

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.

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

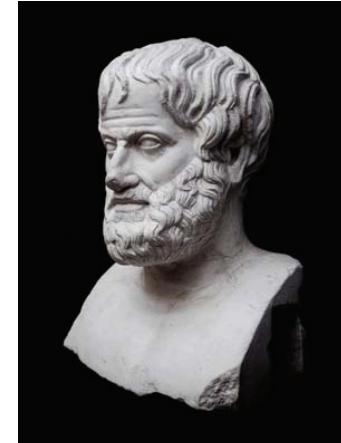
FIRST PRINCIPLES OF PERFORMANCE MEASUREMENT

Is it time that the field of performance measurement had some “agreed upon” “first principles”?

Before we go to far, what are “first principles”? Wikipedia defines them as “a basic, foundational, self-evident proposition or assumption that cannot be deduced from any other proposition or assumption.”

In the most recent issue, we addressed a “fundamental rule” of contribution. Until now, I've made reference to “rules,” though perhaps “first principles” might be a better term. I guess this is open to discussion / debate.

Here, I'm not speaking of things like GIPS® rules, which can be adjusted, eliminated, revised; rather, concepts which are really inherent in what we do.



Aristotle:
A “first principles” advocate

The CFA Institute's CIPM® program has encouraged the term “performance measurement” to encompass both risk and returns, and I'm fine with this. Thus, to speak of first principles of performance measurement would therefore mean ones that cover both risk and returns. And, within returns both the calculation of returns as well as performance attribution, including contribution.

Here are some thoughts on first principles as they might relate to rates of return.

Rates of return

I'll take a stab at a few:

- 1.0 Time-weighting eliminates or reduces the effect of cash flows. This is done in order to isolate (or reduce) the impact of client-directed cash flow decisions on the resulting performance, providing an effective way to judge the portfolio's management.
- 1.1 Exact measures of time-weighting eliminate the effect of cash flows. These are the ideal approach, though, because of the high cost of security pricing, liquidity issues, or lack of accurate pricing, such approaches may not always be feasible.
- 1.2 Approximate measures of time-weighting reduce the effect of cash flows. Factors contributing to the accuracy of these results include, though not limited to,
 - a. Time period over which the return is calculated. At one time, it was not unusual for firms to value portfolios only twice a year (at the start and at the end). The movement to quarterly resulted in increased costs (because of the need for more frequent valuations) but also more accuracy. Further reducing the periodicity to monthly is today considered minimal “best practice.”

