Performance Perspectives
with Dave Spaulding

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 Association for Investment Management & Research (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.

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

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Ending our first year!

This issue marks the last issue in our first publishing year of this newsletter, which we consider quite a feat. On two prior occasions, I began a newsletter, and found it difficult to keep it going. But this time, with the help of Sabina Hastings, I've been able to keep it going.

I recently read *Called to Question*, a book on spirituality by Joan Chittister, a Benedictine sister. In her prologue she references Thaisa Frank and Dorothy Wall who wrote, "Writing is an audacious act to begin with." Sister Chittister responded "Writing makes a person very vulnerable. It opens you to public criticism, to ridicule, to rejection. But it also opens conversation and thought. It stirs minds, and touches hearts. It brings us into contact with our souls." She added later "Writing is the way I think things through." Anyone who writes can surely relate to much of what she has written.

Just as speaking up at a meeting and voicing an opinion exposes you to criticism or worse, writing your thoughts and ideas down multiplies your exposure. We can see this in the U.S. Presidential campaign, where comments that were made 30 years ago have not been forgotten. And a senator's track record is public domain and open to questions.

So, when someone writes a book, pens an article, or offers a newsletter, they are opening themselves up for opposing views and challenges. But I'm okay with this, thus I continue my writing.

This newsletter is a monthly opportunity for me to express comments and offer information on a variety of performance-related issues. Given the dynamics of our segment of the industry, I (hopefully) shouldn't run out of material. And, given that I'm a rather opinionated person (just ask Betty, my wife, or Carl Bacon, Jamie Hollis, or countless numbers of others), this is a great venue for me.

I hope that you will find what we offer here of interest, even if you don't always agree with what is shared.

I have recently completed a total rewrite of my first book, *Measuring Investment Performance*, (*i.e.,* it's not a new edition but a brand new book). The title is *The Handbook of Investment Performance Measurement & Attribution*. Right now, it's in the review stage. We expect to have it published and available by the end of the year.

Geometric Attribution and Interaction

To quickly refresh your memory, the difference between arithmetic and geometric attribution is based primarily on how each defines excess return. These formulas

explain the differences:

$$ER_A = R - \overline{R} \qquad\qquad ER_G = \frac{R+1}{\overline{R}+1} - 1$$

where

R = portfolio return
$\overline{R}$ = Benchmark rate of return

There's quite a bit of controversy about which is better, which we're not going to address here. Rather, we're going to touch on a point of confusion. First, there's a belief that geometric attribution and geometric linking are the same thing; they aren't. As noted above, the way we look at excess return is the basic difference.

Another point of confusion has to do with the interaction effect. We've talked about interaction in the past. Some believe that geometric attribution won't have an interaction effect. This isn't true. As with arithmetic attribution, there will be an interaction effect; it's up to you whether or not you want it shown. For this discussion, we'll use the model Carl Bacon developed for attribution.[1] His model is essentially the geometric equivalent of the Brinson, Fachler (BF) model. And as with the Arithmetic version of the BF model, we can have an interaction effect, by substituting benchmark weight in the selection formula:

$$Selection = \overline{w}_i \times \left(\frac{(1+r_i)}{(1+\overline{r}_i)} - 1 \right) \times \left(\frac{1+\overline{r}_i}{1+R_S} \right)$$

where

$\overline{W}_i$ = benchmark weight
r_i = return for portfolio sector or security
$\overline{r}_i$ = return for benchmark sector or security
R_s = portfolio's semi-notional return, where

The interaction effect is then quite similar to the way it's shown in the arithmetic approach, excepting for the additional factor at the end:

$$R_S = \sum_{i=1}^{n} w_i \times \overline{r}_i$$

Explaining this additional factor isn't easy. As I understand it, it's what we need to get the math to work properly – not a terribly elegant explanation, but that's all I've got.

The key point is that geometric attribution does have an interaction effect, just as arithmetic does; it's up to you whether or not you feel it should be shown.

More commentary on Modified Dietz

I've commented previously about my opinion that the Modified Dietz yields a time-weighted rate of return.[2] Because I apparently don't have much of a life, especially since I've given up my political career, I continue to reflect on this topic. I'd like to opine further on this subject.

Much of this discussion centers around terminology – specifically, time- and money-weighting. Without clearly agreed upon definitions, there's bound to be confusion and disagreement.

The term *time-weighted* comes from the BAI standards.[3] Here we read: "The recommended rate is called 'time-weighted' because it is simply the weighted average of internal rates of return for the sub periods [*sic*] between cash flows with each weight being only the length of its corresponding subperiod [*sic*]."[4] To my knowledge, no one does a weighted average of internal rates of return. And yet, this term has stuck with us. Is there any formula that *weights time*? Well yes, several. For example, the Internal Rate of Return weights the time the flow is present, just as the Modified Dietz and the Modified BAI. Does this mean these formulas are time-weighted? Hardly.

