

Four faces of style

How style analysis has evolved is examined by **Robert Schwob** of Style Research, who argues that it is essential to examine style in a number of ways in portfolios

Portfolio Style analysis was initially popularised during the early 1990s by the simplicity and accessibility of Bill Sharpe's

Returns-Based Style Analysis methodology and its direct applicability to the analysis of US mutual funds. Now, however, much as a consequence of the changing needs of worldwide investment professionals through the tumultuous events of the past decade, there are a further three recognised techniques of style-based portfolio analysis widely available. This article will review how and why each of these methods emerged and evolved through the decade in response to a growing need for more comprehensive style analysis features. Each new technique developed to address anomalous market situations and idiosyncratic patterns of investor behaviour. And the most recent introduction, risk-based style analysis, completes the suite of portfolio style analysis techniques in direct response to concerns regarding the identification of specific investor practices following the abrupt style shifts that occurred following global equity market peak in early 2000.

Technique 1: Returns-based style analysis

Practical portfolio style analysis really got started during the early 1990s when, following the prescription of Professor Bill Sharpe (Asset Allocation: Management Style and Performance Measurement – The Journal of Portfolio Management, Winter 1992), a number of returns-based style analysis services emerged offering a simple mechanism for identifying the style features of investment portfolios. These services were useful in permitting the high level classification of funds simply from published performance statistics and, as financial advisers warmed to the efficiency of the style vocabulary, this method of systematising the sales process was instrumental in popularising style classifications and style analysis within the retail funds sector.

The technical simplicity of the returns-based style analysis method also contributed to its wide acceptance. After all, since the technique

only required fund returns and the returns of a small number of publicly available style benchmarks, there was not a particularly high data requirement; and the programming was relatively simple as well. In fact, a serviceable process could be quickly developed using the equation solving facilities in a number of popular spreadsheet programmes.

But these techniques only offered a narrow view of manager style; a number of criticisms of this process are worth noting:

□ Statistical relevance

The technique almost always found a solution, even if it was not a good one. It offered style characterisations of funds or portfolios even if no style was really statistically relevant in their construction or performance characteristics. Retail investors are not interested in t-statistics; and, even if they were, many instances of statistically significant misclassification became widely recognised within the professional investment community.

□ Theoretical inconsistency

Returns-based style analysis features the facility to trace the changing style components of funds through time. Paradoxically, however, the mechanism that assesses the scale of each component implicitly assumes that the proportions of each component are fixed throughout the assessment window. Shortening the assessment window reduces the problem but then statistical significance suffers, and the higher level of noise that affects the higher frequency returns data also compromises the accuracy of the results.

□ Excessive factor dependency

Style benchmark construction processes are critical. While many such benchmarks are available based on the most popular of style factors (mainly size and book to price), these factors might not closely represent managers' style considerations and could give misleading indications of manager strategies.

□ Insensitive to process nuances

The sector by sector structure of the style benchmark portfolios carries implicit assumptions about the sector strategies of the fund manager. For example, in virtually all

markets an unconstrained sample of high value companies is 20% to 50% overweight (relative to the overall market) in the financials sector. Consequently, returns-based style

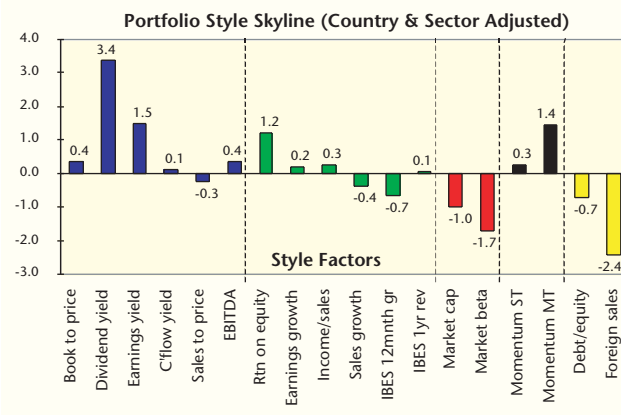
analysis based on standard construction style benchmarks would only detect a strong value strategy if a fund performed in a manner consistent with a disproportionately high percentage in financials. While most US based style-conscious managers "honour the style benchmarks" in the construction of their investments (so that value managers would be overweight in financials and other value sectors and, correspondingly for growth managers and growth oriented sectors) and so would be well identified using popular style benchmarks, the delayed development of style benchmarks across Europe and the rest of the world resulted in non-US based managers frequently being misclassified owing to their more market-related sector proportions. Simply put, many value managers in the UK and Europe were neutral or even underweight in financials during most of the 1990's. This strategy invalidated the application of the simple style benchmarks, falsely characterised them as more growth orientated than they were, and largely tarnished the image of returns-based style analysis outside of North America.