The Journal of Performance Measurement®

UPCOMING ARTICLES

Fixed Income Attribution with Carry Effect

– *Tianci Dai, CFA, CIPM
Mark Elliott*

The Associative Property of Attribution Linking

– *Yindeng Jiang, CFA
Joseph Sáenz, Ph.D.*

New Look at Multi-Period Attribution: Solving Rebalancing Issue

– *Dmitry Cherkasov, CFA, CIPM*

Visualization, R, ggplot2, and Applied Finance in Performance Measurement

– *Rodolfo Vanzini*

Contribution Fundamentals

– *David Spaulding, DPS, CIPM*

- b. The timing of the cash flow within the period can also be a factor. For example, mid-point treatments (e.g., Original [Peter] Dietz method) was fairly common in the 1970s and 1980s. A move to day-weighting (e.g., Modified Dietz, Linked IRR (aka Modified BAI)) is considered an improvement over the mid-point approach. And while the mid-point method was, at one time, acceptable for GIPS compliance, it no longer is.
 - c. Another factor is to recognize the impact of large cash flows, which can distort the results. Consequently, to revalue the portfolio for large flows is recognized today as best practice.
- 2.0 Money-weighting takes cash flows into consideration. It is ideally suited for measuring the performance of managers who control cash flows (e.g., private equity managers) and to report the performance of the client (e.g., “personal rates of return”). With money-weighting, we revalue the portfolio only at the start and end of the period, regardless of the period’s length.
- 2.1 The exact method for money-weighting is the internal rate of return (IRR).
 - 2.2 An approximation method for money-weighting is Modified Dietz. While it can and does frequently provide results that are quite close to the IRR, there are times, which may be unpredictable, when the differences can be significant. Consequently, firms that employ Modified Dietz should strongly consider a move to the IRR.
 - 3.0 We geometrically link subperiod (e.g., days, months, years) returns in order to compound the results. Arithmetic linking (simply adding returns) is not valid, as it fails to incorporate the effects of compounding.
 - 4.0 Annualization results in average returns that take compounding into consideration. Simple averages would result in returns that would not, if re-linked, produce the original return. Simple averages may be inputs into various risk measures (e.g., Sharpe ratio), but should generally not be reported as they serve no useful purpose.
 - 4.1 It is not appropriate to annualize returns for periods less than one year. Doing so would violate a fundamental rule, that past performance is not an indication of future results.¹

Okay, so this is very much a “first cut” at the idea of creating “first principles.” I’ll look to do more in the coming issues.

What are your thoughts? Is this a worthwhile exercise?

¹ I wonder if this should be a “first principle.”

GIPS® PREPARATION, IF IT'S NOT IMMEDIATELY IN YOUR FUTURE

We were recently asked the following:
 “Do you have any recommendations or best practices we should be employing now to provide an easier transition to GIPS reporting in the future?”

I'll share with you what I shared with the sender:

1. *Identify the strategy(ies) that each account is in (as well as has been, over the past five years or so, in case there were changes)*
2. *Look over the prior five years or so and identify accounts that have since terminated; what strategy(ies) were they in?*
3. *Ensure the portfolio return calculation meets the GIPS requirements.*
4. *Begin to create composites. Establish policies as to timing to (a) add new accounts, (b) remove terminated accounts, and (c) handle situations where an account changes a strategy (therefore, removing from one and adding to another)*
5. *Think about rules that would cause an account to be considered not representative of the strategy. For example, if a client imposes restrictions such that the account wouldn't represent the strategy. Document these rules.*
6. *Think about error correction. What level of errors would they consider to be “material.” Material could be interpreted as a level of error that might cause the prospect to draw a different impression of the firm.*
7. *Create composites for all strategies. Calculate composite returns using an asset-weighted approach. If they have software that can support composites, great; if not, they can either use Excel or purchase such software. These composites should include currently active accounts as well as accounts that had been managed in the strategy but have since terminated.*



My colleague, John D. Simpson, CIPM, added the following:

I'd add that they should start to identify an appropriate benchmark for each strategy/composite, and/or determine if the benchmarks they have been using are appropriate. This includes thinking about how the benchmark strategy might differ from their strategy in significant ways that may be important to disclose (e.g., exclusion of sectors or countries; use of derivatives or leverage).

Also they might want to glance at the sample composite presentations in the GIPS standards, to get a sense of what they will need to show. They might want to try to see what their competitors show on their composite presentations as well, if possible.

I think this is a good start; there's a lot more they could do, but I think these are some important steps.

We recommend to our new GIPS verification clients that we begin with a “GIPS Planning Session,” aka “GPS Session.” This is our proprietary approach to providing clients with a “grounding” in the Standards, and ultimately a “road map” to compliance.

To learn more, please contact Chris Spaulding (CSpaulding@SpauldingGrp.com), Steve Sobhi (SSobhi@SpauldingGrp.com), or Patrick Fowler (PFowler@SpauldingGrp.com).



PUZZLE TIME

Last month's puzzle

I found the puzzle from the *Math: An Integral Part of Happiness* page on Facebook.

I think this is a great puzzle to demonstrate the power of 2. There have been many.

