is *most* likely:
  A. alpha skills.
  B. position sizing.
  C. rewarded factor weightings.

Case: Monongahela Ap

- **Solution: A.**

  A is correct. The three main building blocks of portfolio construction are alpha skills, position sizing, and rewarded factor weightings. Fund 1 generates active returns by skillfully timing exposures to factors, both rewarded and unrewarded, and to other asset classes, which constitute a manager's alpha skills.

Case: Monongahela Ap

- Which fund in Exhibit 1 *most* likely follows a bottom-up approach?

  A. Fund 1

  B. Fund 2

  C. Fund 3

Case: Monongahela Ap

- **Solution: C.**

  C is correct. Bottom-up managers evaluate the risk and return characteristics of individual securities and build portfolios based on stock-specific forecasts; Fund 3 follows this exact approach. Example views of bottom-up managers include expecting one auto company to outperform another, expecting a pharmaceutical company to outperform an auto company, and expecting a technology company to outperform a pharmaceutical company. Both bottom-up and top-down managers can be either diversified or concentrated in terms of securities.

Case: Monongahela Ap

- Which fund in Exhibit 1 *most* likely has the greatest implicit costs to implement its strategy?
  - A. Fund 1
  - B. Fund 2
  - C. Fund 3

Case: Monongahela Ap

- **Solution: A.**

  A is correct. Because Fund 1 has a large AUM but focuses on small-cap stocks, holds a relatively small number of securities in its portfolio, and prefers to make large trades, Fund 1 likely has the highest implicit costs. Each of these characteristics serves to increase the market impact of its trades. Market impact is a function of the security's liquidity and trade size. The larger a trade size relative to a stock's average daily volume, the more likely it is that the trade will affect prices. The relatively low level of trading volume of small-cap stocks can be a significant implementation hurdle for a manager running a strategy with significant assets under management and significant positive active weights on smaller companies.

Case: Monongahela Ap

- Based on Exhibit 2, the portion of total portfolio risk that is explained by the market factor in Fund 1's existing portfolio is *closest* to:
  - A. 3%.
  - B. 81%.
  - C. 87%.

Case: Monongahela Ap

➢ **Solution: C.**

C is correct. The portion of total portfolio risk explained by the market factor is calculated in two steps. The first step is to calculate the contribution of the market factor to total portfolio variance as follows:

$$\text{CVmarket factor} = \sum_{j=1}^{n} x_{\text{market factor}} x_j C_{mf,j} = x_{\text{market factor}} \sum_{j=1}^{n} x_j C_{mf,j}$$

Where:

- CVmarket factor = contribution of the market factor to total portfolio variance
- x_(market factor) = weight of the market factor in the portfolio
- x_j = weight of factor j in the portfolio
- C_(mf,j) = covariance between the market factor and factor j

Case: Monongahela Ap

The variance attributed to the market factor is as follows:

- CVmarket factor = (1.080 × 0.00109 × 1.080) + (1.080 × 0.00053 × 0.098) + (1.080 × 0.00022 × –0.401) + (1.080 × –0.00025 × 0.034)
- CVmarket factor = 0.001223

The second step is to divide the resulting variance attributed to the market factor by the portfolio variance of returns, which is the square of the standard deviation of returns:

- Portion of total portfolio risk explained by the market factor = $0.001223/(0.0374)^2$
- Portion of total portfolio risk explained by the market factor = 87%

Case: Monongahela Ap

➢ Relative to Fund 1, Chiyodasenko's new equity fund will *most* likely exhibit a lower:

A. information ratio.

B. idiosyncratic risk.

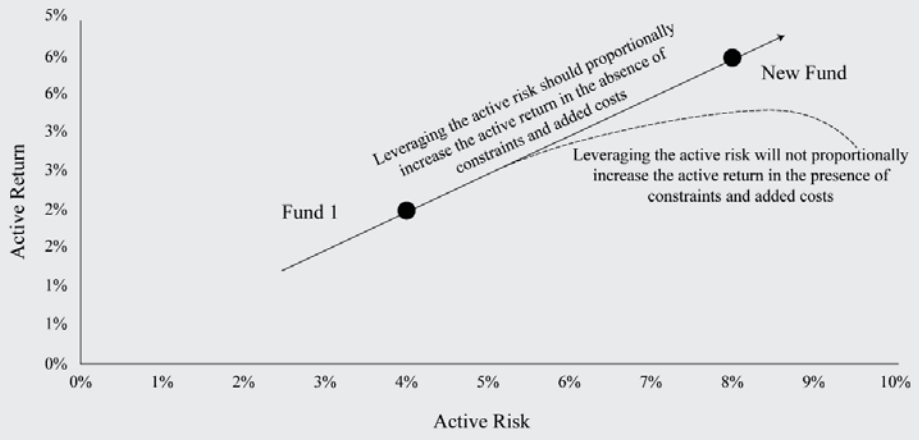
C. collateral requirement.

