

Research Comments

Performance Attribution

Glenn E. Atkins, CFA

Director of Research

Most fixed income investment managers fall into one of two broad categories. Most will claim to be either asset allocators or security selectors, or some combination thereof. In the big picture, comparing portfolio returns to some benchmark is an easy task. You either beat the index or you don't. Similarly, evaluating risk-adjusted returns is a fairly straightforward exercise. Risk-adjusted returns are either positive versus the index or they are not. But how do investors know if their manager has any skill at either asset allocation or security selection? One of the primary ways is a technique called performance attribution. Performance attribution is used to explain what portions of return differentials (excess return in the example below) are caused by such things as asset allocation, security selection, and other risk attributes.

An Example

In our example we will assume that there are only two industry groups in which we are allowed to invest: industrial bonds and utility bonds. Our investment manager earned a 7% return on his industrial bonds and allocated 65% of his portfolio to this sector. Further, he earned a 2% return on his utility bonds and allocated 35% of his portfolio to this sector. The manager's total return for the period was 5.25% (returns are not additive and must be weighted to the asset allocation). Our benchmark index returned 5% on its industrial bonds with a 40% allocation and returned 3% on its utility bonds with a 60% allocation. The index's total return was 3.80%. Thus, the manager outperformed the index by 1.45%. Additionally, our hypothetical manager claims to be an expert at security selection. Let's see how he did.

There are two key formulas for performance attribution: one for asset allocation and one for security selection. The asset allocation formula is: $\text{allocation effect} = (\text{Portfolio Weight} - \text{Index Weight}) \times (\text{Index Segment Return} - \text{Index Total Return})$. The security selection formula is: $\text{security selection effect} = (\text{Portfolio Segment Return} - \text{Index Segment Return}) \times \text{Portfolio Weight}$. Each of these formulas must be repeated for each industry segment in the portfolio.

Our asset allocation effect for industrial bonds then becomes: $(.65 - .40) \times (5\% - 3.8\%)$ or .30. For utility bonds it is: $(.35 - .60) \times (3\% - 3.8\%)$ or .20. Therefore, the total asset allocation effect is .50%. This means that fully 50 basis points of the 145 basis points performance differential is explained by the asset allocation decisions our investment manager made over the investment horizon.

Given that we are only isolating two attributes (asset allocation and security selection), we now know that the other 95 basis points are explained by security selection. Let's see for sure. Our security selection effect for industrial bonds is: $(7\% - 5\%) \times .65$ or 1.30%. The security selection effect for utility bonds is then: $(2\% - 3\%) \times .35$ or -.35%. Therefore, total security selection explains 95 basis points of the 145 basis points performance differential as expected.

The Results

What does this mean? Almost 100 basis points or two-thirds of the entire 145 basis points performance differential was explained by the manager's ability to select bonds. In fact, almost all of the performance differential (130 basis points) was because the manager was very good at selecting industrial bonds that outperformed the industrial bonds in the benchmark index. The manager's ability to select utility bonds during this period is somewhat less inspired. He gave up 35 basis points of performance because he selected terrible bonds in this sector. If he would have had the exact same bonds (and weights) as in the index, his relative performance would have been better by 35 basis points. We also discovered that our manager has some skill in asset allocation as well, but not as much as in security selection. He picked up 30 basis points in his industrial bond allocation and 20 basis points in his utility bond allocation. The gain in the industrial allocation is slightly larger because industrial bonds outperformed utilities and the manager was overweighted versus the index in that sector. From this analysis we would conclude that our manager has lived up to his claim of being a good security selector.