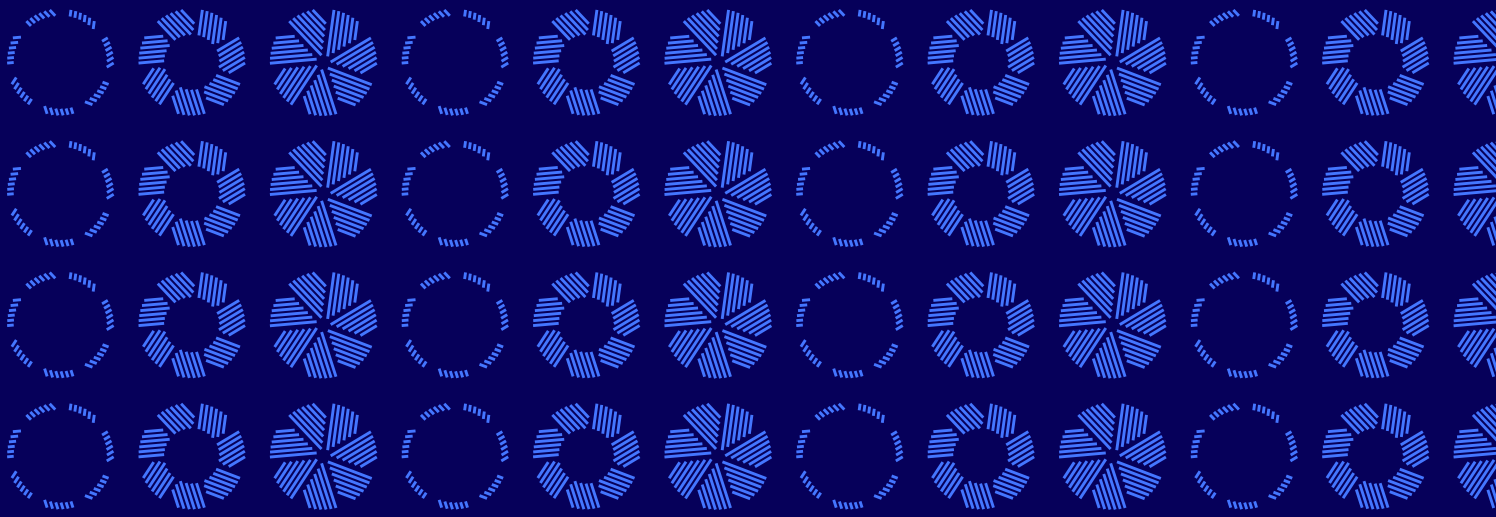
CFA Institute®

EXPOSURE DRAFT
GUIDE FOR BEST PRACTICES IN RETURN ATTRIBUTION REPORTING

60 DAYS FROM PUBLICATION DATE: 14 OCTOBER 2025 – 12 DECEMBER 2025



Invitation to Comment

Public commentary on this Exposure Draft will help shape the final version of the "Guide for Best Practices in Return Attribution Reporting." Written comments should be provided by email and submitted to gipsstandards@cfainstitute.org.

Recommendations and questions for the Guide's intended users can be found throughout the document. You may address as few or as many of the Exposure Draft recommendations and questions as you wish. A complete list of the Exposure Draft recommendations appears in the section titled "Return Attribution Report Recommendations," and a complete list of questions appears in Appendix D. We also welcome any further comments on this Exposure Draft that are not explicitly captured in the list of questions provided in Appendix D. This Exposure Draft is available on the Global Investment Performance Standards (GIPS®) website (www.gipsstandards.org).

The deadline for providing feedback is 12 December 2025. **Comments received after 12 December 2025 will not be considered**. Unless otherwise requested, all comments will be posted on the GIPS standards website.

Guidelines for Commenting

Comments are most useful when they

- directly address a specific recommendation or question,
- provide a rationale and support for the opinions expressed, and
- suggest alternative solutions in the event of disagreement.

Positive comments are equally as helpful as comments that provide constructive suggestions for improvement.

Requirements for Commenting

For comments to be considered, please adhere to the following requirements:

- Provide all comments in English.
- Submit comments in a Microsoft Word document.

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GUIDE FOR BEST PRACTICES IN RETURN ATTRIBUTION REPORTING

Introduction

Return attribution is a valuable tool for assessing a firm's active investment decisions, isolating sources of added value, and facilitating a meaningful dialogue between firms and their clients and prospects. Return attribution decomposes a portfolio or fund return into return segments to identify the sources of excess return relative to the benchmark. Return attribution can be applied to either *ex post* (i.e., backward-looking) or *ex ante* (i.e., forward-looking) returns. This "Guide for Best Practices in Return Attribution Reporting" (Guide) focuses on *ex post* return attribution and does not address attribution of *ex ante* returns.

Firms have many choices in calculating and presenting return attribution analysis. Much guidance has been written on return attribution calculations, and several methodologies have become standard practice, but limited guidance exists for reporting and disclosing attribution information.

CFA Institute has issued this Exposure Draft of the "Guide for Best Practices in Return Attribution Reporting" to solicit public comments on best practices for fairly presenting and fully disclosing return attribution information in marketing materials. Many of these practices also can be incorporated into internal or client reporting materials.

Relationship to the GIPS Standards

The GIPS standards are the premier investment industry standards for calculating and presenting historical investment performance. This Guide is not part of the GIPS standards. A firm that claims compliance with the GIPS standards and chooses to adopt the best practices for return attribution reporting included in this Guide would also need to consider the requirements of the GIPS standards. Although this Guide is presented in the form of recommendations, some of the recommended items may be requirements for firms adhering to the GIPS standards. For example, if a GIPS compliant firm includes

return attribution in a GIPS Report as supplemental information, the firm would be required to maintain records to support this information, whereas this Guide recommends that firms maintain records to support return attribution.

Return Attribution Methodology

The purpose of presenting return attribution in marketing materials is to explain the sources of a representative portfolio's or composite's excess return, which, in turn, are used to evaluate the success of a firm's strategy. Therefore, the return attribution methodology and the information presented in a return attribution report should facilitate analysis of the firm's investment decision-making process. The attribution methodology a firm chooses to present should be consistent over time unless a firm makes changes to its investment strategy that warrant a change in methodology.

1. Components of a Return Attribution Report

A return attribution report consists of two elements: (1) the presentation of the return attribution and (2) disclosures designed to provide more information on the return attribution. A return attribution report typically includes the following information:

- Representative portfolio or composite
  - Total return
  - Segment returns
  - Segment weights
  - Attribution effects
  - Return contribution
- Benchmark
  - Total return
  - Segment returns
  - Segment weights

The following sections contain descriptions of each of these items. Given the variety of information that may be included in a return attribution report, firms should clearly label all items included in the report.