Case: Monongahela Ap

➢ **Solution: A.**

A is correct. As the new fund scales up active risk by doubling active weights, it will face implementation constraints that will prevent it from increasing the weights of many of its short positions. The information ratio (IR) is defined as the ratio of active return to active risk. If there were no constraints preventing the new fund from scaling up active weights, it could scale up active risk by scaling up active weights, proportionally increase active return, and keep the IR unchanged. Implementation constraints experienced by the new fund, however, such as the cost and difficulty in borrowing securities to support the scaled-up short positions, will prevent the active return from proportionally increasing with the active risk. Therefore, the IR would most likely be lower for the new fund than for Fund 1. As the following chart illustrates, as active risk is scaled up, implementation constraints create diminishing returns to scale for active returns, thereby degrading the IR.

Case: Monongahela Ap



Case: Monongahela Ap

➢ As a result of Fund 3's two trades, the portfolio's active risk *most* likely:

A. decreased.

B. remained unchanged.

C. increased.

Case: Monongahela Ap

- **Solution: C.**

  C is correct. Active risk is affected by the degree of cross-correlation. The correlation of two stocks in different sectors is most likely lower than the correlation of two stocks in the same sector. Therefore, the correlation of the energy/financial pair is most likely lower than that of the automobile/automobile pair. Because both positions were implemented as an overweight and underweight, the lower correlation of the two stocks in the new position should contribute more to active risk than the two-stock position that it replaced.

Case: Monongahela Ap

- What was the effect of Fund 3's two trades on its active share? Fund 3's *active* share:

  A. decreased.

  B. remained unchanged.

  C. increased.

Case: Monongahela Ap

- **Solution: B.**

  B is correct. Active share changes only if the total of the absolute values of the portfolio's active weights changes. For the two trades in Fund 3, both the initial position and the new position involved two stocks such that one was 1pp underweighted and the other was 1pp overweighted. Although the active weights of particular securities did change between the initial position and the new position, the total absolute active weights did not change. Therefore, the portfolio's active share did not change.

Case: Monongahela Ap

- Which risk measure does Fund 3's new risk control *explicitly* constrain?
  - A. Volatility
  - B. Skewness
  - C. Drawdown

Case: Monongahela Ap

- **Solution: B.**

  B is correct. Skewness measures the degree to which return expectations are non-normally distributed. If a distribution is positively skewed, the mean of the distribution is greater than its median—more than half of the deviations from the mean are negative and less than half are positive—and the average magnitude of positive deviations is larger than the average magnitude of negative deviations. Negative skew indicates that that the mean of the distribution lies below its median, and the average magnitude of negative deviations is larger than the average magnitude of positive deviations. Fund 3's new risk control constrains its model's predicted return distribution so that no more than 60% of the deviations from the mean are negative. This is an explicit constraint on skewness.

Case: Ayanna Chen

- Ayanna Chen is a portfolio manager at Aycrig Fund, where she supervises assistant portfolio manager Mordechai Garcia. Aycrig Fund invests money for high-net-worth and institutional investors. Chen asks Garcia to analyze certain information relating to Aycrig Fund's three sub-managers, Managers A, B, and C.
- Manager A has $250 million in assets under management (AUM), an active risk of 5%, an information coefficient of 0.15, and a transfer coefficient of 0.40. Manager A's portfolio has a 2.5% expected active return this year.
- Chen directs Garcia to determine the maximum position size that Manager A can hold in shares of Pasliant Corporation, which has a market capitalization of $3.0 billion, an index weight of 0.20%, and an average daily trading volume (ADV) of 1% of its market capitalization.

Case: Ayanna Chen

- Manager A has the following position size policy constraints:
  - **Allocation:** No investment in any security may represent more than 3% of total AUM.
  - **Liquidity:** No position size may represent more than 10% of the dollar value of the security's ADV.
  - **Index weight:** The maximum position weight must be less than or equal to 10 times the security's weight in the index.
- Manager B holds a highly diversified portfolio that has balanced exposures to rewarded risk factors, high active share, and a relatively low active risk target.
- Selected data on Manager C's portfolio, which contains three assets, is presented in Exhibit 1.

