

PERFORMANCE PERSPECTIVES

with David Spaulding



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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, our focus is 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.

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THE CONFUSING WORLD OF MODIFIED DIETZ

In the past I've touched on the issue of Modified Dietz from the standpoint of whether it's "time" or "money" weighted and, after much thought, reflection, and hammering by my friend Carl Bacon, have concluded that yes, it is money-weighted unless we link it, in which case it becomes an approximation to the time-weighted return.¹

You may be aware that the plan is for the GIPS standards to require compliant firms to revalue their portfolios when large cash flows occur effective January 2010.² The reason? Large flows impact the return's accuracy. We recognize that the Modified Dietz is only an approximation to the true, daily timeweighted return, but we are only willing to accept a certain degree of error.

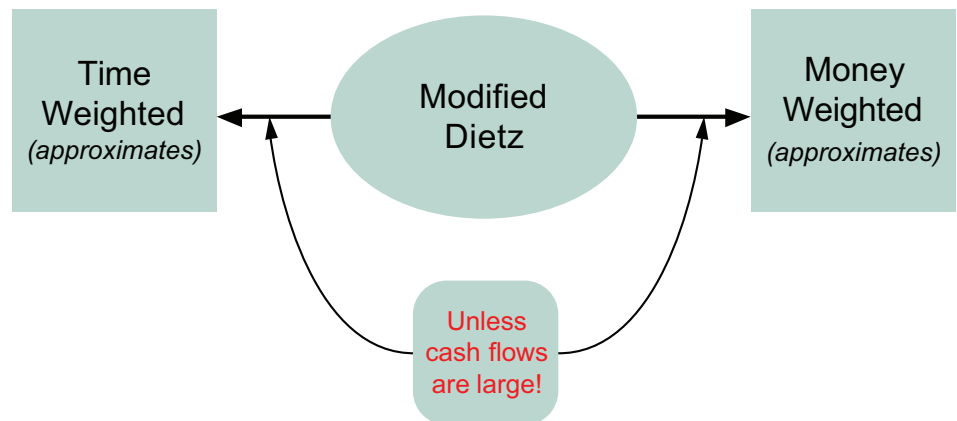


Table 1 shows four scenarios. In each case we have split the period into two, where in each case the manager's performance for the two periods is identical (1% and 5%). This means that the exact rate of return for all four periods is identical: 6.05 percent. In the first case (upper left), no cash flow occurs between the first and second periods; in the second case (upper right), we've introduced a 5% flow; in the third (lower left) we have a 10% flow; and finally, in the fourth case (lower right) we have a 25% flow. We've calculated the Modified Dietz for each case and have shown how the error increases as the flows grow. This exercise demonstrates the problems that can occur with Modified Dietz when there are large flows, especially in volatile markets.

It turns out that we have a similar problem when Modified Dietz is used to approximate the moneyweighted return.

¹ See our October 2005 issue for my *mea culpa*.

² *Global Investment Performance Standards*. February 2005. Para 2.A.2.b.

The Journal of Performance Measurement®:

UPCOMING ARTICLES

Multi-currency Attribution – Part 2 – Factoring in Interest Rate Differentials

– *Carl Bacon, CIPM,
StatPro Group*

Performance Attribution Against Transient Buckets

– *Timothy P. Ryan,
Hartford Investment
Management Company*

Derivative Products in Performance Attribution

– *Mathieu Cubilié, StatPro Group*

Evaluating Target Date Lifecycle Funds

– *Ronald J. Surz, PPCA, Inc.,
and Craig L. Israelsen, Ph.D.,
Brigham Young University*

The Role of Conceptual Context in Finding the Rate of Return

– *Yuri Shestopaloff, Ph.D.,
SegmentSoft Inc., and
Konstantin Shestopaloff,
SegmentSoft Inc.*