Recommendation: Firms should clearly label all items included in the return attribution report.

Representative Portfolio or Composite Returns

Firms typically use a representative portfolio or a composite to calculate return attribution, although in some cases a model, or paper-traded, portfolio is used. The use of a model portfolio is not recommended because it is not an actual portfolio and its performance does not reflect actual transactions and trading costs.

Representative portfolios are commonly used for presenting return attribution because they provide a straightforward way to calculate return attribution based on the performance of a single portfolio. When selecting the representative portfolio, a firm should choose the portfolio that is most representative of the strategy. The most representative portfolio for a discretionary strategy is typically the portfolio with the fewest restrictions, the fewest external cash flows, and the longest track record. If a representative portfolio is used, a firm should have policies and procedures for choosing the representative portfolio. A firm should not simply choose the best-performing portfolio as the representative portfolio.

Once selected, a firm should consistently use the same representative portfolio. In some instances, however, a firm may need to select a new representative portfolio, such as when the representative portfolio terminates. When a new representative portfolio is chosen, a firm may either link the track records of the old and new representative portfolios together or change the representative portfolio retroactively for all periods. Choosing the latter option may result in a shorter track record.

A composite is an aggregation of one or more portfolios managed according to a similar investment mandate, objective, or strategy. Attribution calculated using a composite reflects the performance of all the portfolios managed to the strategy. Using composites, however, greatly increases the complexity of the attribution calculations. To calculate return attribution using a composite, all component returns and weightings of the portfolios included in the composite must be aggregated. In addition, the portfolio composition of the composite is not static—portfolios are added and removed on an ongoing basis. Also, composite returns calculated by the attribution system may differ from the composite returns calculated by the performance system when different systems are used to calculate attribution and performance.

Recommendation: Firms should disclose whether the attribution is calculated using a representative portfolio, a composite, or a model portfolio.

Question 1: Should firms disclose that the policy for selecting representative portfolios is available upon request?

Gross of Fees vs. Net of Fees

Attribution can be calculated using either gross-of-fees returns or net-of-fees returns. The use of gross-of-fees returns provides a more comparable picture of performance relative to the benchmark because neither gross-of-fees returns nor benchmark returns have been reduced by fees. Firms are therefore recommended to present return attribution on a gross-of-fees basis. Local regulation, however, may require firms to present certain components of an attribution report on a net-of-fees basis. Firms should disclose whether return attribution is calculated on a gross-of-fees or net-of-fees basis.

Recommendation: Firms should present return attribution on a gross-of-fees basis.

Recommendation: Firms should disclose whether the return attribution is calculated on a gross-of-fees or net-of-fees basis.

Calculation Frequency

Firms determine the frequency of return attribution calculations according to the investment strategy, the availability of data, and the attribution calculation methodology. For example, firms may calculate return attribution daily or weekly for strategies based on securities that are traded or valued frequently, whereas attribution may be calculated over longer periods for strategies that contain less frequently traded or valued securities. Firms should disclose the frequency with which attribution is calculated.

Depending on the investment strategy and the availability of data, attribution may be more accurate when calculated for shorter periods versus longer periods. If attribution effects are calculated for shorter intervals and linked together to present a longer period, such as linking daily periods to calculate attribution for a monthly or quarterly period, firms should disclose this fact.

Recommendation: Firms should disclose the calculation frequency of attribution effects (e.g., daily, monthly).

Recommendation: Firms should disclose if the attribution effects were calculated for shorter intervals and linked together to present attribution for longer periods.

Question 2: Does your firm show attribution for periods greater than one year? If so, what is the longest period shown? Are there challenges with presenting attribution periods greater than one year that are not addressed in this Guide?

Question 3: For periods greater than one year, does your firm calculate attribution on an annualized or cumulative basis? What factors influence your decision?

Time Periods

Firms should determine appropriate time periods for which return attribution will be presented in attribution reports (e.g., attribution will be presented for the most recent quarter). Once they have selected those time periods, firms should present the periods consistently in return attribution reports. Firms should not "cherry-pick" the time periods for which attribution is presented to provide the appearance of more favorable performance. Attribution time periods presented should correspond with performance time periods presented.

Recommendation: Firms should present consistent time periods in attribution reports.

Segment Returns

Whether a firm chooses to use a representative portfolio or a composite, the firm should present segment returns and not only total returns for the representative portfolio or composite. Firms should also present benchmark segment returns and not only the benchmark total return.

Segments may include industry and geographic sectors; fixed-income categories, such as maturity bands and credit ratings; and any other segment of a portfolio that is part of the manager's investment decision-making process, such as currencies, risk factors, or security selection.

Recommendation: Firms should present representative portfolio or composite segment returns in addition to representative portfolio or composite total returns.

Recommendation: Firms should present benchmark segment returns in addition to benchmark total returns.

Segment Weights

Segment weights reflect the percentage of the representative portfolio or composite benchmark that is held in each segment. In an attribution report, segment weights may be presented as beginning-of-period weights, end-of-period weights, or average weights. Presenting segment weights for attribution for longer time periods may be less meaningful than attribution for shorter time periods. To ensure the comparison to the benchmark is relevant, firms should present the same type of weight for the representative portfolio or composite as the benchmark type of weight.

Recommendation: Firms should disclose the type of segment weights that are presented (e.g., average weights, beginning-of-period weights, or end-of-period weights).

Recommendation: Firms should present the same type of segment weight for the representative portfolio or composite as the benchmark type of segment weight (e.g., average weight for the period).

Benchmark

The benchmark in a return attribution report should be an appropriate benchmark for the representative portfolio's or composite's investment mandate, objective, or strategy.[1] If the benchmark used to generate the return attribution is different from the representative portfolio or composite benchmark, firms should disclose the fact that the benchmark shown is different and the reason the presented benchmark was selected for the attribution. Firms also should disclose the benchmark to which the representative portfolio or composite is managed.

[1] For information on identifying an appropriate benchmark, refer to the GIPS standards "Guidance Statement on Benchmarks for Firms" (CFA Institute 2023b).

If the appropriate benchmark does not have underlying information that is sufficient to prepare a return attribution report—for example, if the benchmark is an absolute return target or peer universe—the firm may present a different benchmark as long as the benchmark is appropriate. If the representative portfolio or composite has no appropriate benchmark, the firm should not present return attribution with an inappropriate benchmark. If there is no appropriate benchmark, the firm should consider presenting return contribution instead of return attribution (see the subsection titled "Return Contribution").