Case: Ayanna Chen

Exhibit 1. Selected Data on Manager C's Portfolio

	Portfolio Weight	Standard Deviation	Covariance		
			Asset 1	Asset 2	Asset 3
Asset 1	30%	25.00%	0.06250	0.01050	0.00800
Asset 2	45%	14.00%	0.01050	0.01960	0.00224
Asset 3	25%	8.00%	0.00800	0.00224	0.00640

Case: Ayanna Chen

- Chen considers adding a fourth sub-manager and evaluates three managers' portfolios, Portfolios X, Y, and Z. The managers for Portfolios X, Y, and Z all have similar costs, fees, and alpha skills, and their factor exposures align with both Aycrig's and investors' expectations and constraints. The portfolio factor exposures, risk contributions, and risk characteristics are presented in Exhibits 2 and 3.

Case: Ayanna Chen

Exhibit 2. Portfolio Factor Exposures and Factor Risk Contribution						
	Factor Exposure			Factor Risk Contribution		
	Portfolio X	Portfolio Y	Portfolio Z	Portfolio X	Portfolio Y	Portfolio Z
Market	1.07	0.84	1.08	103%	82%	104%
Size	–0.13	0.15	–0.12	–2%	7%	-3%
Value	0.04	0.30	0.05	–5%	18%	-6%
Momentum	0.08	0.02	0.07	7%	–3%	7%
Quality	0.10	0.35	0.11	–4%	–21%	–5%
Unexplained	—	—	—	1%	17%	3%
Total	n/a	n/a	n/a	100%	100%	100%

Case: Ayanna Chen

Exhibit 3. Portfolio Risk Characteristics			
	Portfolio X	Portfolio Y	Portfolio Z
Annualized volatility	10.50%	13.15%	15.20%
Annualized active risk	2.90%	8.40%	4.20%
Active share	0.71	0.74	0.63

Case: Ayanna Chen

- Chen and Garcia next discuss characteristics of long–short and long-only investing. Garcia makes the following statements about investing with long–short and long-only managers:
  - **Statement 1:** A long–short portfolio allows for a gross exposure of 100%.
  - **Statement 2:** A long-only portfolio generally allows for greater investment capacity than other approaches, particularly when using strategies that focus on large-cap stocks.
- Chen and Garcia then turn their attention to portfolio management approaches. Chen prefers an approach that emphasizes security-specific factors, engages in factor timing, and typically leads to portfolios that are generally more concentrated than those built using a systematic approach.

Case: Ayanna Chen

- The number of truly independent decisions Manager A would need to make in order to earn her expected active portfolio return this year is *closest* to:
  - A. 8.
  - B. 11.
  - C. 69.

Case: Ayanna Chen

- **Solution: C.**

  C is correct. The breadth (number of truly independent decisions made each year by the manager) required to earn the expected portfolio active return of 2.5% per year is approximately 69 decisions, calculated as follows:

  $\mathrm{E}(R_A) = IC \times \sqrt{BR} \times \sigma_{R_A} \times TC$

  $\mathrm{E}(R_A) = 0.15 \times \sqrt{BR} \times 5\% \times 0.40 = 2.5\%$

  $2.5\% = 0.15 \times \sqrt{BR} \times 5\% \times 0.40$

  $\sqrt{BR} = \dfrac{2.5\%}{0.3\%} = 8.33$

  $\mathrm{BR} = 69.44$

Case: Ayanna Chen

- Which of the following position size policy constraints is the *most* restrictive in setting Manager A's maximum position size in shares of Pasliant Corporation?
  - A. Liquidity
  - B. Allocation
  - C. Index weight

Case: Ayanna Chen

➢ **Solution: A.**

A is correct. The maximum position size in shares of Pasliant Corporation (PC) is determined by the constraint with the lowest dollar amount. The maximum position size for PC under each constraint is calculated as follows:

Liquidity Constraint

Dollar value of PC traded daily = PC market cap × Average daily trading volume

Dollar value of PC traded daily = $3 billion × 1.0% = $30 million

Liquidity constraint = Dollar value of PC traded daily × Liquidity % threshold

Liquidity constraint = $30 million × 10% = $3 million

Allocation Constraint

Allocation constraint = AUM × Maximum position size threshold

Allocation constraint = $250 million × 3.0% = $7.5 million

Case: Ayanna Chen

Index Weight Constraint

Index weight constraint = AUM × (Index weight × 10)

Index weight constraint = $250 million × (0.20% × 10) = $5.0 million

The liquidity constraint of $3.0 million is less than both the $5.0 million index weight constraint and the $7.5 million allocation constraint. Therefore, the maximum allowable position size that Manager A may take in PC is $3.0 million.