[1]   Bacon, Carl, 2002, "Excess Returns - Arithmetic or Geometric? , *The Journal of Performance Measurement,* Spring : Pages 23-31

[2]   Spaulding, David, 2003, "Is the Modified Dietz Formula Money-weighted or Time-weighted?", *The Journal of Performance Measurement*. Spring: Pages 37-41.

[3]   BAI, 1968, *Measuring the Investment Performance of Pension Funds, (*Bank Administration Institute. 1968).

[4]   Ibid, Page 16.

Do any formulas *weight money*? Yes, the IRR, the Modified Dietz and the Modified BAI do. Are you confused yet?

Dietz offered an idea of what the term, time-weighting, means when he wrote "The time-weighted approach *computes a rate of return for each sub period.*"[5] Pretty simple, yes? Which would clearly qualify the Modified Dietz as being a time-weighted return, since that's what we're doing. But, if we calculate it over a long, extended multi-month period (without the benefit of geometric linking),[6] then we're no longer calculating a time-weighted return. Dietz took credit for introducing time-weighting, although he acknowledged that he initially referred to it as "the average return method."[7]

The terms "money-weighting," "dollar-weighting," and "time-weighting" are all essentially misnomers, as the "weighting" isn't the point. What's the point is the effect of the cash flows on the rate of return. Perhaps a simple definition like:

Time-weighted returns eliminate or reduce the effect of cash flows.

Money- or dollar-weighted returns are significantly impacted by cash flows.

If we said "time-weighting eliminates the effect of cash flows," then the Modified Dietz and any approximation method would fail the test, as we know there is going to be an impact because of the flow. The idea with an approximation method is to reduce this impact, thus the broader definition I offered earlier. I believe that Dietz would support this, as he wrote, "Since 1966, time-weighted rates of return have been the standard comparative measure in the industry. They are used to compute the return earned on the beginning portfolio for any given time period, with a number of methods existing for *diminishing the impact of cash flows*.[8]

There's currently a debate raging about the appropriateness of mandating the valuation of portfolios whenever a cash flow occurs, which would yield a true or exact time-weighted rate of return.[9] Dietz, too, remarked on this: "It is generally agreed that more frequent measurement periods (shorter time intervals) result in more accurate returns. Ideally, portfolio valuations should be calculated whenever a contribution or distribution takes place. This would eliminate the necessity of making assumptions as to the timing of cash flows and would simplify return computations. However, as a practical matter trustee/custodian banks and investment management firms usually do not have systems in place that allow for valuation more frequently than monthly."[10]

If we really consider what Dietz did with his formula, he simply wanted to incorporate a way to handle intra-period cash flows; he wasn't setting out to come up with an alternative to the Internal Rate of Return for money-weighting returns. The numerator reflects the money earned during the period while the denominator represents the base upon which this gain (or loss) is measured. We acknowledge that part of the gain comes from what we began the period with; and, if there were cash flows, we would be wrong not to include a portion of these, too. And that's what Dietz does. Lerit (1996) demonstrated how the problem with these approximation methods is how they respond to large flows, at the extremities of the time period, during volatile markets.[11]

As I stated at the beginning, there is confusion as to what the terms *time-weighting* and *money-weighting* mean. We recently conducted a "mini-survey" of performance measurement professionals, asking them to define these two terms. This table summarizes the responses, with each row representing an individual's response.

As you can see, there isn't a common theme at all, although there are a few points which several individuals raise. We can conclude that this is a confusing topic.

Now, back to my earlier claim. I've always considered the Modified Dietz formula to be time-weighted. After all, it's referenced as time-weighted in various places, such as by Dietz, the AIMR-PPS®,[12] and the GIPS® Handbook.[13] So, when I first heard it

[5]   Dietz, Peter O. and Jeannette R. Kirschman, 1983, "Evaluating Portfolio Performance," *Managing Investment Portfolios – A Dynamic Process,"* ed. Maginn, John L. and Donald L. Tuttle, Warren, Gorham & Lamont: page 622.
[6]   *I.e.,* where we only value the portfolio at two points – the beginning and the ending periods.
[7]   Dietz (1983), Page 613.
[8]   Dietz (1983), Pages 612-613.
[9]   I am, of course, referring to the proposed requirement of "Gold" GIPS to revalue portfolios for any cash flow (meaning, any flow, regardless of its size).
[10]   Dietz (1983), Page 623.
[11]   Lerit, Steven J., (1966), "Measuring the Impact of Cash Flows and Market Volatility on Investment Performance Results," *The Journal of Performance Measurement,* Winter: Pages 56-60.
[12]   AIMR Performance Presentation Standards Handbook, 1987, Pages 44-47.
[13]   *Global Investment Performance Standards Handbook*, 2002, 4-2.A.1 Page 3.

referred to as being money-weighted, it didn't make sense in light of the evidence. And, seeing none presented, my only conclusion was that this was an error. In addition, I was able to find several cases where the IRR and Modified Dietz yielded very different results.[14] But an important point: when we think about Modified Dietz, we think of it as a measure for sub periods (*e.g.,* months or quarters, as noted in the Dietz definition cited above) which are then geometrically linked.