Firms are recommended to use total return benchmarks and not price-only benchmarks in a return attribution report. Using a price-only benchmark as the benchmark for a total return strategy may produce an overstated excess return, which would be misleading. It can be misleading to compare a composite or pooled fund return that includes income (i.e., a total return) with a benchmark return that does not include income (i.e., a price-only return). If a price-only benchmark is used (e.g., because no appropriate total return benchmark exists), the firm should provide sufficient disclosures so that a prospective investor understands the difference between the return of a price-only benchmark and the return of a total return benchmark.

For GIPS compliant firms, price-only benchmark returns may be presented outside of a GIPS Report. In such cases, "price-only" must be included in the label or the name of the benchmark, and the firm must provide sufficient disclosures so that a prospective client or prospective investor understands the difference between the return of a price-only benchmark and the return of a total return benchmark.

Some firms may use a custom benchmark, or strategy benchmark, that is created by combining two or more benchmarks for the purpose of more accurately reflecting a product's investment strategy. Firms may also change benchmarks for a product's investment strategy, resulting in two benchmarks that are linked together to cover a period. When a firm uses a custom benchmark, it should disclose both the fact that a custom benchmark is used and the composition of the custom benchmark, including the benchmark names and weights. When a firm changes the benchmark for a product's investment strategy and the attribution report period covers the period during which the change took place, firms that link the two benchmarks together should disclose which benchmark is used for which period.

Sometimes firms may adjust a benchmark, such as by applying a synthetic hedge or a 130/30 long–short calculation. If it has adjusted the benchmark, the firm should disclose the adjustment. Some firms with hedged or partially hedged representative portfolios or composites may choose a benchmark that does not fully match the currency exposures of the representative portfolio or composite; that is, the benchmark hedge does not match the representative portfolio or composite hedge. Firms should disclose when a benchmark mismatch exists for a fully or partially hedged portfolio or when an unhedged portfolio is compared against a fully or partially hedged benchmark.

Recommendation: If the benchmark used to generate the return attribution is different from the representative portfolio or composite benchmark, firms should disclose this fact and the reason why the benchmark was selected.

Recommendation: If the benchmark used to generate the return attribution is different from the representative portfolio or composite benchmark, firms should disclose the benchmark to which the representative portfolio or composite is managed.

Recommendation: Firms should use total return benchmarks and not price-only benchmarks in a return attribution report. If a price-only benchmark is used, firms should provide sufficient disclosures so that a prospective investor understands the difference between the return of a price-only benchmark and the return of a total return benchmark.

Recommendation: If a custom benchmark composed of two or more benchmarks is used, firms should disclose this fact and the composition of the custom benchmark.

Recommendation: If the historical returns of two benchmarks are linked together during the period covered by the attribution report, firms should disclose the change in benchmark and which benchmark is used for which periods.

Recommendation: Firms should disclose if there are any adjustments made to the benchmark (e.g., synthetic hedging or a 130/30 long–short calculation).

Recommendation: Firms should disclose if there is a mismatch in hedging between the representative portfolio or composite and the benchmark.

Attribution Effects

Attribution effects explain the source of differences in a representative portfolio's or composite's excess return versus the benchmark return. Types of attribution effects differ depending on the investment strategy. For example, common attribution effects for equity strategies are allocation effect and selection effect. Allocation effect explains the value the firm adds by having segment weights that differ from the benchmark segment weights. Selection effect explains the value the firm adds by holding individual securities or investment instruments in weights that differ from benchmark weights. Only attribution effects that reflect the investment strategy should be presented. For instance, currency effects should be presented only when currency decisions are part of the investment decision-making process and not a byproduct of investment decisions. Attribution effects are discussed in more detail in the "Return Attribution Calculations" section.

Recommendation: Firms should present attribution effects that reflect the investment strategy.

Return Contribution

Return contribution identifies the performance contributions of a representative portfolio's or composite's segments or securities to its total return. Whereas return attribution aims to answer the question of how a representative portfolio or composite performed relative to its benchmark in terms of attributing the relative excess returns to investment decisions, return contribution provides information on the contribution of the representative portfolio's or composite's holdings to the absolute performance of the representative portfolio or composite. For each segment or security, there is a weight, a return, and a contribution to total return. Return contribution for a portfolio does not consider the benchmark in the calculation. A return contribution can also be calculated for a benchmark. Benchmark return contribution can be a useful comparator to an analysis of portfolio return contribution.

Return contribution provides additional information that is helpful in performance analysis and should be included in a return attribution report. Return contribution can be presented instead of return attribution when a representative portfolio or composite does not have an appropriate benchmark. **Exhibit 1** shows an example of return contribution.

Exhibit 1. Return Contribution Example

	Weight	Return	Contribution
Sector A	25%	4.80%	1.20%
Sector B	50%	2.50%	1.25%
Sector C	25%	−1.20%	−0.30%
Portfolio Total	100%	2.15%	2.15%

Source: CFA Institute (2022, p. 375).

In Exhibit 1, the return contribution of each segment is calculated by multiplying the segment weight by the segment return. The segment return contributions sum to the total portfolio return: 1.20% + 1.25% + −0.30% = 2.15%.

Recommendation: Firms should present return contribution in addition to return attribution in an attribution report.

2. Return Attribution Calculations

To understand what return attribution information is necessary for fair representation and full disclosure in a return attribution report, it is helpful to review the options available to a firm when choosing a return attribution model. Equity attribution models are largely standardized, but fixed-income attribution is more complex, more varied, and less standardized. For a discussion and comparison of equity and fixed-income return attribution models, see Appendix A.

Return attribution can be calculated using either an arithmetic or geometric method and one of three types of attribution calculations: holdings based, transaction based, or returns based. Other attribution considerations include cash; currencies; input data; leverage and derivatives; and fees, taxes, and trading costs.

Arithmetic vs. Geometric Methods

Some attribution models calculate a breakdown of an arithmetic "excess return," and others calculate a breakdown of a geometric "relative return." The term "excess return" is commonly used to refer to return differences from both arithmetic and geometric calculation methods, and the term is used in this way throughout this Guide. **Exhibit 2** compares the calculation of excess return using the arithmetic method and the geometric method.

Exhibit 2. Arithmetic Excess Return vs. Geometric Excess Return Calculation

Assume a portfolio return, R_p, is 8.0% and the benchmark return, R_b, is 6.0%.

Arithmetic Excess Return

The arithmetic excess return uses the following formula:

Arithmetic excess return = $R_p - R_b$.

