

PERFORMANCE PERSPECTIVES

with David Spaulding



VOLUME 3 – ISSUE 9

MAY 2006

Since 1990, The Spaulding Group has had an increasing presence in the money management industry. Unlike most consulting firms that support a variety of industries, we focus on the money management industry.

Our involvement with the industry isn't limited to consulting. We're actively involved as members of the CFA Institute (formerly AIMR), the New York Society of Security Analysts (NYSSA), and other industry groups. Our president and founder regularly speaks at and/or chairs industry conferences and is a frequent author and source of information to various industry publications.

Our clients appreciate our industry focus. We understand their business, their needs, and the opportunities to make them more efficient and competitive.

For additional information about The Spaulding Group and our services, please visit our web site or contact Chris Spaulding at CSpaulding@SpauldingGrp.com

ANNUALIZING RETURNS

While recently doing some design work for a client I was reminded of a discovery I made about a year ago, while visiting another client. They showed a report with something like the following:

Prior Year Cumulative Return	Prior Year Annualized Return
9.54%	9.51%

The problem? How can an annual return have a different cumulative return and annualized return? Since, as you'll recall, the formula for annualization is:¹

$$\text{Annualized Return} = \sqrt[n]{1 + \text{Cumulative ROR}} - 1 = (1 + \text{Cumulative ROR})^{1/n} - 1$$

if $n=1$, then the annualized return should equal the cumulative return. Indubitably.²

So, why do we have a problem? Why don't these returns agree? Because our client used the day-count convention to determine the value of n . That is, they counted the number of days in the period. While this is fine when we're dealing with *any date to any date* ranges, it can yield some interesting (and erroneous) results if we fail to take into consideration a leap year, as in the case of 2004. And to count the number of days (in this case, 366) and divide by 365 (which our client did) will cause an error. So what should they have divided by? 366, of course.

Okay, that was easy right. Well, in this case, yes; but what about cases crossing leap years that exceed a year in time. What do we divide by then? That's where it can get a tad tricky.

Here's my suggestion:

- if the date doesn't span a leap year, or if the date spans a leap year but doesn't include February 29, divide by 365.
- if the date spans a leap year and includes February 29, divide by 365.333.

I plan to write an article for *The Journal of Performance Measurement*[®] where I will go into greater detail as to how this suggestion arose. As always, your comments and thoughts are invited. Also, if you have a system that calculates returns using some divisor logic, please let us know what you do.

¹ We show the two approaches: either take the n th root of the cumulative return or raise the cumulative return to the reciprocal.

² An explanation is perhaps in order. I was reading "Sun Tzu Was a Sissy" by Stanley Bing and came across this word. My only memory of it was from The Three Stooges, which I watched in the 50s – I had never seen it in print before. Given that Bing later referenced this comic trio suggests that he, too, may have learned the word from that show. It's now our goal to popularize this word!

The Journal of Performance Measurement®:

UPCOMING ARTICLES

How to Build Your Own Linking Formula – A Unified Linking Theory on Contributions
– Gary Kahan

Obstacles to Overcome in Performance Measurement
– Stefan Tangen

Actual Results Achieved by 401(k) Investors over a Market Cycle – Surprising Conclusions
– Colin Fernandes, Shiv Mehta

Performance Attribution Method – Update
– Teri Geske

Fixed Income Attribution – a Flexible Approach
– Per Sögaard-Andersen Ph.D. and Lars Bjerre Hansen

The Attribution of Portfolio and Index Returns in Fixed Income
– Timothy Lord

The Journal Interview
– Gary Brinson

MONEY-WEIGHTED BENCHMARKS

If you've been reading our newsletter for a while, you no doubt are aware of my fondness for money-weighted returns. But a question arises: if you're going to show a money-weighted portfolio return, shouldn't the index return be money-weighted, too? Of course!³ But how do you calculate a money-weighted index?

To my knowledge, this has never been addressed in print before (at least I haven't seen it – if you have, please enlighten us).

To calculate a money-weighted index return, we are essentially asking "what would the return have been had the investor bought the index?" There are three different components to our process:

- the starting value
- the ending value
- the cash flow values.

