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

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MAKING SENSE OF COMPOUNDING

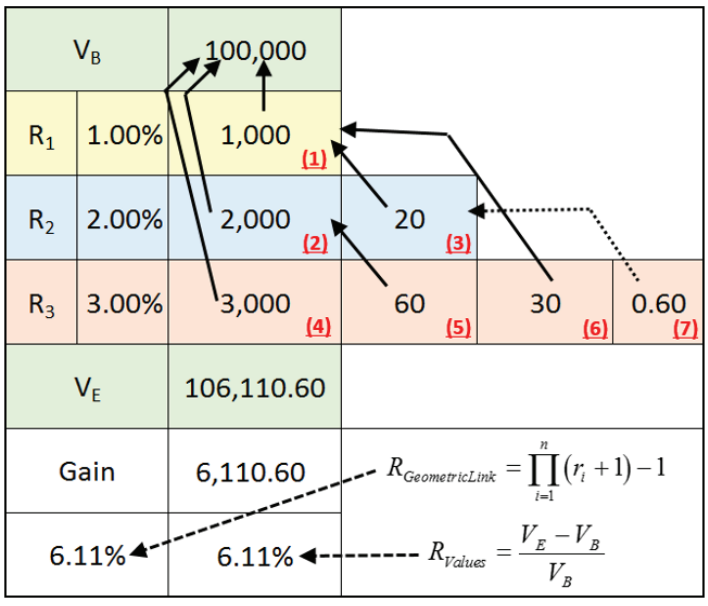
As you'd expect, in our Fundamentals of Investment Performance Measurement class we teach what I refer to as "multi-period performance measurement." That is, the mathematics behind us extending single period returns across time. This includes the concepts of compounding and annualization.

When it comes to compounding, I routinely ask, "why do we geometrically link our returns, rather than simply arithmetically link (i.e., by adding them)?" Depending on the level of the students, I this question might be met with total silence, or perhaps one or two who'll respond "in order to compound the returns." Correct!

I often begin with a simple example: a 1% return in the first period (e.g., month), 2% in the second, and 3% in the third. I point out that if we simply add these values, we get 6.00%, and ask if there's anything wrong with it. Again, someone may mention the absence of compounding. When we geometrically link these returns, we get 6.11%, and I point out that the 0.11%, or 11 basis points, comes from compounding.

Okay, so what does that mean, exactly? What do we mean by "compounding"? Many are familiar with "compound interest," and may understand that subsequent gains build upon the earlier ones, but how can we make this even clearer?

I created an example using money to demonstrate what occurs, and I'm sharing it with you, as I believe it helps *drive home* what is meant by *compounding*.



The Journal of Performance Measurement®

Our beginning value is 100,000 ($, £, ¥, € etc.; it doesn't matter which). During the first period we get a return of 1.00%; this is followed by a return of 2.00%, and then 3.00 percent. Arithmet-ically, as noted above, we'd get 6.00% (i.e., 1% + 2% + 3% = 6%). But, we want to capture the compounding.

During the first period, we earn 1,000 on the 1.00% return (i.e., 1.00% of 100,000 = 1,000).

During the second period,

- we earn 2,000 on the 2.00% return (i.e., from the 2.00% of the initial 100,000)
- and, we also get 20 from applying 2.00% to the gain from the prior period (i.e., 2.00% of 1,000 equals 20).

During the third period, where our return is 3.00%,

- we get 3,000 from the initial investment (i.e., 3.00% of 100,000 yields 3,000)
- we get 60 from applying the 3.00% on what we earned from the prior period's gain from the 100,000 (i.e., 3% applied against the 2.00%, against the 100,000, or 2,000; 3.00% times 2,000 gives us 60)
- we also apply the 3% against the 1,000 we earned from the first period (i.e., 3.00% times 1,000 gives us 30)
- and finally, we get to apply the 3.00% against what we got in the second period, from applying its return against the gain from the first period (i.e., 3.00% times 20 yields 0.60).

When we add all these gains up, they total 6,110.60. This is added to our ending value. Our return for the period is therefore:

$$R_{Value} = \frac{V_E - V_B}{V_B} = \frac{106{,}110.60 - 100{,}000}{100{,}000} = \frac{6{,}110.60}{100{,}000} = 6.11\%$$

I subscripted this return with the word "value," since it's based on the starting (VB (100,000)) and ending (VE (106,110.60)) portfolio values.