The Journal Interview

– *Douglas Lempereur CFA, CIPM,
FRA, Franklin Templeton*

Case #1: No cash flow				Case #2: 5% cash flow			
	Portfolio ROR	BMV	EMV		Portfolio ROR	BMV	EMV
1st half	1%	\$1,000.00	\$1,010.00	1st half	1%	\$1,000.00	\$1,010.00
2nd half	5%	\$1,010.00	\$1,060.50	2nd half	5%	\$1,060.50	\$1,113.53
C=	\$ -	Modified Dietz equals the True Time-weighted ROR		C=	\$ 50.50	Modified Dietz approximates the True Time- weighted ROR	
Mod D=	6.05%			Mod D=	6.15%		
True =	6.05%			True =	6.05%		
Difference =	0.00%			Difference =	0.10%		
Case #3: 10% cash flow				Case #4: 25% cash flow			
	Portfolio ROR	BMV	EMV		Portfolio ROR	BMV	EMV
1st half	1%	\$1,000.00	\$1,010.00	1st half	1%	\$1,000.00	\$1,010.00
2nd half	5%	\$1,111.00	\$1,166.55	2nd half	5%	\$1,262.50	\$1,325.63
C=	\$ 101.00	Modified Dietz's error is beginning to grow		C=	\$ 252.50	Modified Dietz's approximation is unacceptable	
Mod D=	6.24%			Mod D=	6.49%		
True =	6.05%			True =	6.05%		
Difference =	0.19%			Difference =	0.44%		

Table 1: Modified Dietz's error increases as cash flows grow larger

I recently met with a client who was going to use Modified Dietz as an approximation for the internal rate of return; this isn't an unusual practice. The difficulty, again, is that the return's accuracy as an estimator of the true, money-weighted rate of return (i.e., the IRR) can be impacted by large cash flows.

They were testing their system and came across a few occasions when the returns were less than -100 percent; quite a feat for a cash account.³ Here's the data they were dealing with:

- Length of period: 90 days
- Beginning market value: \$99,450
- Ending market value: \$343,610
- Cash flow: \$500,000
- Date of cash flow: 62nd day.

Recall that the Modified Dietz formula is:

$$ROR = \frac{EMV - BMV - C}{BMV + W \times C}$$

where:

EMV = ending market value

BMV = beginning market value

C = cash flow

W = weighting factor.

³ While it's possible to lose more than 100% with a margin account, to do so with a cash account would be a bit difficult.

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All submissions will be kept confidential. For more information, e-mail your questions to info@performancejobs.com or call us at 732-873-5700.

Let's calculate the weighting factor:

$$W = \frac{CD - D}{CD} = \frac{90 - 62}{90} = 0.31111$$

where:

CD = number of calendar days in the period (90)

D = day of cash flow (62).

We can now calculate the Modified Dietz return:

$$R = \frac{343,610 - 99,450 - 500,000}{99,450 + 0.31111 \times 500,000} = -1.0033 = -100.33\%$$

So, how did we manage to lose more than 100% of our money? By my calculations, we had a total investment of \$599,450 (\$99,450 + \$500,000) and ended with \$343,610, meaning we lost \$255,840. Hardly a 100% loss.

What do we get if we calculate the IRR? The IRR formula is as follows:

$$0 = -BMV - \frac{C_i}{(r + 1)^{t_i}} + \frac{EMV}{(r + 1)}$$

The interpretation of the signs is rather simple: we measure the result from our investments (putting money into the portfolio, which is equivalent to money coming out of our pocket) versus the amount we end up with (which is money coming back to us). Recall that because the IRR won't provide a direct solution if there are multiple cash flows, we must solve for the IRR ("r") iteratively.

Table 2 provides the solution. As you can see, I used the "bracketing" or "bisection" method to arrive at the solution.⁴ You'll also see that my first guess (which typically is the solution from Modified Dietz) failed to provide a solution to the equation. And why is this? Because the IRR appears not to support returns at or below -100%, which seems to be a deficiency, because there are obviously cases when one can lose more than 100 percent.⁵ We find that the solution is -76.19 percent.⁶ Makes more sense, yes? And, the error of more than 24% (which is also more than a 100% loss) is both extreme and nonsensical.

⁴ One of the goals of the IRR Standards Working Group we formed (see last month's issue) will be to identify the preferred method to arrive at the solution; other options include Newton-Raphson and Secant.

⁵ This, too, will be addressed by the IRR Standards Working Group.

⁶ How can the solution be -76.19% when the result is -52.56 and we're trying to equal zero? Because we've determined that the right answer is somewhere between -76.19% and -76.20%, since one is positive and the other is negative. While we could continue this iterative process for several more steps to find the answer that yields a zero answer, it would result in simply fractions of basis points that will end up rounding to -76.19%, since this number is closer to zero than -76.20 percent.



