Testing Investment Manager Skill

Because investment management involves seeking an appropriate balance between risk and reward, assessment of manager skill generally focuses on measures that takes due account of both of these factors.

The most common statistic used, at least for managers who have an outperformance target relative to a benchmark is thus the Information Ratio, which is calculated as:

$$Information\ Ratio = \frac{Outperformance\ (versus\ benchmark)}{risk\ (relative\ to\ benchmark)}$$

Here, outperformance is relative return (possibly annualised, and possibly also converted into geometric or logarithmic form). Risk is measured by reference to standard deviation of relative return.

The corresponding statistic, if the benchmark is cash (or an absolute performance objective) is the Sharpe ratio, see Risk Measurement Glossary.

Effectively, the Information Ratio is measuring the outperformance per unit of risk taken (i.e. 'bangs per buck'). If all relative positions were doubled in size (and assuming that the investor only holds a small proportion of the total of such exposures, so such a doubling does not in practice increase the investor's liquidity risk), then outperformance and risk, as measured above, should both double and hence the Information Ratio should remain unaltered. So the Information Ratio measures the skill at selecting and implementing investment ideas as it is invariant to the amount of capital put to work with these ideas.

The use of standard deviations to measure risk implicitly assumes that returns are not fat-tailed or that the investor is indifferent to fat-tailed behaviour to the extent that it does exist. Either the Information Ratio or the Sharpe ratio can be refined to use other measures of risk deemed more appropriate by the investor, e.g. downside risk (see Sortino ratio in Risk Measurement Glossary) or measures that give greater importance to fat-tailed behaviour, akin to those used for independent components analysis.

If returns are log-normally distributed then the information ratio (if outperformance and risk are both expressed logarithmically) is the same as the *t*-statistic that would be used to test for the mean of the distribution being significantly different from zero.

If we further assume that investment manager 'skill' is relatively rare (an assumption that seems to be approximately true for many asset types) then we should expect the spread of Information Ratios that a selection of active managers (e.g. a peer group of funds all investing in the same asset class) to be distributed in the same way as the corresponding t-statistic would be distributed under the null hypothesis that the mean (relative) return is zero. Such a methodology can be used to estimate the information ratio level needed to be, say, upper quartile in such a peer group. For large n, where n is the number of funds in the peer group, the distribution tends to a normal distribution independent of n and hence independent of the peer group in question.

If we make further assumptions about the typical spread of risk that different managers in a given peer group might exhibit, we can derive approximations for the level of risk that a manager needs to take to achieve an upper quartile performance given a specific level of skill. For many peer groups an

approximately median level of risk coupled with an upper quartile information ratio appears to equate to approximately an upper quartile performance.