Case: Ayanna Chen

➢ Manager B's portfolio is *most* likely consistent with the characteristics of a:

A. pure indexer.

B. sector rotator.

C. multi-factor manager.

Case: Ayanna Chen

- **Solution: C.**

  C is correct. Most multi-factor products are diversified across factors and securities and typically have high active share but have reasonably low active risk (tracking error), often in the range of 3%. Most multi-factor products have a low concentration among securities in order to achieve a balanced exposure to risk factors and minimize idiosyncratic risks. Manager B holds a highly diversified portfolio that has balanced exposures to rewarded risk factors, a high active share, and a relatively low target active risk—consistent with the characteristics of a multi-factor manager.

Case: Ayanna Chen

- Based on Exhibit 1, the contribution of Asset 2 to Manager C's portfolio variance is closest to

  A. 0.0025.

  B. 0.0056.

  C. 0.0088.

Case: Ayanna Chen

- **Solution: B.**

  B is correct. The contribution of an asset to total portfolio variance equals the summation of the multiplication between the weight of the asset whose contribution is being measured, the weight of each asset (x_j), and the covariance between the asset being measured and each asset (C_{ij}), as follows:

  $$\text{Contribution of each asset to portfolio varianc} = CV_i = \sum_{j=1}^{n} x_i x_j C_{ij}$$

  The contribution of Asset 2 to portfolio variance is computed as the sum of the following products:

Weight of Asset 2 × Weight of Asset 1 × Covariance of asset 2 with Asset 1, plus	0.45 × 0.30 × 0.01050
Weight of Asset 2 × Weight of Asset 2 × Covariance of Asset 2 with Asset 2, plus	0.45 × 0.45 × 0.01960
Weight of Asset 2 × Weight of Asset 3 × Covariance of Asset 2 with Asset 3	0.45 × 0.25 × 0.00224
= Asset 2's contribution to total portfolio variance	0.005639

Case: Ayanna Chen

- Based on Exhibits 2 and 3, which portfolio *best* exhibits the risk characteristics of a well-constructed portfolio?
  A. Portfolio X
  B. Portfolio Y
  C. Portfolio Z

Case: Ayanna Chen

- **Solution: A.**

  A is correct. Well-constructed portfolios should have low idiosyncratic (unexplained) risk relative to total risk. Portfolio Y exhibits extremely high unexplained risk relative to total risk, and Portfolios X and Z have low unexplained risk relative to total risk. Therefore, Portfolio Y may be eliminated.

  Portfolios X and Z have comparable factor exposures. In comparing portfolios with comparable factor exposures, the portfolio with lower absolute volatility and lower active risk will likely be preferred, assuming similar costs. Portfolio X has lower absolute volatility and lower active risk than Portfolio Z, although both have similar costs.

  Finally, for managers with similar costs, fees, and alpha skills, if two products have similar active and absolute risks, the portfolio having a higher active share is preferred. Portfolio X has lower absolute volatility, lower active risk, and higher active share than Portfolio Z. As a result, Portfolio X best exhibits the risk characteristics of a well-constructed portfolio.

Case: Ayanna Chen

- Which of Garcia's statements regarding investing with long–short and long-only managers is *correct*?
  A. Only Statement 1
  B. Only Statement 2
  C. Both Statement 1 and Statement 2

Case: Ayanna Chen

➢ **Solution: C.**

C is correct. Both Statement 1 and Statement 2 are correct.

Statement 1 is correct because, similar to a long-only portfolio, a long–short portfolio can be structured to have a gross exposure of 100%. Gross exposure of the portfolio is calculated as the sum of the long positions and the absolute value of the short positions, expressed as percentages of the portfolio's capital.

Gross exposure = Long positions + |Short positions|

Gross exposure long-only portfolio = 100% (Long positions) + 0% (Short positions) = 100%

Gross exposure long–short portfolio = 50% (Long positions) + |–50%| (Short positions) = 100%

Statement 2 is correct because long-only investing generally offers greater investment capacity than other approaches, particularly when using strategies that focus on large-cap stocks. For large institutional investors such as pension plans, there are no effective capacity constraints in terms of the total market cap available for long-only investing.

Case: Ayanna Chen

➢ Chen's preferred portfolio management approach would be best described as:

A. top down.

B. systematic.

C. discretionary.

Case: Ayanna Chen

➢ **Solution: C.**

C is correct. Chen prefers an approach that emphasizes security-specific factors, engages in factor timing, and typically leads to portfolios that are generally more concentrated than those built using a systematic approach

问题反馈

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    - ✓ 所在班级（eg.1906CFA一级长线无忧班）
    - ✓ 问题所在科目（若未知科目，请提供章节、知识点）和页码
    - ✓ 您对问题的详细描述和您的见解
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