PERFORMANCE PERSPECTIVES

with David Spaulding

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MIND THE GAP

There is a defacto standard to not bridge returns across gaps. What do we mean by this? Well, there are a few varieties of gaps. For example,

- a portfolio manager's client changes custodians. While they wait for their securities to be transferred, they tell the manager that he can't execute any trades. Thus, the performance continues up until the point the manager has to stop and then resumes once he begins trading again. Can this gap be crossed?
- a GIPS-compliant firm has a composite with only a single portfolio, that leaves at the end of the second quarter. In the middle of the third quarter, a new portfolio is added to the composite. Can the return for the full year be shown for this composite?
- a client has investments in multiple mutual funds, including an equity fund and a money market. Mid-year, they decide to move all of their money out of the equity fund and into the money market. Later in the year, they reverse direction and move money back into the equity fund. Can this gap be closed?

In the case of the first example, we might allow the crossing of the gap, provided (a) the amount of time that the manager can't trade is relatively small (perhaps up to 7-10 days) and (b) if the manager wouldn't have executed any trades during this period anyway (which can be difficult to confirm, but possible none-the-less). In the case of the second example, we would not allow this to happen. Any such gap, even just a few days, would be problematic, since we're dealing with two different portfolios.

I want to spend a bit more time on the third case. In the past, I've stated that "sorry, but you can't cross the gap." However, after much thought, I'm beginning to see this differently. Let's use an example (see Table 1).

	Market Values					
	12/31/2004	3/15/2005	3/16/2005	7/10/2005	7/11/2005	12/31/2005
Equity Fund	100	107	0	0	100	104
Bond Fund	100	103	101	102	102	105
Money Market	100	101	208	210	110	111
Portfolio	300	311	309	312	312	320

Table 1: Portfolio Market Values

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Risk Adjusted Performance Attribution Could Help

As we can see, in mid March we shifted the monies from the equity fund into the money market, and then in mid-July moved monies back. But for the intermediate period, we have no money there. What's our return for the equity fund?

Let's calculate our return, using the following formula:

$$R = \prod_{i=1}^{n} \frac{EMV_i}{BMV_i} - 1$$

Here, we revalue the portfolio whenever a cash flow occurs. Thus, the return for the equity fund is:

$$R_{EquityFund} = \prod_{i}^{n} \frac{107}{100} \times \frac{0}{0} \times \frac{104}{100} - 1$$

What we see in this formula is that the equity fund had an initial value of 100, rising to 107 (yielding a 7% return for that period). We then withdrew 107, resulting in a new market value of zero. Later, we move 100 back in, meaning that our ending value (just before the flow) is zero. We close out the year with a value of 104 (a 4% return).

$$R_{EquityFund} = \prod_{i}^{n} \frac{107}{100} x \frac{0}{0} x \frac{104}{100} - 1$$

R=7%

R=4%

R=Undefined

You may recall that first, we are not permitted to divide by zero; and, the expression 0÷0, if my memory serves me correctly, is "undefined." So, it's clear that we are unable to have a return for this period. We have "no return" for this period, but this doesn't mean our return is zero. We have a complete absence of a return; thus, the notion that we are not able to bridge the gap has some basis, and thus ends up with the information we show in Table 2.

	Rates of Return			
	12/31/2004 – 3/15/2005	3/16/2005 – 7/10/2005	7/10/2005 – 12/31/2005	12/31/2004 – 12/31/2005
Equity Fund	7.00%	#DIV/0!	4.00%	n/a
Bond Fund	3.00%	0.99%	2.94%	7.08%
Money Market	1.00%	0.96%	0.91%	2.90%
Portfolio	3.67%	0.97%	2.56%	7.36%

Table 2: Calculating the returns

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Well, I gave this quite a bit of thought recently and propose the following. What if, instead of moving 100% of the funds out of the equity fund, we leave the most minuscule amount there, what would happen? Table 3 shows what we get.

Scenario	1	2
BMV	0	0
EMV	0	0
ROR	#DIV/0!	0

Table 3: Returns

At first glance, you may wonder why the returns for scenario 1 are different than those in scenario 2. It's because we're not showing what's really in the market values for the second scenario. Let's extend the precision, as we show in Table 4.