□ Insufficient structural detail

Although financial advisers for the retail sector benefited from the simple style classifications as support for the sales process, professional investors required more. The needs of investment consultants, fund of funds managers and managers themselves were only partially satisfied by the basic superficiality (ie, no deeper than at the total fund level) and one-dimensional nature (since

1. Style skyline of a small cap value oriented manager

Emphasising dividend yield, with neutrality on growth



only one style factor or style composite could be considered in each analysis) of the returns-based style classification.

Holdings-based style analyses

Owing to these limitations and to the growing interest among professional investors in style, various holdings-based versions of portfolio style analysis began to appear during the latter half of the 1990s. These techniques centred on what can be described as: style skyline analysis and style distribution analysis. And their development can be traced to a number of concurrent factors: fundamental data on individual securities was becoming more widely available and reliable; style was seen as a key central issue for performance (growth was dramatically outperforming value at the time); and there was a growing disillusionment (mainly due to risks of over-fitting) in many popular multifactor portfolio analysis packages.

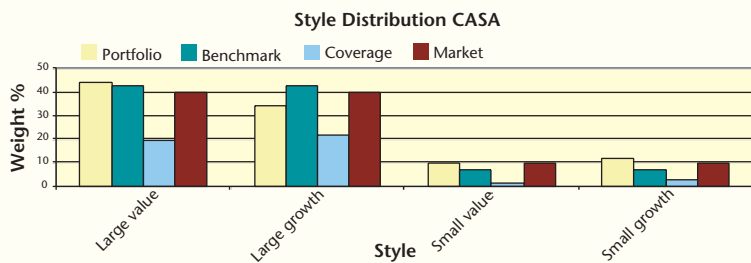
Technique 2: Holdings-based style skyline analysis

Style skyline analysis represents the factor tilts of a portfolio of equity investments against the tilts of its specified benchmark.

This simple process offers a systematic means of reviewing portfolios from a variety of perspectives (ie, at the total fund level, industrial sector neutral, and within individual industrial sectors) and of conducting analysis and communicating portfolio information according to recognisable factors and security attributes. In addition, institutional equity portfolios can be easily clas-

2. Style skyline of a value fund

It is not so much positive on value but negative on large cap growth



sified according to more subtle style nuances than before. Skyline analysis is able to reveal not only to broad value and growth tilts, but GARP (growth at a reasonable price) and popular recovery managers also become clearly identifiable; and it is also possible to detect growth managers' implicit time horizons and to distinguish where value managers find greatest value.

But despite its attractions skyline analysis also had its shortcomings:

□ Outlier dependency and statistical insensitivity

Because of the factor tilt averaging process, portfolio tilts can be distorted by relatively small positions in stocks with large or erroneous factor scores. It is also possible to miss important information embedded within the distribution of factor tilts across the portfolio. Unless more sophisticated statistics are available, it is possible to mistakenly assume that managers with a limited number of large tilts are establishing the same style tilts and exposures as managers who take smaller but more evenly distributed bets.

□ No 'Style Block'

Owing to the popularity of returns-based style analysis, both retail and institutional investors have become accustomed to seeing style blocks which stack to 100% and show the time varying proportions of style characteristics embedded within the funds or portfolios under review. Skylines are not suited to this.

□ No Risk or Return Model

Style skylines offer no direct mechanism for constructing a model for factor returns or risk; this was never their intent. Nonetheless, there was

a clear opening for the development of style-based risk analysis. (Or is it risk-based style analysis? More of this below.)

Technique 3: Holdings-based style distribution analysis ("Where is the money?")

Style distribution analysis complemented style skylines offering recognisable style stacks and overcoming the problem of outlier dependency. Outliers were becoming ever more significant as markets rose to record levels through the late 1990's and it became clear that outlier statistics, particularly in value and growth attributes for individual stocks, were capable of distorting entire factor representations. Concurrent merger and acquisition activity was also responsible for introducing distortions in a number of key style factors as the treatment of goodwill and earnings in many European markets caused sharp outliers to appear. Style distribution analysis sidestepped all of these issues by simply showing where the assets of a portfolio were invested relative to the distribution of assets within the relevant benchmark.