Save
the
Date!

Guess	Result
-100.33%	#NUM!
-99%	22,328,600.07
-80%	103,354.65
-60%	(180,379.68)
-70%	(100,059.91)
-75%	(24,349.91)
-77%	18,346.55
-76%	(4,139.98)
-76.50%	6,798.28
-76.25%	1,255.60
-76.10%	(1,999.07)
-76.20%	164.88
-76.15%	(920.00)
-76.18%	(269.77)
-76.19%	(52.56)

Table 2: Solving for the IRR

OUR NEXT BOOK PROJECT

We have decided to publish a book that will contain articles that we believe to be “classics” in performance measurement. Many are difficult to obtain and yet of great value. Others have “historical” significance, as they helped lay the groundwork for what we do today.

The genesis for this idea arose a few years back when it occurred to me that we could, in a sense, replicate a project that Charlie Ellis had undertaken, when he compiled a book containing classic articles in investments (*Classics: An Investor’s Anthology*). The book’s subtitle is also insightful: “The most interesting ideas and concepts from the literature of investing.” I wondered if we should compile a similar book of performance classics. We put the idea on hold until last Fall when we were approached by Jim Tzitzouris of T. Rowe Price who suggested we assemble a book with some of the articles that appeared in *The Journal of Performance Measurement*[®]. This gave us the necessary motivation to move forward with the idea. But we didn’t want to limit ourselves to articles from JPM.

Jim and I are the book’s editors. We considered quite a host of articles and came up with 23 that we felt are “classics.” While one may argue whether they’re (a) all “classics” or (b) whether we overlooked others that are worthy,⁷ this is our initial set. We expect to publish a subsequent version (Classics II) at some point in the future and will therefore welcome your input. The articles in this edition are (in no particular order):

1. Fama, Eugene F. “Components of Investment Performance.” *The Journal of Finance*. June 1972.
2. Sharpe, William F. “Mutual Fund Performance.” *Journal of Business*. (Special Supplement, January, 1966).
3. Treynor, Jack L. “How to Rate Management of Investment Funds.” *Harvard Business Review* (January-February, 1965).



⁷ We didn’t include any articles that are in our previous publication, *Readings in Fixed Income Performance Attribution*, although several are definitely “classics.”

Verifiers' Corner

A question seems to be cropping up more and more of late: how to handle the situation where the asset manager makes their model available to a third party, who in turn executes it for their clients? Are the assets of this third party the manager's? Do these accounts need to be placed into a composite?

I recall this being addressed by one of the committees I was on a few years back and we unanimously agreed that (a) these assets are not the managers and therefore (b) the manager doesn't need to be concerned with compositing the accounts.

What's the rationale behind this?

1. The manager doesn't have discretion over these assets; they're being managed by a third party.
2. How do you monitor the third party to ensure they have actually carried out the model?
3. What about the timing of the execution? What if there's a delay in the execution, might this invalidate the model if some of the changes are time-sensitive?

This version of a "wrap" account has been growing in popularity, thus the increased concerns among GIPS compliant firms. The bad news: these aren't your assets, so you can't include them in your firm assets; the good news: (a) you get to pocket the revenue and (b) you don't have to be concerned with capturing the account details for GIPS composite purposes.