Scenario	1	2
BMV	0	0.000000001
EMV	0	0.000000001
ROR	#DIV/0!	0.000000000

Table 4: Returns

If it was possible, we could leave an <u>extremely</u> small amount in the fund – a minuscule fraction of our smallest possible currency denomination. Perhaps we could carry out our decimals with zeros to 100 places, or 1 million places, or 1 trillion places, or more, before we finally see a one. Rounding to almost any level would make our values zero, as we saw in Table 3. But because there's at least some non-zero value there, regardless of how small, we can achieve a return of zero percent. And this would allow us to bridge the gap!

$$R_{EquityFund} = \prod_{i}^{n} \frac{107}{100} \times \frac{0.00000001}{0.00000001} \times \frac{104}{100} - 1$$

R=7%

R=4%

$$R_{EquityFund} = \prod_{i}^{n} \frac{107}{100} \times \frac{0.00000001}{0.00000001} \times \frac{104}{100} - 1$$

R=0%

Can we agree to make a leap and allow ourselves to violate basic mathematical principles and permit our earlier beginning and ending market values of zero to yield a return of zero percent? What would the harm be? And perhaps more important, what would the benefits be?

KEEP THOSE CARDS & LETTERS COMING

We appreciate the occasional e-mail we get regarding our newsletter. Occasionally, we hear positive feedback while at other times, we hear opposition to what we suggest. That's fine. We can take it. And more important, we encourage the dialogue. We see this newsletter as one way to communicate ideas and want to hear your thoughts.

	Rates of Return			
	12/31/2004 – 3/15/2005	3/16/2005 – 7/10/2005	7/10/2005 – 12/31/2005	12/31/2004 – 12/31/2005
Equity Fund	7.00%	#DIV/0!	4.00%	11.28%
Bond Fund	3.00%	0.99%	2.94%	7.08%
Money Market	1.00%	0.96%	0.91%	2.90%
Portfolio	3.67%	0.97%	2.56%	7.36%

Table 5: Calculating the returns

If we were to agree that we could do this, it would allow us to *bridge the gap*, and provide a return for this asset class for the full period (see Table 5). Thus, it would allow us to compare the equity fund's return with an index for the full year, thus showing whether the decision to back out of equities for a period was a good one or not.

Not only am I suggesting that we do something that's no doubt in conflict with what many feel is the rule (thou shalt not bridge gaps) but also violates basic mathematical principles. But is it worth it?

Please give this some thought and let us know.

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April 28-29	Performance Measurement Forum	Las Vegas, NV (USA)	April 22, 2005
May 9-10	Introduction to Performance Measurement Training	San Francisco, CA (USA)	May 6, 2005
May 11-12	Performance Measurement Attribution Training	San Francisco, CA (USA)	May 6, 2005
May 16-17	Performance Measurement, Attribution & Risk (PMAR™ III)	New York, NY (USA)	May 13, 2005
June 15-16	Performance Measurement Forum	Copenhagen, Denmark	June 10, 2005
July 19-20	Introduction to Performance Measurement Training	Chicago, IL (USA)	July 15, 2005
July 21-22	Performance Measurement Attribution Training	Chicago, IL (USA)	July 15, 2005
August 8-9	Introduction to Performance Measurement Training	Bermuda	August 5, 2005
August 10-11	Performance Measurement Attribution Training	Bermuda	August 5, 2005
September 12-13	Introduction to Performance Measurement Training	New York, NY (USA)	September 9, 2005
September 14-15	Performance Measurement Attribution Training	New York, NY (USA)	September 9, 2005
October 4-5	Introduction to Performance Measurement Training	Toronto, Canada	September 30, 2005
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October 17-18	Introduction to Performance Measurement Training	Boston, MA (USA)	October 14, 2005
October 19-20	Performance Measurement Attribution Training	Boston, MA (USA)	October 14, 2005
October/ November	Fixed Income Attribution (FIA™) Symposium	New York, NY (USA)	TBA
November 9-10	Performance Measurement Forum	Brussels, Belgium	November 4, 2005
November 14-15	Introduction to Performance Measurement Training	Los Angeles, CA (USA)	November 11, 2005
November 16-17	Performance Measurement Attribution Training	Los Angeles, CA (USA)	November 11, 2005
December 1-2	Performance Measurement Forum	Orlando, FL (USA)	November 25, 2005
December 6-7	Introduction to Performance Measurement Training	Washington, DC (USA)	December 2, 2005
December 8-9	Performance Measurement Attribution Training	Washington, DC (USA)	December 2, 2005

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