Time-Weighting	Money-Weighting
Time-weighting is geometric compounding of returns.	Money-weighting is Internal Rate of Return (or its linearized approximation, the Modified Dietz).
Defining time-weighting is the linking of returns from consecutive time periods to determine the return for an extended period of time.	Defining money/dollar weighting is to calculate a return on a composite based on the beginning values for that time period- actually, as I'm reading this, maybe that is not the definition you are looking for - I use the phrase market-weighted but I have heard dollar-weighted used for this same thing; however, this might be referring to an individual account and weighting the dollars invested
Time-weighted total return is not affected by the timing of contributions and withdrawals. This makes them comparable over the same time periods against other managers' returns.	Dollar-weighting calculates, for example, higher returns when contributions are made in periods of down markets which later rally. This makes them not comparable to other managers' returns who have no control over the timing of contributions. Dollar weighting is useful back testing investment strategies that might create higher ending value, for example, by investing at certain times of the year rather than evenly throughout the year. We use this to show our children why it is better to save a little each month than spend now and delay savings until later.
Time-weighting: A performance calculation that negates the effect of varying asset levels.	Money or dollar weighting: A performance calculation that reflects the combined effects of the change on investment valuations and the varying portfolio size over time.
Time-weighting measures the return of the first dollar invested over a time period.	Dollar-weighting measures the average return of every dollar invested during a time period.
TWRR is a geometric linking of multiple periods of MWRR .	MWRR is a formula with money in the equation. Lots of equations are used.
I do not know how to define time weighted and dollar weighted because I have heard some many different things. I always thought Modified Dietz was time weighted and IRR was dollar weighted. I have heard Carl and some others say that Modified Dietz is really a combination of the two because the initial calculation is dollar-weighted, but the linking is time weighted. My understanding of the key difference is that the dollar weighted is influenced by when cash goes in and out of the account and that is part of measuring the returns whereas time weighted seeks to remove the effect of timing of cash flows.	
Time-weighting- a weighting methodology that mitigates the size and timing impacts of cash flows on returns. This methodology explains the change to the initial dollar invested at the beginning of the period.	Money- or Dollar-weighting- a weighting methodology that allows the timing and size of cash flows to impact returns. The calculation explains the change to the average dollar invested with in the measurement period.

[14]   One example is shown in my upcoming book, where the IRR yields a return of -96% while the Modified Dietz produces a return of well below -100% (quite an accomplishment – to lose more than all your money in a cash account).

Time-weighting	Money-weighting
Time-weighting attempts to better reflect the manager's decision-making performance, without any impact based on dollars in or out of the portfolio beyond the manager's control.	Dollar weighting is a better reflection from the investor's perspective of the absolute return on the investment, but doesn't reflect the time value of money.
Relative return for a given period linked together by relative returns for sub periods defined by no capital (in/out) flows, thus giving a total period relative return not affected by the levels of invested capital in the different sub periods. Relative return in a sub period with low invested capital impacts the total period relative return as much as relative return in a sub period with high invested capital.	Average relative return for a given period where the average return is decided both by the relative return in the sub periods with no capital (in/out) flows and the level of capital in these sub periods. Money weighted return is calculated as the interest rate that makes the discounted value of the subsequent cash flows equal the initial investment (= internal rate of return/IRR). Relative return in a sub period with low invested capital thus impacts the total period relative return less than relative return in a sub period with high-invested capital.
Time-weighting: method of capital flow handling that can be used to accurately calculate investment performance based on (manager) investment decisions and excluding the effect of (client) contributions & withdrawals. Time-weighting methodologies make the size and timing of cash flows unimportant. Daily valuation method and the original and modified Dietz are examples of time-weighting.	Money-weighted: method of capital flow handling that can be used to calculate the total growth; i.e. Growth due to investment decisions and contributions & distributions. An example is the internal rate of return calculation, which determines the constant rate that equates the ending market value with the sum of the future value of the beginning market value plus the future value of each cash flow.
The TWR method calculates the return per monetary unit invested in a portfolio (it could also be asset class or a security instead of a portfolio.). This means that cash flow has no impact on the calculation of the return on the portfolio and therefore it reflects true manager performance. Theoretically the method is independent of the absolute return of the portfolio. It is calculated as a simple geometric average of each sub period rates of return. Each sub period is defined as a period within the portfolio when no cash flow occurs.	The DWR method calculates the average return on the invested capital and it is basically calculated as the IRR on the portfolio. This means that the cash flow is included in the calculation and you only need to calculate the market value of the portfolio at the beginning and end of the period. Therefore this method can be used for calculating return on the portfolio, as the return is close related to the absolute return earned on the portfolio.