4. Brinson, Gary P., L. Randolph Hood and Gilbert L. Beebower. "Determinants of Portfolio Performance." *Financial Analysts Journal*. July-August 1986.
5. Jensen, Michael. "The Performance of Mutual Funds in the Period 1945-1964." *Journal of Finance*. May 1968.
6. Brinson, Gary P. and Nimrod Fachler. "Measuring non-U.S. Equity Performance." *Journal of Portfolio Management*. Spring 1985.
7. Sharpe, William F., "Asset Allocation: Management Style and Performance Measurement." *Journal of Portfolio Management*. Winter 1992.
8. Ankrim, Ernest M. & Chris R. Hensel. "Multicurrency Performance Attribution." *Financial Analysts Journal*. March-April. 1994.
9. Singer, Brian D; & Denis S. Karnosky. "The general framework for global investment management and performance attribution." *Journal of Portfolio Management*. Winter 1995.
10. Fama, Eugene F. "Risk, Return and Equilibrium: Some Clarifying Comments." *Journal of Finance*. March 1968.
11. Grinold, Richard C. & Ronald N. Kahn. "Information Analysis." *Journal of Portfolio Management*. Spring 1992.
12. Goodwin, Thomas H. "The Information Ratio." *Financial Analysts Journal*. July/August 1998.
13. Modigliani, Franco & Leah Modigliani. "Risk-Adjusted Performance." *Journal of Portfolio Management*. Winter 1997.
14. Friend, Irwin & Marshall Blume. "Measurement of Portfolio Performance Under Uncertainty." *American Economic Review*. September 1970.
15. Dietz, Peter O. "Components of a Measurement Model: Rate of Return, Risk, and Timing." *Journal of Finance*. May 1968.
16. Dietz, Peter O. "Pension Fund Investment Performance--What Method to Use When." *Financial Analysts Journal*, January/February 1966.
17. Stannard, John C. "Measuring Investment Returns of Portfolios Containing Futures and Options." *The Journal of Performance Measurement*. Fall 1996.
18. Bacon, Carl. "Excess Returns – Arithmetic or Geometric?" *The Journal of Performance Measurement*. Spring 2002.
19. Cariño, David R. "Combining Attribution Effects Over Time." *The Journal of Performance Measurement*. Summer 1999.
20. Menchero, Jose. G. "An Optimized Approach to Linking Attribution Effects Over Time." *The Journal of Performance Measurement*. Fall 2000.
21. Lerit, Steven J. "Time-weighted vs. Money-weighted Returns." *The Journal of Performance Measurement*. Fall 1996.
22. Spaulding, David. "Contrasting Time- and Money-weighted Returns: When Each Should be Used." *The Journal of Performance Measurement*. Fall 2005.

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.

23. Menchero, Jose. "Risk-Adjusted Performance Attribution." *The Journal of Performance Measurement*. Winter 2006/2007.

Many of these articles are difficult (if not impossible) to find, so including them in this book will serve to make them available to a wider audience. We believe that this book will be a valuable edition to the serious performance measurement professional. Our book's title is Classics in Investment Performance Measurement and its subtitle is "Literature that has shaped the ideas and concepts of the performance measurement industry."

As you might imagine, we had to obtain permission to include any article that didn't appear in *The Journal of Performance Measurement*, which wasn't always an easy undertaking.

This project began a few months ago but there's still a lot to be done. All of the older articles have to be recreated from scratch. In addition, there's the typical formatting to be done, as well as a host of other tasks. We're hoping to have the book available mid-year. We'll provide more details in future issues of this newsletter.

LATE BREAKING NEWS

As we were finalizing this issue an article appeared in The Wall Street Journal that is worthy of comment: "SEC Aims to Let Firms Explain Crunch Thorns," page C1, March 14, 2008 edition. The teaser caption that appears on Page A1 caught my attention: "The SEC plans to tell companies that they can provide ranges for the values of securities that are hard to gauge." At the last European meeting of the Performance Measurement Forum, one of our members commented on how illiquid securities that had been impacted by the huge drop in sub-prime interest rates were, in some cases, overpriced because only stale prices were available. The alternative method for pricing involved discounting for future anticipated cash flows, but even this was far from accurate. Consequently, many portfolios were understating losses which would eventually appear.

From the article we read "[t]he guidance is aimed at giving investors more information about prices that are difficult to gauge because many markets have seized up in recent months." While I don't always agree with Massachusetts U.S. Representative and chairman of the House Financial Services Committee Barney Frank, his statement that "there is an urgent need to look at mark-to-market accounting" can't be denied. "The SEC move won't change the actual accounting for instruments torched by the credit crunch. In most cases, companies will still have to use market prices and so record big hits to profit[s]." Details will be forthcoming on the SEC's website. We do learn that "the SEC is considering recommending companies explain how they got the market-value number, disclose the extent to which the number depends on financial models, and provide the potential variability of that number, or how firm or sensitive to change it is, and a reasonable range." Federal Reserve Chairman Ben Bernanke "noted his agency's unease over the use of mark-to-market accounting and said it is 'one of the major problems we have in the current environment.'" Not surprisingly, "he added that there wasn't a clear alternative to the approach."