The arithmetic excess return is calculated as

8.0% − 6.0% = 2.0%.

An arithmetic model would explain a total excess return of 2.0%.

Geometric Excess Return

The geometric excess return uses the following formula:

Geometric excess return = $(R_p + 1)/(R_b + 1) - 1$.

The geometric excess return is calculated as

(1.08/1.06) − 1 = 1.89%.

A geometric model would explain a total excess return of 1.89%.

Arithmetic excess returns are simple to calculate and easy for users to understand. Arithmetic excess returns, however, do not compound—that is, they do not "add up" over multiple periods. This combination of an arithmetic operation and a geometric operation (compounding) creates a residual, discussed in a separate section.

In certain models that use the arithmetic method, the arithmetic calculations of the allocation and selection effects may create an unintended cross-product called *interaction*. This interaction is not part of the investment decision-making process. The interaction cross-product results from the combination of the allocation and security selection decisions (see Bacon 2019, p. 15). Presentation of interaction as an effect is discussed separately.

In contrast to the arithmetic method, the geometric method involves more complex calculations and can be more difficult for users to understand. Firms may choose to use the geometric method to calculate excess returns for several reasons. Geometric excess returns are compoundable over multiple periods, so the geometric method preserves the proportionality of excess returns. In addition, geometric excess returns are convertible across different currencies. That is, the geometric excess return remains the same regardless of the currency used to calculate performance (Bacon 2011, p. 54). Finally, the geometric method does not calculate a separate interaction. Instead, the interaction is included in the calculation of the selection effect.[2]

Firms typically use the same method (arithmetic or geometric) for calculating the attribution effects and for calculating excess returns. A firm should disclose whether it uses the arithmetic or geometric method to calculate excess returns.

Recommendation: Firms should disclose whether excess returns are calculated using the arithmetic or geometric method.

Interaction Effect

When a return attribution generates an interaction, firms should not ignore the interaction, randomly allocate it to other attribution effects, split it proportionally among segments, or split it evenly between selection and allocation effects. Such treatments can result in a misleading presentation of attribution effects (CFA Institute 2022, p. 389). Instead, the interaction should be combined with the selection effect or shown separately. This treatment reflects the common investment strategy practice of making

[2] See CFA Institute (2022, p. 394, footnote 5): "Although it is possible to calculate a geometric interaction effect, this is rarely done in practice."

allocation decisions first and selection decisions second. This treatment also reflects the case in which the strategy is a bottom-up security selection strategy and there is no primary allocation decision (CFA Institute 2022, p. 390). Combining the interaction with the selection effect allows a user to more appropriately assess the impact of both the allocation and selection decisions in the investment process.

Recommendation: When an interaction is combined with an attribution effect, the firm should disclose the attribution effect with which it is combined.

Attribution Calculation Types

In addition to methods of calculation, return attribution models also differ by the type of information used to calculate attribution effects: holdings-based, transaction-based, or returns-based attribution. Holdings-based and transaction-based attribution are the most common calculation types. Firms should disclose which type of return attribution calculation is used.

Recommendation: Firms should disclose whether the return attribution is calculated using a holdings-based, transaction-based, or returns-based approach.

Holdings-Based Attribution

Holdings-based attribution is calculated using the holdings and weights of the representative portfolio or composite as of the beginning of the period and excludes any trades and related trading costs that occurred during the period. Income, dividends, and corporate actions of those beginning-period holdings are included in the returns. Holdings-based attribution can use the same pricing sources as the assigned benchmark—thus eliminating one source of difference between representative portfolio or composite returns and benchmark returns.

Holdings-based attribution can be calculated for any period, but shorter periods may be more accurate than longer periods, depending on the investment strategy. Shorter periods can be linked together to present longer-period results. Because holdings-based attribution excludes trades that occurred during the period, the attribution return may not reconcile to the actual representative portfolio or composite return. This difference in portfolio returns can lead to a residual, which requires special treatment (see the section titled, “Residuals”).

Holdings-based attribution is simpler to calculate and requires less data than transactions-based attribution. Holdings-based analysis can be appropriate for strategies that trade infrequently. If a portfolio trades frequently during the period for which the holdings-based attribution is calculated, however, the accuracy of the attribution analysis will be compromised. If a firm uses holdings-based attribution, it should disclose the holding period.

Recommendation: Firms should disclose the holding period if holdings-based attribution is used.

Transaction-Based Attribution

Transaction-based attribution is calculated by using holdings and the transactions that occurred during the period. Segment and security weights and returns reflect all transactions and transaction costs during the period. Transaction-based attribution is the most accurate type of attribution calculation, but it is also the most difficult and time consuming given the amount and types of data needed. A transaction-based attribution return should reconcile with the representative portfolio or composite return; typically, there should be no residual.

Returns-Based (or Factor) Attribution

Returns-based, or factor, attribution is calculated by regression analysis using only the total portfolio return over a period with the aim of identifying the factors, or risk exposures, that have generated the return. Returns-based attribution can be used for factor-based investment strategies when sufficient portfolio holdings information is unavailable or when such information is not transparent, such as for a hedge fund of funds. It may also be used to complement traditional holdings-based and transaction-based attribution.

Residuals

A residual is the unexplained portion of a return attribution that occurs when the sum of the segment returns does not equal the representative portfolio or composite return or when the attribution effects do not sum to the excess return. Residuals generally become larger when returns are linked together over time.

Residuals may occur for many reasons, including the following:

(1) Use of an arithmetic method to calculate the return attribution over multiple periods

(2) Use of a holdings-based return attribution, if transactions have occurred during the holding period

(3) A failure of the sum of the weights and returns included in the return attribution of either the portfolio or benchmark to add up to the reported total portfolio or benchmark return resulting from

- failure to include all investment categories in the portfolio in the return attribution,
- failure to include all investment instruments, such as forward currency contracts or other derivative instruments, or
- use of a different methodology to calculate segment returns versus the total return

(4) Benchmark-related reasons, such as

- an error in the calculation of a customized benchmark,
- an error by the index provider, or
- an unexpected transaction in a constituent security in the index, such as a corporate action, that has not been considered in the portfolio

(5) When differences exist between the benchmark provider and the firm in the treatment of corporate actions, foreign exchange rates, pricing sources, frequency of calculations, and treatment of withholding taxes

(6) When differences exist between the benchmark and the representative portfolio or composite in end-of-day versus beginning-of-day prices

(7) When trade errors or class action cash flows occur

Firms may choose to eliminate residuals by using a smoothing or linking algorithm in their attribution model to automatically allocate a residual to one or more other effects. Alternatively, some firms choose to present a residual separately in the attribution report, whereas others combine it with another attribution effect.

