

# Performance Perspectives

## with Dave Spaulding

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### Interaction explained (briefly)

One of the more confusing aspects of attribution is the effect known as "interaction." What is it? Why is it here? And, how come it's so high sometimes?

I've been doing some research in this area over the past few months and have uncovered some rather interesting points. The Winter issue of *The Journal of Performance Measurement* will have an article I'm writing which discusses this in much greater depth. This issue of our newsletter will touch upon some of the key points.

First, *what is it?* The term itself doesn't convey much, although it's a heck of a lot better than the term assigned in the Brinson, Hood, Beebower article from the 1987 *Financial Analysts Journal* – there, it was simply called "other." Not terribly meaningful.

In the equity world, it's supposed to convey the interaction of the asset allocation and selection decisions. So, the term actually does have some meaning. Let's review a couple formulas for a moment. First, the selection effect:

$$\text{Selection} = (W_B) \times (R_P - R_B)$$

The key factor, I think, is the return differential ( $R_p - R_b$ ), which reflects the results of our active bets. The weight we use is from the benchmark. Interestingly, if we choose to use the portfolio weight, we eliminate the interaction effect.<sup>1</sup>

The allocation effect comes in at least two flavors. The Brinson, Hood, Beebower (BHB) and Brinson Fachler (BF) methods are almost identical, with the exception being the return they multiply by. In the case of the BHB, we use just the return from the sector, but with the BF model, we use the sector return minus the overall benchmark return. We can get some pretty significant differences which I discuss in my recent book.<sup>2</sup>

$$\text{AssetAllocation}_{BHB} = (W_P - W_b) \times R_b$$

$$\text{AssetAllocation}_{BF} = (W_P - W_b) \times (R_b - R_B)$$

The factor in both cases that reflects the allocation is the weight differences ( $W_p - W_b$ ), as this shows whether we overweighted (in which case, the portfolio weight exceeds the benchmark weight) or underweighted.

The formula to derive the interaction effect is:

$$\text{Interaction} = (W_p - W_b) \times (R_p - R_b)$$

As you can see, the interaction effect combines the allocation decision (weight differential factor) with the results of the selection decisions (return differentials) into a single effect – thus the idea that there's some *interaction* between the two effects.

Why is it here? I guess we could say it's here because of a shortcoming of our model – that the selection and allocation effects don't account for 100% of these decisions. Or, perhaps because it's supposed to be. It's interesting – some people feel it's mandatory for

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<sup>1</sup> Actually, we don't eliminate it – we are including it with selection!

<sup>2</sup> Investment Performance Attribution, McGraw-Hill, 2003.

it to be shown while others try to eliminate it. I think the latter results from ignorance of what it is or reluctance to explain it to a client. Hopefully, this brief presentation, coupled with the upcoming article, will provide some additional meaning to the term.<sup>3</sup>

How come interaction is sometimes so big? Well, I've identified three reasons. The first is probably obvious by looking at the interaction formula: if we have very big weighting differences (i.e., big bets to over- or underweight a sector in the portfolio) and/or big return differences (either large over or under-performance), we'll have a large interaction effect.

The second source arises from situations where we are either invested in sectors (or securities, in the case of a stock-level system) which the benchmark isn't in, or vice versa. If you try this out yourself, you'll see that the interaction effect can be quite large in these cases. Some vendors are aware of this and provide their users with an option as to where the interaction should go in these cases (i.e., to avoid this from happening).<sup>4</sup> The BF model treats these cases differently than the BHB model, as I discuss in my forthcoming article.

The third source can be the linking method that the firm uses to achieve multi-period attribution. One of the major providers of attribution software<sup>5</sup> uses a method where they simply take the residual and allocate it evenly across the effects (e.g., if the residual is six basis points and there are three effects, two basis points will be added to each effect). I think that this is too arbitrary in that it has no bearing on the proportionality differences between the effects and can result in an over-allocation of the residual). Many feel that the proportionality should be maintained when we link our effects and this approach fails to do this, resulting in times when the interaction effect will grow more than it should.

My understanding of the interaction effect has definitely broadened as a result of this brief research exercise and has caused me to look much more favorably upon the notion of including it in a presentation. And, if a firm doesn't want to show it, it's important, I would argue, that the its assignment to one of the other effects must be done with care.