I started by constructing a spreadsheet, to figure out the equation for the doubling:



		0.1
Folds	1	0.2
	2	0.4
	3	0.8
	4	1.6
	5	3.2
	6	6.4
	7	12.8
	8	25.6
	9	51.2
	10	102.4

The 10th fold is simply

$$2^{10} \times (0.1)$$

And so, we can extend this to a more general form:

$$2^{\text{Folds}} \times (0.1)$$

I simplified the notation a bit:

$$2^x \times (0.1)$$

And so, to determine the number of folds for the value 102.4, we would solve this equation:

$$2^x \times (0.1) = 102.4$$

Easy, right? Well, if you've been away from this kind of math for decades as I have, you'll need some help. Granted, this is probably high school math, but I graduated nearly 5 decades ago, and so I turned to something we didn't have when I was in High School: Google!

KEEP THOSE CARDS & LETTERS COMING

We appreciate the emails we receive regarding our newsletter. Mostly, 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.

I simply entered “how solve equation with power of x,” and it pointed me to a variety of pages. I settled on this one: <http://www.regentsprep.org/regents/math/algtrig/ate8/exponentialEquations.htm> or, if you prefer a shorter version: <http://tinyurl.com/z5c4fhk>.

Here I found what I was looking for:

Solve for x , to the nearest thousandth.	Answer
$5^x = 7$ OR $\log_5 5^x = \log_5 7$ $x = \log_5 7 = \frac{\log 7}{\log 5} \approx 1.209$	$\log 5^x = \log 7$ $x \log 5 = \log 7$ $x = \frac{\log 7}{\log 5} \approx 1.209$ <ul style="list-style-type: none"> Take the log of both sides. Apply the log rule for exponents shown above. Solve for x. Estimate answer using calculator. <p>OR</p> $\log_5 5^x = \log_5 7$ $x = \log_5 7 = \frac{\log 7}{\log 5}$ <ul style="list-style-type: none"> log base 5 can also be used as a solution method notice how the \log_5 of 5^x is really composition and yields x. notice the change of base formula used at end

And so, to solve for this equation $2^x \times (0.1) = 102.4$

I employed their example: $2^x = 102.4 \div (0.1) = 1024$

$$\begin{aligned} \log 2^x &= \log 1024 \\ x \log 2 &= \log 1024 \\ x &= \log 1024 \div \log 2 \end{aligned}$$

I then turned to Excel to find the solution $x = 10$.

Okay, so I knew that. This simply was a way to confirm the approach to use.

Next, we need to convert the 384,000 km to mm, by simply multiplying by 1 million. We can now use the same approach to solve this equation:

$$2^x \times (0.1) = 384,000,000,000$$

$$2^x = 384,000,000,000 \div (0.1) = 3,840,000,000,000$$

$$\log 2^x = \log 3,840,000,000,000$$

$$x \log 2 = \log 3,840,000,000,000$$

$$x = \log 3,840,000,000,000 \div \log 2$$

Again, turning to Excel, we find the solution: $x = 42$

Given the relatively low number of folds, we can test this in two ways. First, by running the numbers through Excel:

And of course the second is to fold a sheet of paper 42 times. Sadly, I tried but I had to give up as I couldn't find a paper quite large enough. Oh, darn...

Folds	Length (mm)
1	0.2
2	0.4
3	0.8
4	1.6
5	3.2
6	6.4
7	12.8
8	25.6
9	51.2
10	102.4
11	204.8
12	409.6
39	34,945,504,389
40	109,951,162,778
41	219,902,325,555
42	439,804,651,110

We had only one reader submit the correct answer: Anthony Howland. I think the puzzle seemed more challenging than it actually is. Excel helped me a great deal in figuring out the correct formula for each fold, so it was just a matter of reversing direction to find the solution.

August Puzzle

I received the following email from Hans Braker:

Hi David,

Because the August issue of the Newsletter came out during my holidays and I was very busy after that time, I did not have time to really dive into the very intriguing coins puzzle.

