In the Summer 2005 edition of JASSA, Gallagher and Gardner attempted to show that “too many chefs spoil the soup” when constructing multi-manager portfolios. JON EGGINS explains that it is not actually the number of chefs that determines the quality of the soup, but rather the skills they bring to the kitchen.

Gallagher and Gardner (2005) use data on Australian equity managers to present a range of findings regarding multi-manager portfolio structures. Unfortunately, although the analysis Gallagher and Gardner present appears sound, the interpretation of their results and the conclusions reached are at times misleading, and in some cases simply incorrect.

This note presents a critique of the work conducted by Gallagher and Gardner, deconstructing two of their most important conclusions. Specifically, it shows, contrary to Gallagher and Gardner that, 1) the reduced benchmark-relative risk observed in multi-manager structures does not lead to lower returns, and 2) multi-manager structures do not incur additional transactions costs compared to single managers.

ONLY TELLING HALF THE STORY
Gallagher and Gardner use simulation analysis to show that blending active managers leads to a decline in tracking error and the magnitude of active positions. Based on these findings, the authors claim that “as active managers are blended together in a single portfolio structure, the opportunities to generate positive alpha diminish”. This is an extremely strong statement that, as we shall see below, it is also unfounded. Curiously, despite having the data to do so, the authors choose not to report the impact on alpha of blending managers. This is certainly a strange omission given that the claim of lower returns from multi-manager structures is one of their central conclusions.

To help make up for this omission, Figure 1 shows the impact on both tracking error and alpha of combining managers. It uses simulation analysis based on the actual historical performance track record of 50 Australian equity managers over the five years ending June 2006. Each point in Figure 1 is the average alpha or tracking error of 1,000 simulated multi-manager portfolios.

The results confirm that increasing the number of managers in a portfolio reduces tracking error. Importantly, however, the number of managers has virtually no impact on alpha. That is, the average alpha is unchanged regardless of the number of managers in the portfolio.

This result directly contradicts the claims of Gallagher and Gardner. Importantly, the shape of the results presented in Figure 1 (declining tracking error, unchanged alpha) is not specific to this dataset. Any set of manager returns will give results with the same pattern — the mathematics of portfolio construction guarantees this.

This means that had Gallagher and Gardner chosen to present the impact on alpha of combining managers, they...
would certainly have obtained similar results to those presented in Figure 1, thereby contradicting one of their main conclusions.

WHY THE CONFUSION?
Rather than attempting to prove their claim that combining managers reduces alpha, Gallagher and Gardner simply invoke a common, yet flawed, assumption that reduced active bets and lower tracking error equates to lower alpha. The relationship between active bets and alpha, however, is not as simple as it may first appear. What Gallagher and Gardner overlook is that alpha is determined not only by the size of active bets, but also by how many of these bets turn out to be correct (i.e., manager skill). What is not immediately obvious, however, is that the level of ‘skill’ at a portfolio level actually increases when managers with positive alpha are combined. This increase in skill for a multi-manager portfolio can be shown mathematically. Using Grinold and Khan’s (2000) definition of skill, the information coefficient, we can show that the combined skill from two sources is greater than the weighted average of the two (assuming the forecasts are not perfectly correlated). Sorenson et al. (2004) show that the combined information coefficient from two sources (IC$_A$ and IC$_B$) is:

$$IC_{Combined} = \frac{w_AIC + w_BIC_B}{\sqrt{1-2w_Aw_B(1-p)}}$$

where $w_A$ and $w_B$ are the weights allocated to each source and $p$ is the correlation between them.

Equation (1) shows that skill of the combined portfolio is a function of the skill of the underlying managers and their correlation of their forecasts. As long as the correlation between forecasts is less than 1, the combined information coefficient will be higher than a weighted average of the two. When it comes to active management, two heads really are better than one. A useful way to think about this is to consider a portfolio comprised of two skilled managers. The combined portfolio retains the active bets where the managers agree, while neutralising those where they disagree. This neutralisation of divergent views is what causes the decline in active bets lamented by Gallagher and Gardner. Rather than being a cause for alarm, however, this decline in active bets is actually something to be welcomed. Since both managers have skill, it makes sense that those bets that overlap will more likely be correct than those where the managers disagree. This means that the fall in active bets is merely a reduction in those positions that are less likely to pay off. Therefore, the combined portfolio will have a higher level of ‘skill’ than the underlying managers, offsetting the effects of smaller active bets to leave alpha unchanged.

A SIMPLE MODEL OF ACTIVE MANAGEMENT
Consider a stylised investment universe of 100 stocks, all with equal weight (i.e. 1%) in the benchmark index. The benchmark return is set at 15% over the period. Half of the stocks in the index return 5%, while the remainder return 25%.

Now assume there are 3 managers (A, B and C). Each of these three managers selects 20 securities from the 100-stock universe, and allocates an equal 5% weight to each stock. All 3 managers possess skill; in fact, each has a success ratio of 60% (i.e., 60% of their active bets are correct). Since each manager makes 100 active bets (20 overweights and 80 underweights), a success ratio of 60% implies getting 60 of these correct. In the example below we allow no overlap between the manager portfolios, although this assumption can be relaxed with no change to the key results.