Imagine the impact the ability or call for a range of prices will have on your systems and calculations! I'm sure this isn't the last we'll hear on this interesting topic.



THE SPAULDING GROUP'S 2008 INVESTMENT PERFORMANCE MEASUREMENT CALENDAR OF EVENTS

DATE	EVENT	LOCATION
April 15-16	Introduction to Performance Measurement Training	New York, NY (USA)
April 17-18	Performance Measurement Attribution Training	New York, NY (USA)
April 24-25	Performance Measurement Forum (North America)	San Francisco, CA (USA)
May 6-7	Introduction to Performance Measurement Training	Los Angeles, CA (USA)
May 8-9	Performance Measurement Attribution Training	Los Angeles, CA (USA)
May 21-22	Performance Measurement, Attribution, & Risk (PMAR) Conference	Philadelphia, PA (USA)
June 3-4	Introduction to Performance Measurement Training	Baltimore, MD (USA)
June 5-6	Performance Measurement Attribution Training	Baltimore, MD (USA)
June 12-13	Performance Measurement Forum (Europe)	Paris, France
July 14-18	Performance Measurement Boot Camp	New Brunswick, NJ (USA)
August 25-26	CIPM Principles Prep Class	New Brunswick, NJ (USA)
August 27-29	CIPM Expert Prep Class	New Brunswick, NJ (USA)
October 7-8	Introduction to Performance Measurement Training	New York, NY (USA)
October 9-10	Performance Measurement Attribution Training	New York, NY (USA)
October 7-8	Introduction to Performance Measurement Training	San Francisco, CA (USA)
October 9-10	Performance Measurement Attribution Training	San Francisco, CA (USA)
October 22	Trends in Attribution Symposium (TIA)	Philadelphia, PA (USA)
November 4-5	Introduction to Performance Measurement Training	Boston, MA (USA)
November 6-7	Performance Measurement Attribution Training	Boston, MA (USA)
November 13-14	Performance Measurement Forum (Europe)	Amsterdam, The Netherlands
December 4-5	Performance Measurement Forum (North America)	Orlando, FL (USA)
December 9-10	Introduction to Performance Measurement Training	New Brunswick, NJ (USA)
December 11-12	Performance Measurement Attribution Training	New Brunswick, NJ (USA)

For additional information on any of our 2008 events, please contact Christopher Spaulding at 732-873-5700

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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:

April 15-16, 2008 – New York, NY

May 6-7, 2008 – Los Angeles, CA

June 3-4, 2008 – Baltimore, MD

October 7-8, 2008 – New York, NY

October 7-8, 2008 – San Francisco, CA

November 4-5, 2008 – Boston, MA

December 9-10, 2008 – New Brunswick, NJ

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Two full days devoted to this increasingly important topic. The Spaulding Group, Inc. invites you to attend Performance Measurement Attribution on these dates:

April 17-18, 2008 – New York, NY

May 8-9, 2008 – Los Angeles, CA

June 5-6, 2008 – Baltimore, MD

October 9-10, 2008 – New York, NY

October 9-10, 2008 – San Francisco, CA

November 6-7, 2008 – Boston, MA

December 11-12, 2008 – New Brunswick, NJ

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IN-HOUSE TRAINING

The Spaulding Group has offered in-house training to our clients since 1995. Beginning in 1998, we formalized our training, first with our Introduction to Performance Measurement class and later with our Performance Measurement Attribution class. We now also offer training for the CIPM program. To date, over 1,500 individuals have participated in our training programs, with numbers increasing monthly.

We were quite pleased when so many firms asked us to continue to provide in-house training. This saves our clients the cost transporting their staff to our training location and limits their time away from the office. And, because we discount the tuition for in-house training, it saves them even more! We can teach the same class we conduct to the general market, or we can develop a class that's suited specifically to meet your needs.

The two-day introductory class is based on David Spaulding's book, *Measuring Investment Performance* (McGraw-Hill, 1997). The attribution class draws from David's second book *Investment Performance Attribution* (McGraw-Hill, 2003). The two-day Advanced Performance Measurement Class combines elements from both classes and expands on them.