Starting Value

For the start, we need to figure out the equivalent number of shares or units the investor would hold in the index. This is based on the portfolio's market value. Here, we simply divide the market value by the index value. Example:

Starting Value = \$100,000

Index value on trade date before start date = 1101.20

Equivalent number of units/shares in the index = 90.81.

$$\text{StartingNumberOfIndexShares} = \frac{\text{StartingPortfolioValue}}{\text{StartingIndexValue}} = \frac{100,000}{1101.20} = 90.81$$

Cash Flows

Whenever there's a cash flow, we need to figure out the equivalent number of index shares/units the cash flow amount represents. Once this is done, we either add this number to the starting number (in the case of inflows) or reduce it (in the case of outflows). The formula is identical to what we do at the start. Example:

Contribution = \$40,000

Index value on trade date before cash flow date = 1210.10

Equivalent number of shares/units of the index bought (because it's an inflow) = 33.06.

$$\text{NumberOfSharesBought} = \frac{\text{CashFlowAmount}}{\text{IndexValue}} = \frac{40,000}{1210.10} = 33.06$$

³ You may disagree and many do. So, we will typically show time-weighted returns. And there are good reasons for this. In a forthcoming article I will go into greater detail on this.

Ending Value

At the end, we simply want to know the dollar value equivalent of the index, given the accumulated shares/units and the current index value. Example:

$$\text{Accumulated number of shares/units} = 90.81 + 33.06 = 123.87$$

$$\text{Ending index value} = 1305.19$$

$$\text{Dollar value of index position} = 161,667.55.$$

$$\text{IndexDollarValue} = \text{SharesHeld} \times \text{IndexValue} = 123.87 \times 1305.19 = 161,667.55$$

Calculating the return

Now that we have the ingredients, we can calculate our return, just as we do with a portfolio. The only other pieces we need are the start and end dates, as well as the cash flow dates:

$$\text{Start date} = 3/15/05$$

$$\text{End date} = 5/1/06$$

$$\text{Cash flow date} = 12/1/05.$$

To demonstrate this, we will use the Modified Dietz as a proxy for the IRR.⁴

We can now calculate the cash flow weighting factor:

$$W = \frac{CD - D}{CD} = \frac{412 - 261}{412} = 36.65\%$$

where

CD = number of calendar days in the period

D = number of days from the starting date to the cash flow date.

We can now calculate our return:

$$R_{\text{IndexMoneyWeighted}} = \frac{EMV - BMV - C}{BMV + W \times C} = \frac{161,667.55 - 100,000 - 40,000}{100,000 + 0.3665 \times 40,000} = 18.90\%$$

Starting Position			
Start Date	Starting Market Value	Starting S&P Value	Equivalent Share pos'n in S&P
3/15/2005	100,000	1101.20	90.81

Ending Position				
End Date	Ending S&P Value	# of S&P Equivalent Shares Held	"Market Value" of S&P Pos'n	Market Value of Portfolio
5/1/2006	1305.19	123.87	161,667.55	155,000.00

⁴ My apologies to my friend Carl Bacon – if he were dead he'd be rolling around in his grave right now.

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.

Cash Flow			
Cash Flow Date	Cash Flow Amount	S&P Value on Trade Date Before Cash Flow Date	Equivalent Share Amount of Cash Flow
12/1/2005	40,000	1210.10	33.06

"CD"	Date Range – Start to End	412
"D"	Date Range – Cash Flow to Start	261
	Weight of Flow Date Range	36.65%

Index Return	18.90%
--------------	--------

Make sense? An article on this topic will be offered in the near future.