Alternatively, we can geometrically link the returns:

$$R_{GeometricallyLink} =$$

$$\prod_{i=1}^{n}(r_i + 1) - 1 = (1.00\% + 1)(2.00\% + 1)(3.00\% + 1) - 1 =$$

$$(1.01)(1.02)(1.03) - 1 = 6.11\%$$

Hopefully, this rather simple example demonstrates what we mean by compounding: that is, how subsequent periods benefit from the prior period gains.

A funny thing about compounding: if we change the order of the returns, we get the same result! Many are surprised by this, but it's the commutative law of multiplication at work. I'll leave it to you to confirm this.

PUZZLE TIME

September Puzzle

Never before, have so many offered so many different possible solutions to the same puzzle.

Okay, perhaps a bit of hyperbole, but I was very impressed with the variety of ways to solve it. This puzzle was clearly a popular one (perhaps because you wanted to know how long I exercise!).

The puzzle, as posed:

I try to exercise several days a week, usually early in the morning. I exercise on an elliptical machine, and almost always for the same length of time. As I'm exercising, I will frequently make note of milestones along the way, when I'm 10% done, 25% done, etc.

One day I noticed that when I am 7/9ths of the way done, one minute later I'm 80% done. My question: how long do I exercise?

I relied on algebra, as shown in the accompanying box. I reference four notes:

$$\frac{7}{9}T + 1 = \frac{4}{5}T$$

$$(SeeNote - 1)$$

$$1 = \frac{4}{5}T - \frac{7}{9}T$$

$$(SeeNote - 2)$$

$$1 = T\left(\frac{4}{5} - \frac{7}{9}\right)$$

$$(SeeNote - 3)$$

$$1 = T\left(\frac{36}{45} - \frac{35}{45}\right) = T\left(\frac{1}{45}\right)$$

$$(SeeNote - 4)$$

$$45 = T$$

1) Technically, we're subtracting (7/9)T from both sides, which removes it from the left, leaving just the value 1, and causes the left to become (4/5)T - (7/9)T

2) We're factoring out the common term, T, both fractions on the right-hand side of the equation

3) We need a common denominator; the easiest way to do this is to multiply 4/5 by 9/9 (which is the same as multiplying by one) and 7/9 by 5/5 (again, the same as multiplying by one). This way, we have two fractions with the same denominator (45), allowing us to reduce the term to 1/45

4) We now technically multiply both sides by 45, which causes the right hand side to become T(45/45) which is the same as 1xT, which means just T; and the left side becomes 45, which is the solution: 45 minutes.

I used 80% rather than 4/5 in the puzzle, because I thought 4/5 would make it too easy. Or, at least point you in the direction I used. I thought realizing that 80% was the same as 8/10, or 4/5, would add just a very slight bit of difficulty.

Matthew Lyberg	USA
Michael Director	USA
Jon Gordon	Australia
Curt Graham	USA
Mark Christopher McCreath	UAE
Tom Stapleton	UK
Hans Braker	Netherlands
Stephanie Manter	USA
Dorian Young	USA
Neil Riddles	USA
Gerard van Breukelen	Netherlands

Some alternative approaches:

From Michael Director

You exercise for 45 minutes. I arrived at this solution by calculating that 7/9 = 77.78% and subtracting this from 80% to get a change of 2.22% completion for 1 minute. If we multiply 2.22 by 45 we get 100% therefore you exercise for 45 minutes.

From Neil Riddles

Closely related to Michael's

On average the workout is 45 minutes.

7/9 is 77.778%. It takes one minute to go from 77.778% to 80% finished, an additional 2.222%. If one minute equals 2.222%, then 100 divided by 2.222 equals a 45 minute workout

From Jon Gordon

Exercise time is 45 minutes.

You've trained for 7/9ths (=35/45ths) then one minute later 4/5ths (=36/45ths). This means that one minute equals 1/45th of exercise time so whole exercise time is 45 minutes.

From Dorian Young

You exercised 45 minutes.

7/9ths = 70/90ths.

80% of 90 is 72 -- or 72/90ths.

2/90ths = 1 minute = 1/45ths.

Thus 45 minutes.

From Gerard van Breukelen

Very surprised and happy that I was the only one to have the answer to the August puzzle! A slightly different puzzle probably confuses us; this month you will get the normal amount of responses.

The formula is: 7/9 * "time of exercise" + 1 = 0.8 * "time of exercise". As we learned on high school: work with the same denominator, so: 70/90 * t + 1 = 72/90 * t, so 1 = 2/90 * t, so t = 45 minutes.

So you exercise 45 minutes, which is nice. Where do you find the time to do all that you do?!