Some firms treat a residual as a trading effect. Including residuals in trading effects for reasons other than the use of holdings-based attribution may distort information about the firm's trading decisions (CFA Institute 2022, p. 397).

Recommendation: If a residual exists and it is not presented separately, the firm should disclose the attribution effect with which the residual is combined.

Treatment of Cash

If the investment strategy includes active cash management decisions, cash should be included in the return attribution. In some instances, a firm may choose to exclude cash from the return attribution even though it is part of the investment strategy—for example, when a portfolio receives an unexpected cash flow. In such cases, if a firm chooses to exclude cash from the return attribution, there will be a difference in return between the actual representative portfolio or composite return and the return presented in the attribution report. If cash management is not part of the investment strategy, cash should not be included in the return attribution. If cash is excluded from the attribution analysis but is part of the investment strategy, firms should disclose that cash is excluded from the attribution analysis.

Cash returns may be affected by the use of derivatives in an investment strategy. When derivatives are part of an investment strategy, the cash used in the deployment of derivatives is also part of the strategy and the excess return generated by that cash should be shown in the return attribution.

Recommendation: Firms should disclose if cash is excluded from the return attribution.

Question 4: Is there any other information related to cash that firms should disclose?

Currency Considerations

Currency effects should be presented in a return attribution report only when currencies are part of the investment decision-making process, such as active currency exposure decisions or currency hedging decisions.

On occasion, a firm may wish to present a return attribution in a reporting currency that is not the base currency of the representative portfolio or composite. In this case, the firm should also show the benchmark return attribution in the alternate reporting currency.

Recommendation: Firms should present currency effects in a return attribution report only when currencies are part of the investment strategy's decision-making process.

Question 5: Is there any other information about currencies that firms should disclose?

Input Data Differences

Input data differences can arise from several sources. A firm might use data or calculation methodologies in its performance system that differ from the data or calculation methodologies used in the attribution system. For example, if the firm uses a holdings-based calculation for attribution and a transaction-based calculation for the representative portfolio or composite returns, the returns will not match if transactions have taken place. When returns included in the return attribution report are different from returns included in accompanying marketing materials, firms should disclose this fact.

In another example, a firm may use a data source to price its portfolios that is different from that used by the benchmark provider. If input data differences cannot be eliminated, firms should disclose such differences when they are material.

Recommendation: Firms should disclose if there are any returns in the return attribution report that are not consistent with returns in the accompanying marketing materials.

Recommendation: Firms should disclose if there are any material input data differences.

Additional Topics

Whereas the most common sources of excess return are discussed in the previous section, other sources exist, including leverage, derivatives, and withholding taxes. The topics covered in this Guide are not exhaustive. For a firm to meet best practices for fair presentation and full disclosure in a return attribution report, it may be necessary to disclose additional information not covered in this Guide.

Leverage and Derivatives

The use of leverage and derivatives can significantly affect portfolio returns. Firms should disclose the use of leverage and derivatives and how they are reflected in return attribution. Firms should apply a consistent methodology for the treatment of derivatives in return attribution calculation and reporting.

Recommendation: Firms should disclose the use of leverage and derivatives and how they are reflected in the return attribution.

Question 6: Please share if there is any additional information about the treatment of leverage and derivatives in return attribution that should be disclosed.

Withholding Taxes

Investors who invest in different jurisdictions may have to pay taxes to these jurisdictions on their investment income. These taxes are withheld by the non-domestic jurisdiction. Some jurisdictions allow a portion of these withheld taxes to be reclaimed by certain types of non-domestic investors. Because the inclusion or exclusion of withholding taxes can affect a strategy's return attribution results, firms should treat withholding taxes consistently in both the performance calculation and attribution calculation. If withholding taxes are not treated consistently, firms should disclose this fact and how withholding taxes are treated in attribution.

Recommendation: If withholding taxes are not treated consistently in performance and attribution, firms should disclose this fact and how withholding taxes are treated in attribution.

Miscellaneous

Firms should disclose any additional information that would help a prospect interpret the return attribution report.

Recommendation: Firms should disclose any additional information that would help a prospect interpret the return attribution report.

3. Other Considerations

In addition to fully presenting and disclosing return attribution information, firms should follow other best practices that support fair representation and full disclosure.

Compliance with Laws and Regulations

Firms should comply with any laws and regulations that apply to the presentation of return attribution. As an example, if regulation requires that performance be presented on a net-of-fees basis in marketing materials, then the firm should ensure that the return attribution includes this information in addition to other recommended items. Firms should have policies and procedures to identify laws and regulations regarding the calculation and presentation of return attribution.

False or Misleading Presentation

Firms should not present return attribution that is false or misleading. Firms should establish policies and procedures to ensure that prospects are not given return attribution that is incomplete, inaccurate, biased, or fraudulent.

Firms should provide return attribution that is clearly presented, fully disclosed, and appropriate to the prospect. A return attribution report may be misleading if

- it does not include appropriate disclosures,
- it does not include proper labeling, and
- an improper representative portfolio or benchmark is used.

It would also be misleading for a firm to "cherry-pick" the period for which return attribution is calculated and presented. Firms should determine appropriate time periods for return attribution and use these periods consistently in each return attribution report.

Policies and Procedures

Firms should document policies and procedures for calculating and presenting return attribution. Once a firm establishes its return attribution policies and procedures, it should apply them consistently. Return attribution policies and procedures should be reviewed regularly to determine whether they should be changed or improved. Firms should make available the policies and procedures to prospects upon request.

Record Keeping

Firms should maintain appropriate records to support return attribution. All data and information necessary to support all items included in the return attribution should be captured, maintained, and made available within a reasonable time frame, for all periods presented in the return attribution report.

Error Correction

Firms should establish policies for identifying and correcting material errors in return attribution reports. Firms should create thresholds for determining when an error is considered to be material. Firms should provide a corrected return attribution report with disclosure of the material error to those prospects that received the return attribution report containing the material error.

Prospect Requests

It is possible that a prospect may ask for return attribution that follows a structure or process that is different from the return attribution typically provided by the firm. Firms may provide the return attribution the prospect requests but should offer to provide the return attribution that follows the investment decision-making process of that strategy.

4. Return Attribution Report Recommendations

Firms should consider the following recommendations when preparing a return attribution report:

A. Attribution Presentation Information

1. Firms should clearly label all items included in the return attribution report.
2. Firms should present return attribution on a gross-of-fees basis.