THE SPAULDING GROUP'S 2006 INVESTMENT PERFORMANCE MEASUREMENT CALENDAR OF EVENTS

DATE	EVENT	LOCATION	DEADLINE TO REGISTER
June 15-16	Performance Measurement Forum	Dublin, Ireland	June 9
July 11-12	Introduction to Performance Measurement Training	Chicago, IL (USA)	July 5
July 13-14	Performance Measurement Attribution Training	Chicago, IL (USA)	July 5
July 18-19	Introduction to Performance Measurement Training	Denver, CO (USA)	July 11
July 20-21	Performance Measurement Attribution Training	Denver, CO (USA)	July 11
August 8-9	Introduction to Performance Measurement Training	Sydney, Australia	August 4
August 10-11	Performance Measurement Attribution Training	Sydney, Australia	August 4
September 12-13	Introduction to Performance Measurement Training	Boston, MA (USA)	September 4
September 14-15	Performance Measurement Attribution Training	Boston, MA (USA)	September 4
September 18-19	Introduction to Performance Measurement Training	Los Angeles, CA (USA)	September 11
September 20-21	Performance Measurement Attribution Training	Los Angeles, CA (USA)	September 11
October 9-10	Introduction to Performance Measurement Training	New York, NY (USA)	October 2
October 11-12	Performance Measurement Attribution Training	New York, NY (USA)	October 2
October 18	Fixed Income Attribution Symposium FIA	Philadelphia, PA	October 17
October 23-24	Introduction to Performance Measurement Training	Dallas, TX (USA)	October 16
October 25-26	Performance Measurement Attribution Training	Dallas, TX (USA)	October 16
November 9-10	Performance Measurement Forum	Milan, Italy	November 3
November 14-15	Introduction to Performance Measurement Training	Portland, OR (USA)	November 7
November 16-17	Performance Measurement Attribution Training	Portland, OR (USA)	November 7
Nov. 30 - Dec. 1	Performance Measurement Forum	Orlando, FL (USA)	November 24
December 6-7	Introduction to Performance Measurement Training	Chicago, IL (USA)	December 1
December 8-9	Performance Measurement Attribution Training	Chicago, IL (USA)	December 1

*For Additional information on any of our 2006 events,
please contact Christopher Spaulding at 732-873-5700*

*The Journal of Performance Measurement®
Third Annual International*

F I A

Fixed Income Attribution

SYMPOSIUM

October 18, 2006

Save The Date!

TRAINING...

Gain the Critical Knowledge Needed for Performance Measurement and Performance Attribution

TO REGISTER:

Phone: 1-732-873-5700

Fax: 1-732-873-3997

E-mail: info@SpauldingGrp.com



The Spaulding Group is registered with CFA Institute as an Approved Provider of professional development programs. These programs (Introduction to Performance Measurement & Performance Measurement Attribution) are eligible for PD credit hours as granted by CFA Institute.

Customized In-House Training is also available. Please call or email for additional details.

INTRODUCTION TO PERFORMANCE MEASUREMENT

A unique introduction to Performance Measurement specially designed for those individuals who require a solid grounding in all aspects of performance measurement. The Spaulding Group, Inc. invites you to attend Introduction to Performance Measurement on these dates:

July 11-12, 2006 – Chicago, IL
 July 18-19, 2006 – Denver, CO
 August 8-9, 2006 – Sydney, Australia
 September 12-13, 2006 – Boston, MA
 September 18-19, 2006 – Los Angeles, CA
 October 9-10, 2006 – New York, NY
 October 23-24, 2006 – Dallas, TX
 November 14-15, 2006 – Portland, OR
 December 6-7, 2006 – Chicago, IL

15 CPE Credits upon course completion

The Spaulding Group is registered with CFA Institute as an Approved Provider of professional development programs. This program is eligible for 12 PD credit hours as granted by CFA Institute.



PERFORMANCE MEASUREMENT ATTRIBUTION

A day and a half devoted to this increasingly important topic. The Spaulding Group, Inc. invites you to attend Performance Measurement Attribution on these dates:

July 13-14, 2006 – Chicago, IL
 July 20-21, 2006 – Denver, CO
 August 10-11, 2006 – Sydney, Australia
 September 14-15, 2006 – Boston, MA
 September 20-21, 2006 – Los Angeles, CA
 October 11-12, 2006 – New York, NY
 October 25-26, 2006 – Dallas, TX
 November 16-17, 2006 – Portland, OR
 December 8-9, 2006 – Chicago, IL

11 CPE Credits upon course completion

The Spaulding Group is registered with CFA Institute as an Approved Provider of professional development programs. This program is eligible for 10 PD credit hours as granted by CFA Institute.