I greatly appreciate Gerard's comments about me doing 45 minute workouts (at least one other was impressed, too). But then there's Anthony Howland:

Mixing fractions and decimals should not scare too many people and the algebra (1/(0.8-7/9)) gives us a tidy 45 minutes of training. Not enough for a proper workout though.

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.

But, to put things into perspective, my somewhat younger colleague, Anthony, is quite a swimmer, having swam the English Channel, as well as other rather long and challenging distances. Consequently, 45 minutes is not a big deal.

October Puzzle

John Simpson travels a lot for our company. This gives him a chance to meet lots of people, from all parts of the USA. Last month (September), John flew to five different US cities on business and he flew a different airline each time. During each trip he chatted with the person next to him, and no two people he talked to were held the same job.

From the information below, determine the date John made each flight (each was on a Wednesday, exactly one week apart, starting on September 2nd), the airline he flew, his destination, and the profession of the person who sat next to him on each flight.

1. Three consecutive flights were, in order from first to last, the flight John took with Alaska Air, the flight where he sat next to the Pension Fund Trustee, and the flight he took to Atlan-ta.
2. John sat beside the Risk Analyst on a flight some time earlier in the month than the one he took to Seattle.
3. The week he flew United was some time earlier in the month than the trip to Boston, which was some time earlier in the month than the trip where he sat next to the Portfolio Manager.
4. It wasn't on the trip to San Diego where John sat next to the Performance Analyst.
5. John didn't fly Southwest on his trip to Seattle, and he didn't fly Alaska Air on the trip where he sat next to the Risk Analyst.
6. Atlanta was not John's destination on the trip where he made the acquaintance of the Portfolio Manager.
7. The Delta flight was exactly two weeks before the flight where John passed the time chatting with the Compliance Officer.

Dates: September 2nd, September 9th, September 16th, September 23rd, September 30th

Airlines: United, Delta, American Airlines, Southwest, Alaska Air

Destinations: Atlanta, Boston, Chicago, San Diego, Seattle

Seat Mates: Compliance Officer, Portfolio Manager, Performance Analyst, Risk Analyst, Pension Fund Trustee.

FROM OUR READERS

Anthony Howland sent the following note, in response to our August 2015 newsletter's "WHAT DO WE AGREE ON? AS IT TURNS OUT, NOT MUCH!"

Hi Dave,

… and what do WE agree on? Surely there must be something!

Well, 2 out of 3 ain't bad!

I cannot dispute compounding returns and also agree that GIPS is best practice.

However, I disagree with the "correct" method for annualisation (and of course its spelling!)

I think we may have had this conversation before, but I attach a spreadsheet that explains my methodology and reasoning. The main driver behind my choice is that it is the most "internally consistent" method – reasons noted in the spreadsheet. As with many of these topics, it comes down to an opinion but that's what makes it interesting!

All the best

Anthony

From Todd Juillerat

Hi, Dave. In reading your "Performance Perspectives" newsletter, I noted your comments about the CIPM program's ten-year anniversary. Surely that's a notable accomplishment, and worthy of your "shout-out."

I also believe kudos should go to you (and TSG broadly) for generating momentum via the "Blue Ribbon Committee" that began work to create what I believe we planned to call "CIPA" which I think stood for Certificate in Investment Performance Analytics (or maybe the "A" was for Attribution … I really don't remember, which I should because I think I came up with it…). In any event, I haven't forgotten "the story behind the story"!! And, I still have the P&I story that covered this in June 2004 (which included a fantastic quote from Mr. Patrick Fowler!).

THE SPAULDING GROUP'S 2015 INVESTMENT PERFORMANCE MEASUREMENT CALENDAR OF EVENTS

DATE	EVENT	LOCATION
November 5-6	Performance Measurement Forum	Prague, Czech Republic
November 18	Asset Owner Roundtable Meeting	Phoenix, AZ (USA)
November 19-20	Performance Measurement Forum	Phoenix, AZ (USA)
Nov. 30 – Dec. 4	Virtual PMAR – An online conference event	
December 8-9	Fundamentals of Performance Measurement	New Brunswick, NJ (USA)
December 10-11	Performance Measurement Attribution	New Brunswick, NJ (USA)

For additional information on any of our 2015 events, please contact Christopher Spaulding at 732-873-5700

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IAWatch
COMPLIANCE NEWS, GUIDANCE & BEST PRACTICES

Backtested ads have always required care, even more so post-Lucia ruling

Published on: 10/15/2015

Advisers have long grappled with advertising and marketing rules less than clear on topics like backtesting only to witness the **SEC**'s five commissioners being unable recently to agree where the legal lines get drawn with that performance advertising technique.

