MORNINGSTAR®

Holdings-based and Returns-based Style Analysis Models

Investor Benefits

- Illustrates the investment style of the securities within a portfolio
- Helps investors construct diversified portfolios
- Gives investors a tool to monitor style consistency and control risk

Introduction

Equity style analysis is a method used to identify and describe the characteristics of an investment portfolio. Style analysis might reveal that one portfolio invests in large-cap, value-oriented securities while another invests in small-cap growth stocks. Individual investors use style to understand what types of investments they are buying and how they fit into existing portfolios. Financial advisors, money managers, and academics among others use style analysis to purchase, classify, or construct managed investments and to monitor them for style drift. Style analysis is also used to construct peer groups and to select appropriate style specific benchmarks.

Types of Style Analysis

Although style analysis is widely regarded as a valuable exercise, there is much debate about how style should be measured. There are two main approaches to style analysis: holdings-based and returns-based. Holdings-based style tools classify portfolios based on the characteristics of the underlying securities. For example, the Morningstar® Style Box™ is a holdings-based analysis of the size and value/growth orientation of the underlying stocks in a fund. In contrast, returns-based style analysis compares the portfolio's total returns (usually three to five years of monthly returns) to the total returns of various style-based indexes (usually four to 12 indexes) and makes inferences about style based on how closely the portfolio returns resemble those of different indexes.

Returns-based style analysis has been more widely used among financial professionals, because the input data (monthly returns) is readily available. The alternative holdings-based approach has been well received in concept but difficult to apply, because fewer people have access to data on portfolio holdings.

Morningstar has long been a proponent of holdings-based style analysis but recognizes that there may be situations where returns-based style analysis can also be helpful. Because the two approaches are so different, it is important to understand how the models work in order to correctly interpret the results.

Morningstar Research

Many professionals use only one method of style analysis, and researchers at Morningstar wanted to determine if the methods were fair substitutes for each other. Two separate Morningstar studies evaluated the results and assumptions of each approach.

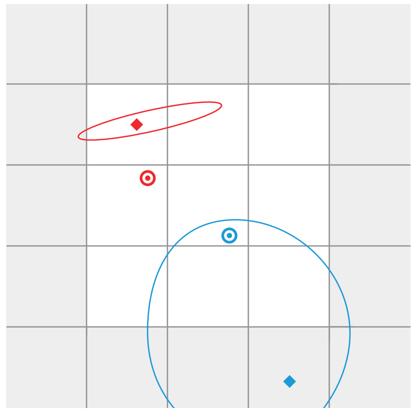
Each study's author ran holdings-based and returns-based analysis on a large set of portfolios and compared the results. The first study (Kaplan [2003]) used both methods to produce X–Y coordinates for value/growth orientation and size. The author used Morningstar's 10-factor style model and plotted each fund's coordinates on the Morningstar Style Box. The author then measured the closeness of the returns-based plot and the holdings-based plot for each portfolio. The second study (Rekenthaler et al. [2004]) compared the style breakdowns produced by each method. The style breakdown is the percent of assets attributed to each style (e.g. % small value, % small growth, % mid-cap value, etc.). This second study used the Russell Style Indexes as a baseline.

Kaplan demonstrated that the accuracy of returns-based style analysis varies for different styles of portfolios. For example, returns-based style analysis usually results in plot points that are similar to holdings-based plots for large-cap and value-oriented portfolios. However, Kaplan found significant variation between the two methods for small-cap, mid-cap, and growth-oriented funds. Furthermore, the author demonstrated that descriptive statistics (such as R-squared) from the returns-based model can sometimes be misleading, implying more accuracy than is present.

Either approach can produce inaccurate results if exposed to certain flaws in the application design or certain limitations in the data. These are practical concerns rather than flaws with the method. Kaplan argued that most returns-based style applications impose unnecessary constraints that act as fences and limit the style results to within certain boundaries; this subsequently makes it difficult to detect more aggressive positions such as deep value or micro-cap. Also, the limited availability of data on derivatives often makes holdings-based style analysis less effective for funds with substantial positions in derivatives.

Holdings- and Returns-based Style Analysis: A Comparison

Both methods typically produce similar results for large-cap and value-oriented portfolios, as shown by the Oakmark example. However, significant variation often exists between the two methods for small- to mid-cap and growth-oriented portfolios. In the Van Kampen example, the plot points are farther apart and the confidence region is much wider.



■ Oakmark Select 1
■ Van Kampen American Value

⊙ Holdings-based style assignment
◈ Returns-based style assignment and confidence region

Rekenthaler et al. addressed a different question, namely, the timeliness of the models' results. Some argue that holdings-based style analysis can be stale because portfolios are not always available on a monthly basis. Others argue that returns-based style analysis can be stale, because it requires a long string of historical monthly returns. The authors found that holdingsbased style analysis with a portfolio that is one year old produces better results than does returns-based analysis with "current" data. In other words, a snapshot that is 12 months old is more accurate than a 36-month average. Furthermore, holdings-based analysis is more stable and consistent over time than returns-based analysis and therefore provides a better estimate of the portfolio's future style and risk.

Other Considerations

In addition, investors should also consider the following characteristics of these models:

- Because returns-based style analysis requires 20–36 months of performance, this approach cannot be used for portfolios that are brand new or to detect style changes over shorter time periods.
- Returns-based style analysis can be used to validate the completeness and accuracy of reported portfolio holdings. If the returns-based analysis is considerably different than the holdings-based analysis, it may indicate that the portfolio manager is not disclosing all of his or her holdings.
- Returns-based style analysis is dependent on the choice of benchmark indexes. Holdings-based style analysis is dependent on the choice of style framework.
- Holdings-based style analysis is transparent. Because stocks and portfolios use the same style framework, portfolio managers can see how each holding contributes to their average portfolio style and can take action if the portfolio's style is drifting from its target. The relationship between stock and fund style can be seen in the Morningstar® Ownership Zone℠, a tool that plots each holding on the Morningstar Style Box.
- Returns-based style analysis is most accurate when the correlations between the benchmark indexes are low. If the indexes have performed in a highly correlated fashion, it is harder for the model to detect distinct style patterns in the total returns.

Conclusion

Financial professionals should understand the strengths and limitations of style analysis models in order to interpret the results correctly. The Morningstar studies concluded that holdings-based style analysis generally produces more accurate results than returns-based style analysis. However, in certain circumstances, returns-based style analysis can be used to estimate investment style. Ideally, practitioners should use both approaches: returnsbased models can often be more widely applied while holdings-based models allow for deeper style analysis.

Where and When

Morningstar Direct℠, the company's flagship institutional research platform, offers extensive holdingsbased style analysis tools. Direct introduced its returns-based style analysis tools in the fall of 2003 and continues to enhance that functionality. Direct combines advanced holdings-based and returns-based style analysis for open-end mutual funds, variable annuities, and separate accounts.

References

- Kaplan, Paul D., *Holdings-Based and Returns-Based Style Models*, June 2003.
- Rekenthaler, John, Michele Gambera, and Joshua Charlson, *Estimating Portfolio Style: A Comparative Study of Portfolio-Based Fundamental Analysis and Returns-Based Style Analysis*, January 2004.
- Both papers are in the "Research Papers" section at http://corporate.morningstar.com/US/research