But, while this process of analysis did offer clear and accessible outputs (which, like skylines, could also look within individual markets and sectors to overcome sector or market-related distortions and could also explore a number of additional style factors in further analyses) it lacked the subtlety and breadth of the skyline analysis.

And still there was no evidence of a risk model in sight.

Technique 4: Style-based risk analysis and risk-based style analysis

The relationships between style and risk have been explored extensively through the past decade. Initially, analysis focused on measuring risk and highlighted the tendency for traditionally calculated risk statistics (principally tracking error) to underestimate the true risks of style oriented portfolios. This is the now well-recognised problem of 'persistence' that seriously afflicted both value and growth oriented portfolios through the late 1990s and well into the 2000 to 2002 period. But style and risk can also be explored from a different perspective.

Style and risk have a two-directional relationship. Risk can be analysed according to a decomposition that includes styles as risk contributors – this is style-based risk analysis; and risk can and, particularly now, should be used as a way of classifying managers according to their style specialisms – this is risk-based style analysis. The mechanism of analysis is quite intricate and it is easy to get bogged down in the detail. But the principle is very simple: If value managers are appointed to manage value stocks and growth managers to manage growth stocks, then shouldn't most of the stock specific risk taken by value managers be in value stocks and most of the stock specific risk taken by growth managers be in growth stocks? Managers should be identifiable not only according to where most of their assets lie (or what the factor tilts might be) but also according to where they take the greatest risk. After all, this ought to be where they believe they have the most valuable insights and the superior management skill.

Just as each of the previous style analysis techniques emerged and became popular in response to current market/practitioner 'needs', risk-based style analysis is now also a well-timed entrant. Following the collapse in the markets from early 2000, the abrupt shift in style

reward patterns caused an interesting anomaly in investor practices. As growth appeared to crumble and value surged, just about all managers started to look suspiciously value oriented. Growth managers, identified only from skylines or according to style distributions, all but vanished. This was so because most had taken strong negative positions in selected growth stocks and as a consequence the tilts and weights of the portfolios indicated a value orientation. But since most of the big bets were still among growth stocks, they were really only masquerading as value managers. This practice was only identifiable by looking at the portfolios more deeply and recognising where the various managers took their greatest bets.

The process is relatively straightforward. Using a hierarchy of stock returns characterisation (from market returns to market-relative sector returns to sector-relative style returns to stock specific returns) and details of portfolio and benchmark stock holdings, it is possible to conduct an analysis of the composition of portfolio risk. Because of the technique employed, risk is not only identified from the primary sources (ie, market risk, sector risk, style risk and stock specific risk), but there are also a number of cross-terms which identify how, for example, sector risk might correlate with style risk or market risk. A typical summary analysis of a typical masquerading value manager might reveal something like that outlined in exhibit 3. In this, the column on the extreme right decomposes stock selection risk and, in this case shows that most of the stock selection risk comes not from within value but rather from bets taken in growth stocks.

Market events of the past decade together with the changing nature of the market and of investment practices and the evolution of style 'awareness' across both retail and institutional sectors have encouraged a significant broadening in the range of available portfolio style analysis techniques.

It is now not only possible but also necessary to examine the style characteristics of equity portfolios according to performance, two methods of analysis of portfolio structure, as well as the style characteristics implicit in the decomposition of portfolio risk.

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3. Style-based risk analysis of a supposed value manager

Contribution to tracking variance by style

Style	Active pos	Total risk	Curr risk	Market X'terms	Market risk	Sector X'terms	Sector risk	Style X'terms	Style risk	Equity X'terms	Equity risk
No style specified	-0.30	0.18	0.01	0.03	0.11	0.07	-0.03	0.00	0.00	0.00	0.00
Large value	-2.43	6.79	0.56	0.09	1.67	2.30	1.76	-0.78	0.39	0.00	0.82
Small value	4.48	0.74	0.03	-0.36	-1.41	0.03	1.96	-0.15	0.18	0.00	0.47
Large growth	-14.73	23.78	0.65	1.09	5.79	6.40	5.74	1.28	0.78	-0.10	2.15
Small growth	-0.10	1.67	0.04	0.01	0.10	0.67	1.16	-0.91	0.33	-0.54	0.81
Cash holdings	13.08	-0.03	0.00	0.00	-0.01	-0.02	0.00	-0.01	0.00	0.00	0.00
Total	0.00	33.12	1.29	0.85	6.24	9.45	10.59	-0.57	1.68	-0.65	4.24