Over the past several months, I've had the opportunity to discuss this issue with several performance professionals, most notably Carl Bacon and other members of the European chapter of the Performance Measurement Forum. At a recent meeting of the group, Jose Menchero made a presentation which included some research he had done showing that in many cases, the Modified Dietz yielded a return that was closer to the IRR than the True Time-weighted rate of return.

I've also found other references that declare the Modified Dietz as being money-weighted.[15] But, there's supporting evidence to conclude that the only money-weighted return is the IRR.[16] So, it seems we have some conflicting, controversial, and confusing material.

First, I would hope that we could agree that the Modified Dietz can yield an approximation to both the true money-weighted return (IRR) and the true time-weighted rate of return. But what does this make the Modified Dietz?

[15]   For example, The Society of Investment Analysts, 1972, "*The Measurement of Portfolio Performance for Pension Funds*," Page 6.; Williams, Arthur III. 1992. *Managing Your Investment Manager*. Pages 176-180. ; Bain, William G. 1996. *Investment performance measurement*. Pages 57-58.

[16]   See, for example, AIMR Performance Presentation Standards Handbook. 1987. Page 66.; "The Addition of Venture Capital and Private Equity Provisions and Guidance to the Global Investment Performance Standards." Page 5.

I believe that the answer to our question, *is the Modified Dietz time-weighted or money-weighted*, depends on the context in which the formula is being used: when we're calculating the Modified Dietz for a short time period (*i.e.,* a sub-period, such as a month or a year), it is time-weighted, just as Dietz defined it himself. If, however, we broaden the period extensively, across multiple months and/or years (*e.g.,* a since-inception return), where we value the portfolio only at the beginning and at the end, then there will be times when it no longer approximates the true time-weighted rate of return and comes closer to the value achieved by the IRR. However, since there are many times when the results will be dissimilar, too, we can only conclude that it is approximating the money-weighted return. I fully believe that Dietz never intended his formula to be used in this fashion and would not favor it as a substitute for the IRR.

Lonely, no more (thanks!)

In our July issue, I asked for people to join me in commenting on "Gold" GIPS. Well, comment you have!

With over 70 people's responses currently on the CFAI website and with another 30 or so waiting to be added, the response has been fantastic! Thanks!"

Now, we move into the review stage, where the Country Standards Subcommittee (CSSC) will spend time looking at the comments and consider what, if any, changes should be made to what was proposed in the draft.

15 years and counting...

This month begins our 15th year in business. We've grown considerably over this time, in more ways than one. My vision of the business in 1990 was very different than what we've become; while we've continued to offer consulting, our narrower focus on performance measurement wasn't anticipated, nor were the host of services that we now provide. A favorite line of mine is "if you want to make God laugh, tell Him your plans." Well, our firm is a perfect example of this. It's been very much a case of seeing opportunities.

We greatly appreciate all the firms that have called upon us over the years. I'm especially grateful to our staff, particularly Patrick Fowler, who has assumed the #2 role in the firm.

When I started the firm, my older son, Chris, was 13 and my younger son, Doug, was 10; today, they both work for the firm. I've especially enjoyed the opportunity to meet so many wonderful people. I'd name some here, but would be afraid I'd leave way too many off.

Much has happened during this period, especially in regards to performance measurement. We're pleased that we've been given the opportunity to be active participants in this highly significant aspect of the investment business.

We're always looking for ideas on ways to improve and additional services to offer. So, let us know your thoughts.

One of the services we have offered in the past (and will continue to offer) is the collection of survey information. We have just begun collecting data from our 2004 Attribution Survey. This is a biennial Survey and we are very interested to see the indicators of any trends that may have developed since the 2002 Attribution Survey was published.

You can find the forms on our website. We hope you will take the time to participate.

http://www.spauldinggrp.com/attributionsurvey2004.htm

Our updated web store!

We're pleased to announce that our on-line ordering process has gotten a whole lot easier, with the introduction of our new web store. At this website, you can order most of our products and services. Please visit it and let us know what you think! (www.spauldinggrp.com/products.htm)

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2004
Performance Measurement Forum Schedule

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