The case for quantitative equity management

Jacobs Levy has proved to be one of the best performers in US equities in recent years. Bruce Jacobs and Kenneth Levy say a quantitative approach is the reason why

WHEN IT comes to quantitative versus traditional active management, we have to admit that we are prejudiced. As quantitative managers ourselves, we believe strongly in the powers of quantification at all levels of the investment process, from security selection through performance evaluation.

This does not mean we do not appreciate the art of investing. It does mean that we combine human insight and intuition with modern computing power, finance theory and statistical techniques: instruments that have the potential to extend the reaches (and discipline the vagaries) of the human mind.

Human brainpower provides the creativity. Selection of variables to be modelled, for example, relies heavily on our intuitive understanding of how stock prices respond to factors such as changes in interest rates or announcements of earnings revisions. It also relies critically on the generation of new ideas, whether motivated by new data that open up new vistas, or by new statistical and modelling techniques that provide better predictive tools. Computer modelling of stock price behaviour and quantitative portfolio construction techniques, however, provide the discipline to ensure that return opportunities are maximised at controlled levels of risk.

There are three critical advantages quantitative investing has over traditional active equity management.

breadth

Traditional investment management relies on in-depth examinations of companies' financial statements and investigations of their managements, products and facilities.

This type of approach is simply not practical for any one manager to apply to all available companies. Traditional managers thus tend to focus on subsets of the equity market; from a universe of, say, 750 large-cap US growth stocks, a traditional manager's closely followed universe may constitute only 200 issues. The reduced breadth of traditional management introduces significant barriers to superior performance by limiting the number of potentially profitable insights that can be incorporated into a portfolio.

Quantitative analysis, by contrast, is equipped to deal with a very broad universe of stocks, and to benefit from all the potential opportunities. At the same time, quantitative tools can afford a depth of analysis equivalent to that enjoyed by traditional management. In effect, quantitative management can exploit the same company fundamental and economic data used by traditional management, and augment these with all the computer power and statistical modelling at its disposal.

discipline

The performance of traditional active management may suffer not only from limitations on the amount of information that can be processed by the human mind, but from errors in interpreting that information.

All humans are subject to cognitive biases, in-grown habits of thought that can lead to systematic errors in decision-making. Investors appear to be as susceptible as any other consumers to fads and fashions, hence to bidding up prices of hot stocks and ignoring out-of-favour issues. Investors also tend to over-emphasise new information if it appears to confirm their existing opinions. An investor who believes a particular firm's management is good may thus be biased toward earnings estimates that are on the high side.

Traditional active management's reliance on the subjective judgments of individual analysts makes it susceptible to cognitive biases. With a quantitative approach, by contrast, adherence to stock selection models helps to immunise the manager from cognitive errors. In fact, quantitative strategies can be designed to exploit the cognitive biases – such as investors' tendency to overreact to news – that lead traditional active managers astray.

integrity

Traditional active management does not look to underlying benchmarks to provide portfolio construction guidelines. While the return on a traditional active portfolio may be measured against a selected market index, traditional managers are generally given wide leeway to pursue return. This leaves the door open not only to cognitive errors, but to ad hoc portfolio construction.

Without explicit guidelines that tie a portfolio to an underlying benchmark, a traditional manager may be tempted to stray from the fold. A traditional value manager averse to analysing utilities, for instance, may simply exclude them from the portfolio. A client using this manager cannot expect performance consistent with value stocks in general. Nor can the investor comfortably combine this manager's portfolio and, say, a growth stock portfolio, with the expectation of capturing an overall market-like performance.

Quantitative portfolios are engineered to underlying benchmark standards, thus ensuring portfolio integrity. Properly constructed quantitative active portfolios can be combined without fear that the combination will result in dilution or distortion of expected performance. Most importantly, portfolio integrity offers consistency of benchmark-relative expected return and risk. The investor faced with the task of selecting managers to meet overall fund objectives can have more certainty of the contributions likely to be made by quantitative, as opposed to traditional, active managers.

Quantitative management offers both the breadth and depth of analysis, as well as the discipline, needed to deliver outperformance on a consistent basis. This is evident from the multi-year performances of our large-cap, small-cap, growth and value portfolios, given in the accompanying table. ▮

Jacobs Levy Equity Management's performance

Strategy (since inception)	Information ratio (annualised excess return/residual risk)	Annualised value-added net of fees (benchmark)
Large cap core (6/91-6/99)	0.65	+124bp (S&P 500)
Small cap core (4/94-6/99)	1.25	+480bp (Russell 2000)
Growth style (1/96-6/99)	1.04	+159bp (Russell 1000 growth)
Value style (2/96-6/99)	1.08	+240bp (Russell 2500 value)

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