After reading the - pretty amazing - answer in today's issue, I dove into it again and found a paper describing the general approach: <http://math.uni.lodz.pl/~andkom/Marcel/Kule-en.pdf>.

In the second table in the paper, you find in the lower right cell that if you have at most $(3^3-1)/2 = 13$ coins (plus the additional one) you can find an odd one in three weighings. So that's the Newsletter puzzle and its solution.

At the end of that paper, it is shown that you can find an odd coin from 40 coins using four weighings, and also exactly how to perform these four weighings. Quite amazing!

That example helped me really understand what is meant by the coding of the coins provided in the table in the Newsletter. The coding provides the exact three weighings:

- *Coin 1 is marked "LLL". You put coin 1 on the left scale at each weighing. If each of the three weighings shows that the left side is lighter (so the outcome is "LighterLighterLighter"), then it must be the case that coin 1 is odd and lighter.*
- *Coin 2 ("HHB") is put on the right scale at the first two weighings, and not on any of the two scales at the third weighings.*

So you could provide the actual three weighings (known in advance). From the codings, the three weighings must be (0 being the known good coin):

- *First weighing: left scale 1,3,5,7,9 and right scale 0,2,4,6,8*
- *Second weighing: left scale 1,3,8,10,13 and right scale 0,2,7,9,11*
- *Third weighing: left scale 1,6,7,10,12 and right scale 0,3,4,9,13*

If the outcome is for example LLH (left lighter, left lighter, left heavier), then coin 3 (marked "LLH") must be the odd coin and it must be lighter. If the outcome is HHL, then it must be the case that coin 3 was heavier (because HHL is opposite of LLH, as marked in the table as well).

Anyway, I thought you might be interested in the link.

*Kind regards,
Hans*

October Puzzle

This is the “4 Hats for 4 Gentlemen” puzzle.

(The host of a restaurant holds 4 hats in the coat room.)

After dinner, 4 gentlemen go to get their hats.

What is the probability that ALL four gentlemen (each) randomly receives the wrong hat?



I again used the *Math: An Integral Part of Happiness* page of Facebook. Good luck!

IPARM 2016

Once again I've been asked to speak at the annual iPARM conference in Sydney. I will speak at the conference and conduct a workshop.



To learn more, go here:

http://www.ibrc.com.au/newsletter_images/P-iPARM%20Australia%202016.pdf

THE SPAULDING GROUP'S 2016 INVESTMENT PERFORMANCE MEASUREMENT CALENDAR OF EVENTS

DATE	EVENT	LOCATION
November 3-4	Performance Measurement Forum	Barcelona, Spain
November 16	Asset Owner Roundtable Meeting	Austin, TX (USA)
November 17-18	Performance Measurement Forum	Austin, TX (USA)
December 6-7	Fundamentals of Performance Measurement	New Brunswick, NJ (USA)
December 8-9	Performance Measurement Attribution	New Brunswick, NJ (USA)
February 14-15, 2017	Fundamentals of Performance Measurement	Chicago, IL (USA)
February 16-17, 2017	Performance Measurement Attribution	Chicago, IL (USA)
March 7-8, 2017	Fundamentals of Performance Measurement	San Francisco, CA (USA)
March 9-10, 2017	Performance Measurement Attribution	San Francisco, CA (USA)

For additional information on any of our 2016 events, please contact Christopher Spaulding at 732-873-5700

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December 6-7, 2016 – New Brunswick, NJ March 7-8, 2017 – San Francisco, CA
February 14-15, 2017 – Chicago, IL

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CFA Institute

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February 16-17, 2017 – Chicago, IL

15 CPE & 12 PD Credits upon course completion

CFA Institute has approved this program, offered by The Spaulding Group, for 12 CE credit hours. If you are a CFA Institute member, CE credit for your participation in this program will be automatically recorded in your CE tracking tool.

CE Qualified Activity



CFA Institute

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, close to 3,000 individuals have participated in our training programs, with numbers increasing monthly.

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