Under these conditions, each manager outperforms the benchmark by 5%. The magnitude of active positions (defined as the sum of the absolute value of active bets) is 1.6 for each manager.

Combining any two of these managers reduces the magnitude of active positions considerably, from 1.6 to 1.2. Combining all three managers results in an even further reduction, down to 0.8, half that of the single managers. However, although the magnitude of active bets falls when combining managers, excess returns remain unchanged. Figure 2 illustrates these results.

The two and three manager portfolios are able to obtain the same alpha, with lower active bets, because of their higher success ratios. Recall that each of the single managers has a success ratio of 60%. The two and three manager portfolios, however, obtain success ratios of 70% and 80% respectively. Because lower active bets are offset by the fact that more of these bets are correct, alpha is unchanged when combining managers.
Although this is a stylised model of reality, the main conclusion is far more general. Combining two or more skilled managers results in portfolios with smaller active bets, but higher success ratios, than the underlying individual managers. Relaxing any of the model’s assumptions – the returns or weights allocated to each stock, the number of time periods, the amount of overlap, the number of managers, the level of skill or the number of stocks in the universe – has no impact on the key conclusion that lower active bets does not imply lower alpha.

**TRANSACTIONS COSTS AND MULTI-MANAGER STRUCTURES**

The proof that multi-manager structures incur no additional transaction costs compared to single manager structures is straightforward. Just as the alpha of a multi-manager portfolio is the weighted average of the manager alphas, so too is the transactions costs of a multi-manager the weighted average of the costs incurred by the underlying managers. Managers only impose their costs on the portions of the portfolio for which they are responsible. If they each incur costs of trading of 1% per annum (for instance), then the average over the whole portfolio will be 1% also.

Gallagher and Gardner are distracted by the potential for manager trades to offset each other; one buying while the other is selling. It should be emphasised, however, that exploiting any opportunity to cross trades would reduce transactions costs below what they would be for a single manager.

The ‘unnecessary trading costs’ that Gallagher and Gardner argue against are only unnecessary relative to the ideal case where offsetting trades between managers can be crossed internally by the multi-manager. Compared to a single manager, however, multi-managers do not incur any additional transactions costs.

**CONCLUSION**

Gallagher and Gardner assume returns will decline as active bets and tracking error fall. This note shows formally why this is not the case. The key insight is that multi-manager structures reduce risk, without reducing returns, by exploiting the beneficial overlap between skilled managers.

Of course, selecting poorly performing managers can lead to inferior investment outcomes. Sharpe (1991) also demonstrates that from a theoretical perspective not all managers in a universe can beat the benchmark because on average (asset-weighted) they must return the index return less transaction and management costs. In the extreme therefore, portfolios that contain managers representing more than half of the available universe must contain some underperformers.

None of these qualifications, however, change the key result that lower active bets and tracking error do not lead to lower returns. The so called ‘erosion’ of active bets and ‘deterioration’ in tracking error lamented by Gallagher and Gardner are actually the positive outworking of manager diversification, something to be welcomed rather than avoided.

**Notes**

1 A related paper that presents the same conclusions, using US data, was also published in the *Journal of Asset Management*; see Gallagher and Gardner (2006).

2 The ‘proof’ that combining managers does not reduce returns follows directly from the mathematics of portfolio construction. While the alpha of a multi-manager portfolio is a weighted average of the underlying manager alphas, tracking error will always be less than a weighted average of the individual manager tracking errors (for correlations less than one). See Eggins and Parish (2007) for more details.

3 To ensure consistency, Figure 1 uses the same simulation methodology as Gallagher and Gardner.

4 The slight kink in the ‘alpha’ line is due purely to sampling error. The values of alpha for all manager combinations are the same to 3 decimal places and are not statistically different from one another.

5 The information coefficient is defined as the correlation of manager forecasts with the actual outcomes. It captures the same concept as the ‘success ratio’, which is presented below.

6 This increase in skill from combining managers is analogous to the reduction in tracking error from combining managers (indeed, the proof can also be shown as a reduction in forecast errors, which is mathematically identical to reducing tracking error).

7 A more detailed discussion of this can be found in Eggins and Parish (2007).

8 This is the same metric that Gallagher and Gardner use to measure active bets. It is bounded between 0 (for a portfolio identical to the benchmark) and 2 (for a portfolio with no stocks in common with the benchmark). A value of 1.6 therefore indicates a portfolio that is substantially different to the benchmark.

9 See Eggins and Parish (2007) for a more thorough treatment of this issue.

10 In practice, this is not always the case. For example, in Figure 1 we show that the universe of Australian equity managers has, on average, added value over the past 5 years. For this to occur other investors (e.g. offshore equity managers) must underperform over the same period. Survivorship bias is another possible explanation; however, we detect no such bias in the dataset.

**References**