3. Firms should present consistent time periods in attribution reports.
4. Firms should present representative portfolio or composite segment returns in addition to representative portfolio or composite total returns.
5. Firms should present benchmark segment returns in addition to benchmark total returns.
6. Firms should present the same type of segment weight for the representative portfolio or composite as the benchmark type of segment weight (e.g., average weight for the period).
7. Firms should present attribution effects that reflect the investment strategy.
8. Firms should present return contribution in addition to return attribution in a return attribution report.
9. Firms should present currency effects in a return attribution report only when currencies are part of the investment strategy's decision-making process.

B. Disclosures

- *Benchmark*

1. Firms should disclose the name of the benchmark used in the attribution report. If it is not a well-known benchmark, the firm should disclose the benchmark description.
2. If the benchmark used to generate the return attribution is different from the representative portfolio or composite benchmark, firms should disclose this fact and the reason why the benchmark was selected.
3. If the benchmark used to generate the return attribution is different from the representative portfolio or composite, firms should disclose the benchmark to which the representative portfolio or composite is managed.
4. Firms should use total return benchmarks and not price benchmarks in a return attribution report. If a price-only benchmark is used, firms should provide sufficient disclosures so that a prospective investor understands the difference between the return of a price-only benchmark and the return of a total return benchmark.
5. If a custom benchmark composed of two or more benchmarks is used, firms should disclose this fact as well as the composition of the custom benchmark.
6. If the historical returns of two benchmarks are linked together during the period covered by the attribution report, firms should disclose the change in benchmark and which benchmark is used for which periods.
7. Firms should disclose if there are any adjustments made to the benchmark (e.g., synthetic hedging or a 130/30 long–short calculation).
8. Firms should disclose if there is a mismatch in hedging between the representative portfolio or composite and the benchmark.

- *Cash*

  9. Firms should disclose if cash is excluded from the return attribution.

- *Calculation*

  10. Firms should disclose whether the attribution analysis is calculated using a representative portfolio, a composite, or a model portfolio.

  11. Firms should disclose whether the return attribution is calculated on a gross-of-fees or net-of-fees basis.

  12. Firms should disclose the calculation frequency of attribution effects (e.g., daily, monthly).

  13. Firms should disclose if the attribution effects were calculated for shorter intervals and linked together to present attribution for longer periods.

  14. Firms should disclose the type of segment weights that are presented (e.g., average weights, beginning-of-period weights, or end-of-period weights).

  15. Firms should disclose whether excess returns are calculated using the arithmetic or geometric method.

  16. When an interaction effect is combined with an attribution effect, the firm should disclose the attribution effect with which it is combined.

  17. Firms should disclose whether the return attribution is calculated using a returns-based, holdings-based, or transaction-based approach.

  18. Firms should disclose the holding period if holdings-based attribution is used.

  19. If a residual exists and it is not presented separately, the firm should disclose the attribution effect with which the residual is combined.

  20. Firms should disclose if there are any returns in the return attribution report that are not consistent with returns in the accompanying marketing materials.

  21. Firms should disclose if there are any material input data differences.

  22. Firms should disclose the use of leverage and derivatives and how they are treated in the return attribution.

  23. If withholding taxes are not treated consistently in performance and attribution, firms should disclose this fact and how withholding taxes are treated in attribution.

- *Miscellaneous*

  24. Firms should disclose any additional information that would help a prospect interpret the return attribution report.

APPENDIX A. EQUITY AND FIXED-INCOME RETURN ATTRIBUTION

Equity return attribution has been largely standardized by the Brinson model. The Brinson model assumes a two-step equity investment decision-making process that seeks to add value through segment (sector) allocation and security selection (CFA Institute 2022, p. 379). Fixed-income investment decision making, along with fixed-income return attribution, is far more complex. Hence, fixed-income performance attribution lacks standardization, and an array of various third-party or internal models are used instead.

Equity Attribution

Two variations of the Brinson model exist: the Brinson–Fachler (BF) model (developed in 1985) and the Brinson–Hood–Beebower (BHB) model (developed in 1986). Because the two models are largely similar, differing only in the calculation of individual sector allocation effects, they are often referred to collectively as "the Brinson model." The BF model, however, is generally considered more reflective of common equity portfolio management processes.

The Brinson attribution model was developed using the arithmetic method, but the geometric method can also be used to calculate excess returns. Other attribution models using the geometric method have also been developed (see, e.g., Burnie, Knowles, and Teder 1998).

The allocation and selection attribution effects are calculated by multiplying the weight of each portfolio segment by its return and subtracting each corresponding benchmark segment weight times its return.

Using the BF attribution model, the contribution to excess return from asset allocation (allocation effect) in the *i*th segment using the arithmetic method is calculated as

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

where

A_i = the allocation effect of segment i

w_i = the weight of segment i in the portfolio

W_i = the weight of segment i in the benchmark

B_i = the benchmark return of segment i

B = the benchmark total return

The contribution to excess return from stock selection in segment i (selection effect) is

$$S_i = w_i(R_i - B_i),$$

where

S_i = the selection effect of securities within the ith segment

w_i = the weight of segment i in the portfolio

R_i = the portfolio return of segment i

B_i = the benchmark return of segment i

The contribution to excess return from interaction in segment i (interaction effect) is

$$I_i = (w_i - W_i) \times (r_i - b_i),$$

where

I_i = the interaction effect of segment i

w_i = the weight of sector i in the portfolio

W_i = the weight of sector i in the benchmark

r_i = the benchmark return of segment i

b_i = the benchmark total return

Exhibit A1 shows an arithmetic BF attribution model for a three-sector domestic equity portfolio.

Exhibit A1. BF Equity Return Attribution Example

Sector	Portfolio Weight	Benchmark Weight	Portfolio Return	Benchmark Return	Allocation Effect	Selection Effect	Interaction Effect	Total Effect
Energy	50.00%	50.00%	18.00%	10.00%	0.00%	4.00%	0.00%	4.00%
Health care	30.00%	20.00%	−3.00%	−2.00%	−1.02%	−0.20%	−0.10%	−1.32%
Financials	20.00%	30.00%	10.00%	12.00%	−0.38%	−0.60%	0.20%	−0.78%
Total	100.00%	100.00%	10.10%	8.20%	−1.40%	3.20%	0.10%	1.90%

Source: CFA Institute (2022, Example 11, p. 388).

The sector allocation effects are as follows:

Energy	(50% − 50%) × (10% − 8.2%) = 0.00%.
Health care	(30% – 20%) × (–2.0% − 8.2%) = −1.02%.
Financials	(20% – 30%) × (12% − 8.2%) = −0.38%.
Total	0.0% – 1.02% – 0.38% = −1.4%.