Hopefully this brief presentation has shed some light on what interaction is all about for you, too. Again, my article goes into much greater depth. Please feel free to comment this brief paper or the article itself.

### **Mandatory verification**

One topic gaining some interest is the notion of having mandatory verification. At the recent AIMR-PPS<sup>®</sup> annual conference in Chicago we were told that a survey was

<sup>3</sup> I tend to feel that it should be here, although I'm okay with eliminating it, as long as we do so in a reasonable way.

<sup>4</sup> I'm not convinced that this is such a good idea and discuss this in the article.

<sup>5</sup> Whose identity will remain somewhat confidential for the time being.

conducted and that there was a large degree of support for this. Well, our 2002 survey on the standards did not see a great deal of support. Also, at the Chicago conference we were told that since Egypt and South Africa are planning to have mandatory verification as part of their Country Version of GIPS, that it may make sense for it to be a universal requirement.

No offense to the Egyptians or South Africans, but I don't think the United States should base its investment policies on what goes on in Egypt or South Africa – the markets are hugely different in makeup and characteristics (size and number of investment firms for one). Also, we have a group that conducts free verifications in the States, called the SEC (you just don't want to fail them). Not all countries have such a regulatory body, so the notion of having an independent firm validating compliance may make sense, but I don't see that it does here.

In addition to what I've shared above, I have other objections to the notion of mandatory verification. For example, the AIMR-PPS was developed with the idea of providing a *level playing field*. I suggest that mandatory verification un-levels the field, as smaller firms may not be able to afford the cost. Is this what we want? That the standards will only apply to firms who can justify the expense? I don't think so. This change would be a huge change to the way the standards have operated for the past ten-plus years.

Another problem is that the market should dictate the need for verification. We've seen a huge turnaround in the U.S. since 1993 regarding verification.<sup>6</sup> Why? Because the market wants it. But, it's still an option. I can still decide whether or not the market is such that it makes sense for me to undergo verification. I have other issues with this idea, which I'll outline in my comments on the draft Gold GIPS<sup>®</sup>, should the Investment Performance Council decide to incorporate verification as a requirement.<sup>7</sup>

I know this (along with lots of other aspects of the standards and performance in general) is a controversial topic. Your thoughts are invited.

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<sup>6</sup> For example, our surveys have shown a huge change in firms who, in 1993 said "we have no intention of getting

<sup>7</sup> You probably know that the current version of GIPS states that "Verification is *strongly encouraged* and is expected to become mandatory (but no earlier than 2005)" (page 11 of the 1999 GIPS).

This newsletter is produced by TSG Publications. It is written and edited by Dave Spaulding. The opinions expressed are his and are a result of his own industry experience. Content layout by Sabina T. Hastings.

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invites you to the  
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**Award Recipients**

**Dietz Awards 2003**

**Long Term Risk Adjusted Attribution**  
Steven Campisi, (Vol. 7, Issue #1)  
**Performance Attribution for Short Positions**  
Jose Menchero, Thompson Vestek, (Vol. 7, Issue #2)

**Honorable Mention Awards:**

**Sharpe Ratio in the Negative**  
Yoshiaki Akeda, Nomura Funds Research and Technologies Co., Ltd. (Vol. 7, Issue #3)  
**Risk Adjusted Performance Attribution: A New Paradigm for Performance Analysis**  
Andrew Kophamel, Deutsche Asset Management (Vol. 7, Issue #4)

**Most Requested Articles:**

**Measuring Investment Returns of Portfolios Containing Futures and Options**  
John Stannard, Russell Investment Group (Vol. 1, Issue #1)  
**Measuring Investment Returns of Portfolios Containing Derivatives:**  
**Part II – Performance Attribution**  
John Stannard, Russell Investment Group (Vol. 1, Issue #3)  
**Fixed Income Portfolio Management: Risk Modeling, Portfolio Construction  
and Performance Attribution**  
Srichander Ramaswamy, Bank for International Settlements (Vol. 5, Issue #4)

**Top Three Reviewers:**

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**November 12-13, 2003 - Lisbon, Portugal**

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