The issue draws attention thanks to last month's 3-2 Commission decision barring adviser **Ray Lucia** from the industry over a PowerPoint presentation shown at seminars designed to gain him new clients (**IA Watch**, Sept. 4, 2015). A rare public dissent from two commissioners followed the decision (**IA Watch**, Oct. 8, 2015).

The pair – now-former SEC Commissioner **Daniel Gallagher** and Commissioner **Michael Piwowar** – accused their brethren of "rulemaking by opinion" given that the Advisers Act doesn't define or mention backtesting.

Advisers at risk

Some back the pair. "This is one of those 'where did that come from?'" decisions, says **David Spaulding** of **The Spaulding Group** in Somerset, N.J. His firm specializes in advertising regulations. "You're just making rules up and it does put advisers at risk when this happens," he adds.

While **Tina Mitchell**, senior compliance consultant with **Core Compliance & Legal Services** in San Diego, calls the Lucia verdict "fascinating," she says the result shouldn't surprise. "The SEC has never liked" the use of hypothetical past performance, she notes. Mitchell has seen many SEC exam deficiency letters over the years that support her contention. "They're always going to find problems" with its use, she adds.

Advisers Act rule 206(4)-1 (Advertisements by Investment Advisers) doesn't mention backtesting. **Morgan Lewis** has defined it as the "use of theoretical performance" that applies an investment strategy "to historical financial data. The backtested results show investment decisions that theoretically would have been made had the given strategy been employed during the particular past period of time.... The SEC staff regards backtesting as highly suspect because the adviser can run the backtested model again and again until it gets the results it wants."

The 3-2 Commission ruling also cited Lucia under Advisers Act section 206 (Prohibited Transactions), which includes language forbidding "any act, practice, or course of business which is fraudulent, deceptive, or manipulative."

Kara Brown joins the ranks of those who applaud the view of Gallagher and Piwowar. "To be rulemaking via cases like this is truly not their job," says the former counsel/CCO who joined the ill-fated adviser **F-Squared Capital** after it ran into its own enforcement case over advertising (**IA Watch**, March 12, 2014).

Tips to keep your ads out of trouble

If a firm pursues backtested performance advertising, "the compliance officer should be very knowledgeable about the process" that produced the backtested result, Brown recommends. "Make sure the methodologies and the assumptions are absolutely clear." Keep good records to support the calculations, consider hiring an expert to verify the results and know which customers and potential clients will see the ads, she continues.

There's little question Lucia's PowerPoint was misleading, says Spaulding. The adviser didn't maintain records to support what he did, relied on hypothetical inflation rates back to the 1960s and carved out numbers designed to make him look good, he adds. Anyone who remembers the 1970s recalls high inflation rates. For Lucia to use a 3% inflation rate in his PowerPoint was clearly misleading, adds Mitchell.

But the Commission's verdict – based on questionable law – "does create a risk for anyone who wants to do backtesting," Spaulding notes.

Spaulding recommends advisers adopt a GIPS rule requirement for backtested performance: keep it separate from actual performance. "I'd put them on separate pages," Spaulding suggests.

More tips

If you have to use backtested results, go overboard with disclosure, have detailed compliance P&Ps around its use and periodically test the data to ensure it remains accurate, Mitchell recommends.

The best advice is to use historical rates and returns and stay away from backtested data, Mitchell stresses. "Nothing good ever comes out of" the use of backtested performance, she adds.

Lucia's wasn't the first SEC case to attack backtested data and it won't be the last. Brown believes advisers who come up with a new strategy for their institutional clients may have little choice but to turn to a backtested presentation. She worries the Lucia case may chill its use on even the more sophisticated institutional client. In light of Lucia, it would be foolhardy to use backtesting to lure retail clients, she adds.

Commissioners dissent used in appeal

The Gallagher/Piwowar dissent appears in Lucia's appeals court challenge of the Commission's ruling, which was filed Oct. 5 in the U.S. Court of Appeals for the D.C. Circuit. The appeal doesn't refer to the Advisers Act but rather challenges the constitutionality of the SEC's ALJ system – another topic raised by Gallagher and Piwowar.

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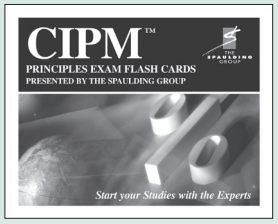

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