The security selection effects are as follows:

Energy	50% × (18% – 10%) = 4.00%.
Health care	20% × (–3.0% + 2.0%) = –0.20%.
Financials	30% × (10.0% – 12.0%) = −0.60%.
Total	4.0% – 0.3% – 0.4% = 3.2%.

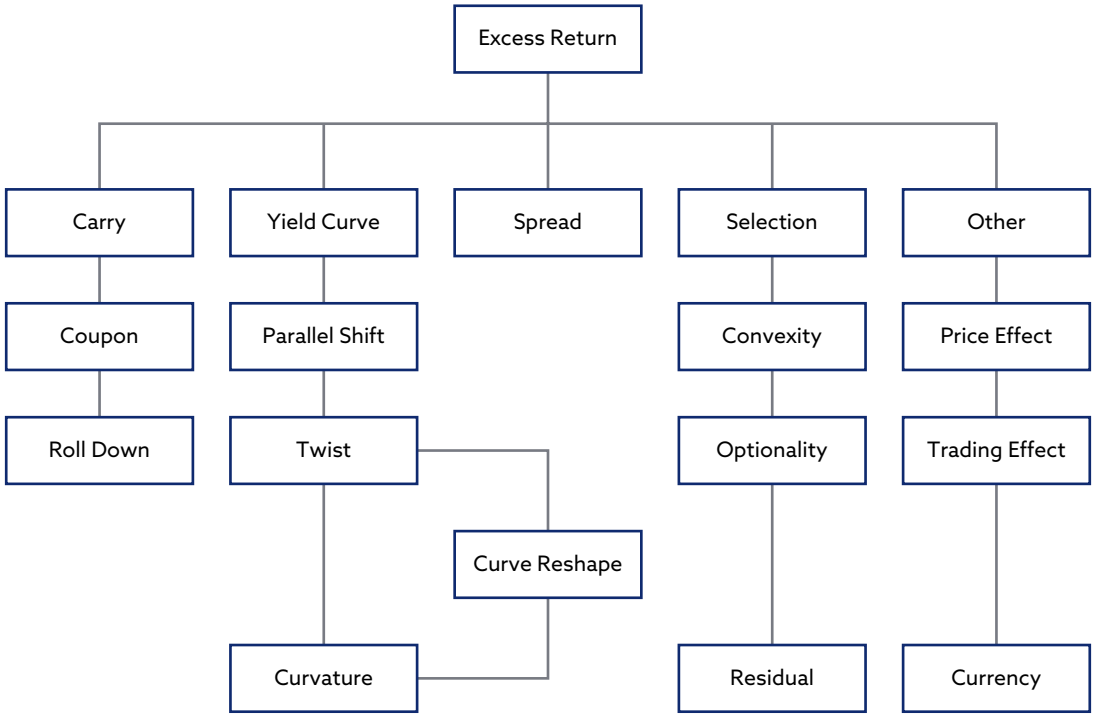
The interaction effects are shown separately in this example. They are calculated as follows:

Energy	(50% – 50%) × (18% – 10%) = 0.00%.
Health care	(30% – 20%) × (−3.0% + 2.0%) = −0.10%.
Financials	(20% – 30%) × (10% – 12%) = 0.20%.
Total	0.0% – 0.1% + 0.2% = 0.1%.

Fixed-Income Attribution

As stated earlier, there are no standardized fixed-income attribution models. In contrast to equity attribution methodologies, which decompose attribution effects based on an investment decision-making process that focuses on segment allocation and security selection, a fixed-income investment decision-making process may have many more variables. In addition to sector and industry decisions, fixed-income investment processes also consider interest rate sensitivity (duration) and yield curve position. Each fixed-income security has multiple characteristics, including a maturity, duration, coupon, yield, credit rating, and credit spread. Some securities also have additional characteristics, such as call or put options or securitized structures. Most fixed-income investment processes include multiple decisions relative to the benchmark based on these characteristics. Moreover, fixed-income benchmarks typically have thousands of securities, so selection effects relative to the benchmark can be difficult or impossible to isolate, depending on the securities chosen. **Exhibit A2** shows an example of the many attribution effects that could make up the excess return of a typical fixed-income investment strategy.

Exhibit A2. Fixed-Income Attribution Effects



Sources: Bacon (2019); redrawn from an exhibit in Dai and Elliot (2014/2015).

There are three types of fixed-income attribution models often used to explain fixed-income excess returns. The simplest is a top-down, segment-based model called exposure decomposition–duration-based attribution. It is similar to Brinson equity models in that it uses market-value-based weights to categorize sources of excess return into risk exposure buckets, such as duration buckets, yield curve positioning, segment buckets, and security selection. Each bucket represents a bet against the portfolio's benchmark index. The portfolio's bonds are also bucketed along the duration spectrum from short to long. Because it is the easiest to understand among the three methods, this approach is often used for marketing purposes.

The second type of fixed-income attribution model is a yield curve decomposition–duration-based attribution approach that can reflect a top-down or bottom-up investment approach, and it allows for the calculation of absolute attribution analysis separately for the portfolio and its benchmark. This approach uses duration and changes in yield to maturity to estimate returns for years-to-maturity buckets, segment buckets, or individual securities. It requires more data and is more complex than exposure decomposition–duration-based attribution.

A third type of fixed-income attribution model, yield curve decomposition–full repricing, estimates bond returns by using bottom-up, security-level repricing based on discounting a bond's cash flows to zero-coupon curves. These cash flow repricings encompass changes in overall interest rates, spreads, or bond-specific factors. This approach is considered to be more reflective of how portfolio managers typically view fixed-income instruments than the other two approaches, but it is also more complex and data intensive.

Exhibit A3 shows an example of attribution effects using the exposure decomposition–duration-based method for a fixed-income investment strategy that is based on duration bets, yield curve bets, segment bets, and security selection.

Exhibit A3. Exposure Decomposition–Duration-Based Method

Duration Bucket	Sector	Duration Effect	Curve Effect	Total Interest Rate Allocation Effect	Sector Allocation Effect	Bond Selection Effect	Total
Short	Government					0.00%	0.00%
Short	Corporate				0.04%	0.00%	0.04%
Short	Total	0.40%	0.13%	0.52%	0.04%	0.00%	0.56%
Mid	Government				0.00%	0.00%	0.00%
Mid	Corporate				−0.05%	0.00%	−0.05%
Mid	Total	0.23%	0.03%	0.26%	−0.05%	0.00%	0.21%
Long	Government				−0.22%	0.00%	0.00%
Long	Corporate				0.00%	0.13%	−0.09%
Long	Total	−1.24%	0.37%	−0.88%	−0.22%	0.13%	−0.97%
Total*		−0.62%	0.52%	−0.10%	−0.23%	0.13%	−0.19%

*Differences in totals may appear because of rounding.

Source: CFA Institute (2023a, p. 409).

A firm's choice of attribution methodology and excess return categories should reflect its fixed-income investment decision-making process. For instance, a manager whose investment decisions focus on duration, sectors, and credit quality should use an attribution model that shows excess returns for these categories.

APPENDIX B. COMPARISON OF ARITHMETIC RETURN ATTRIBUTION AND GEOMETRIC RETURN ATTRIBUTION

Exhibit B1 illustrates the differences between excess returns calculated by the arithmetic method and excess returns calculated by the geometric method. The total excess return calculated by the arithmetic method is 0.98% versus 0.96% as calculated by the geometric method. The arithmetic model calculates an allocation effect of –0.08% compared to the geometric allocation effect of –0.07%. The selection effect of the arithmetic method is 1.13%, 9 basis points higher than the geometric method selection effect of 1.04%. The arithmetic method calculates an interaction of –0.08%, whereas the geometric method does not calculate an interaction.

Exhibit B1. Arithmetic vs. Geometric Return Attribution

Arithmetic

Sector	Portfolio Start Weight	Benchmark Start Weight	Portfolio Return	Benchmark Return	Excess Return	Portfolio Contribution	Benchmark Contribution	Asset Allocation	Stock Selection	Interaction	Total Active
Sector A	60%	65%	5.00%	3.00%	2.00%	3.00%	1.95%	-0.08%	1.30%	-0.10%	1.12%
Sector B	30%	35%	-2.00%	-1.50%	-0.50%	-0.60%	-0.53%	0.15%	-0.18%	0.03%	0.00%
Sector C	10%	0%	0.00%	0.00%	0.00%	0.00%	0.00%	-0.14%	0.00%	0.00%	-0.14%
Total	100%	100%	2.40%	1.43%	0.98%	2.40%	1.43%	-0.08%	1.13%	-0.08%	0.98%

Geometric

Sector	Portfolio Start Weight	Benchmark Start Weight	Portfolio Return	Benchmark Return	Excess Return	Portfolio Contribution	Benchmark Contribution	Asset Allocation	Stock Selection	Interaction	Total Active
Sector A	60%	65%	5.00%	3.00%	1.94%	3.00%	1.95%	-0.08%	1.18%	n/a	1.11%
Sector B	30%	35%	-2.00%	-1.50%	-0.51%	-0.60%	-0.53%	0.14%	-0.15%	n/a	0.00%
Sector C	10%	0%	0.00%	0.00%	0.00%	0.00%	0.00%	-0.14%	0.00%	n/a	-0.14%
Total	100%	100%	2.40%	1.43%	0.96%	2.40%	1.43%	-0.07%	1.04%	n/a	0.96%

Benchmark	1.43%
Notional portfolio	1.35%
Portfolio	2.40%

Asset Allocation	-0.07%
Stock Selection	1.04%
Total Active	0.96%

APPENDIX C. EQUITY ATTRIBUTION SAMPLE

Exhibit C1 represents a sample return attribution report that includes the return attribution presentation and disclosure information recommended in this Guide.

Performance Attribution Notes

Representative Portfolio Policy

Attribution is calculated using a representative portfolio. XYZ's policy for selecting representative portfolios is available upon request.

Excess Return Calculation

XYZ calculates excess returns using the arithmetic method.

Performance Calculation Methodology

Performance is calculated daily using end-of-day prices and average weights for the period.

Performance is calculated based on portfolio holdings as of the close of business each day during the three months ended 30 September 202X.

Residual and Smoothing Algorithm

The return attribution analysis includes a residual. The residual is the total return differential resulting from intraday transactions. A smoothing algorithm has been applied to allocate the residual to the allocation and selection attribution effects.

Benchmark Composition

The benchmark is a custom benchmark composed of

- one-third S&P 500 Energy Select Index,
- one-third S&P 500 Health Care Select Index, and
- one-third S&P 500 Financials Select Index.

Exhibit C1. Tri-Sector Fund Third-Quarter Performance Attribution Analysis for the Three Months Ended 30 September 202X

							Tri-Sector Fund Attribution Effects			
Sector	Tri-Sector Fund Weight	Custom Sector Benchmark Weight	Tri-Sector Fund Return	Custom Sector Benchmark Return	Tri-Sector Fund Return Contribution	Custom Sector Benchmark Return Contribution	Allocation	Selection	Interaction	Total
Energy	50.00%	50.00%	18.00%	10.00%	9.00%	5.00%	0.00%	4.00%	0.00%	4.00%
Health care	30.00%	20.00%	−3.00%	−2.00%	−0.90%	−0.40%	−1.02%	−0.20%	−0.10%	−1.32%
Financials	20.00%	30.00%	10.00%	12.00%	2.00%	3.60%	−0.38%	−0.60%	0.20%	−0.78%
Total	100.00%	100.00%	10.10%	8.20%	10.10%	8.20%	−1.40%	3.20%	0.10%	1.90%
Fees			0.30%							
Net of fees			9.80%							

Index Classification Basis

The S&P 500 Index stock classifications are based on the Global Industry Classification Standard (GICS®).

Index Descriptions

- S&P 500 Energy Select Index: Measures the performance of the stocks in the energy sector of the S&P 500 Index.
- S&P 500 Health Care Select Index: Measures the performance of the stocks in the health care sector of the S&P 500 Index.
- S&P 500 Financials Select Index: Measures the performance of the stocks in the financial sector of the S&P 500 Index.

Note: This sample contains language related to performance attribution presentation only and does not contain standard performance-related language or disclosures.

APPENDIX D. QUESTIONS

Question 1: Should firms disclose that the policy for selecting representative portfolios is available upon request?

Question 2: Does your firm show attribution for periods greater than one year? If so, what is the longest period shown? Are there challenges with presenting attribution periods greater than one year that are not addressed in this Guide?

Question 3: For periods greater than one year, does your firm calculate attribution on an annualized or cumulative basis? What factors influence your decision?

Question 4: Is there any other information related to cash that firms should disclose?

Question 5: Is there any other information about currencies that firms should disclose?

Question 6: Please share if there is any additional information about the treatment of leverage and derivatives in return attribution that should be disclosed.

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