Understanding Investment Returns

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It's about time.

Never walk across a river just because the average depth is four feet.[1]

Background

I'll never forget one of my very first client meetings upon entering the advisory business back in 1991. His retirement portfolio had grown from $100,000 to $250,000 in the past ten years and he didn't mind letting me know that computed to a 25% per year return; after all, the math was clear: 250,000/100,000 = 2.5. Since the portfolio was 250% greater, 250/10 years = 25% per year! Simple!

Listening to people talk about computing investment returns is often like listening to people who just came back from a Las Vegas vacation… they all either made money or broke even.

Often people will look at the average returns of the investments they own and assume it's the return they, too, achieved. Sometimes this isn't the case.

Return Measures

As we know, market returns do not occur in a orderly and consistent manner. While it may be reasonable to expect that the return of a given investment might be approximately 12% over the next five years, we know it won't happen at the rate of 1% per month. The individual monthly returns – indeed, even the annual returns over that five year period – will be distributed among a range of returns that often results in the bell-shaped curve you're probably familiar with.

Let's take a look at some long-term average returns for the most commonly used asset classes:

Long-Term Historical Annual Returns 1926-2009	**Geometric**	**Arithmetic**
	Mean	**Mean**
Large company stocks	9.8%	11.8%
Small company stocks	11.9	16.6
Long-term corporate bonds	5.9	6.2
Long-term government bonds	5.4	5.8
Intermediate-term government bonds	5.3	5.5
U.S. Treasury bills	3.7	3.7
Inflation	3.0	3.1

Source: Ibbotson SBBI 2010 Classic Yearbook ©Morningstar

Geometric vs. Arithmetic

Arithmetic return is the simple average of returns over a number of periods. You add-up the returns and divide by the number of returns, and viola… you have your average return. Geometric return is the compound return realized over time based on a series of returns.

Let's take a look at a some examples:[2]

First, consider a simple two-period example for a $1,000 investment:

Period	**Return**	**Portfolio Balance**
1	100%	$2,000
2	-50%	$1,000

[1] Bierwirth (1994)
[2] *The New Wealth Management*, Evensky, Horan, Robinson, John Wiley & Sons ©2011. Note these computations are for portfolios with no additions or withdrawals.

The arithmetic average is a simple average of the two observations, or 25%; but, the geometric return is 0 percent, because the ending value is the same as the beginning value.

Let's take a look at a more detailed example over a 10-year period. In this example the manager has demonstrated that s/he has just as much chance of gaining as losing. Again, starting with a $1,000 investment:

Period	Return	Portfolio Balance
1	-50%	$500
2	50	750
3	-10	675
4	10	743
5	-30	520
6	30	676
7	-20	541
8	20	649
9	-40	390
10	40	545

Arithmetic average return = 0%
Geometric return based on portfolio balance = -5.9%

If we are to assume that the chance of gaining or losing in the future is 50-50, it would be reasonable to assume the arithmetic return would be 0 percent. However, with a history of -6% as a compounded annual loss, the 50-50 argument would be a little hard to buy.

The arithmetic return is an unbiased estimate of a portfolio's expected future return for a particular period; the geometric return represents the fixed return required to achieve a specific return over a given period of time, and is therefore the best measure of past performance and a measure of expected returns over long periods of time based on the annual arithmetic return expected and the volatility of returns.[3]

The Impact of Variance

If there is any variance in the return series, the geometric return will always be less than the arithmetic return.[4] Variance "drain" is a descriptive term used to draw attention to the fact that an active manager will usually generate a variance of returns that's greater than a passive alternative, such as index funds or index exchange-traded funds (ETFs). In order to add value, the active manager must not only cover fees and transaction costs, but the cost of variance drain, as well.

This doesn't mean active managers should be avoided. After all, many can add value by managing downside risk and/or mitigate tax exposure. It is important, however, to know why a manager is being hired and what function s/he is to perform in the overall portfolio strategy.

Using Geometric and Arithmetic Returns

Fund	Geometric Return	Arithmetic Return
Ultra Fund	21.6%	28.7%
Alpha Fund	21.0%	23.4%

The approximate variance drain for Ultra Fund was 7.1% (Arithmetic minus Geometric), while the variance drain for Alpha Fund was 2.4%. For Ultra to achieve the same compounded return – the same ending value – as Alpha, Ultra had to achieve a much better arithmetic average return. Alpha had a lower variance drain.

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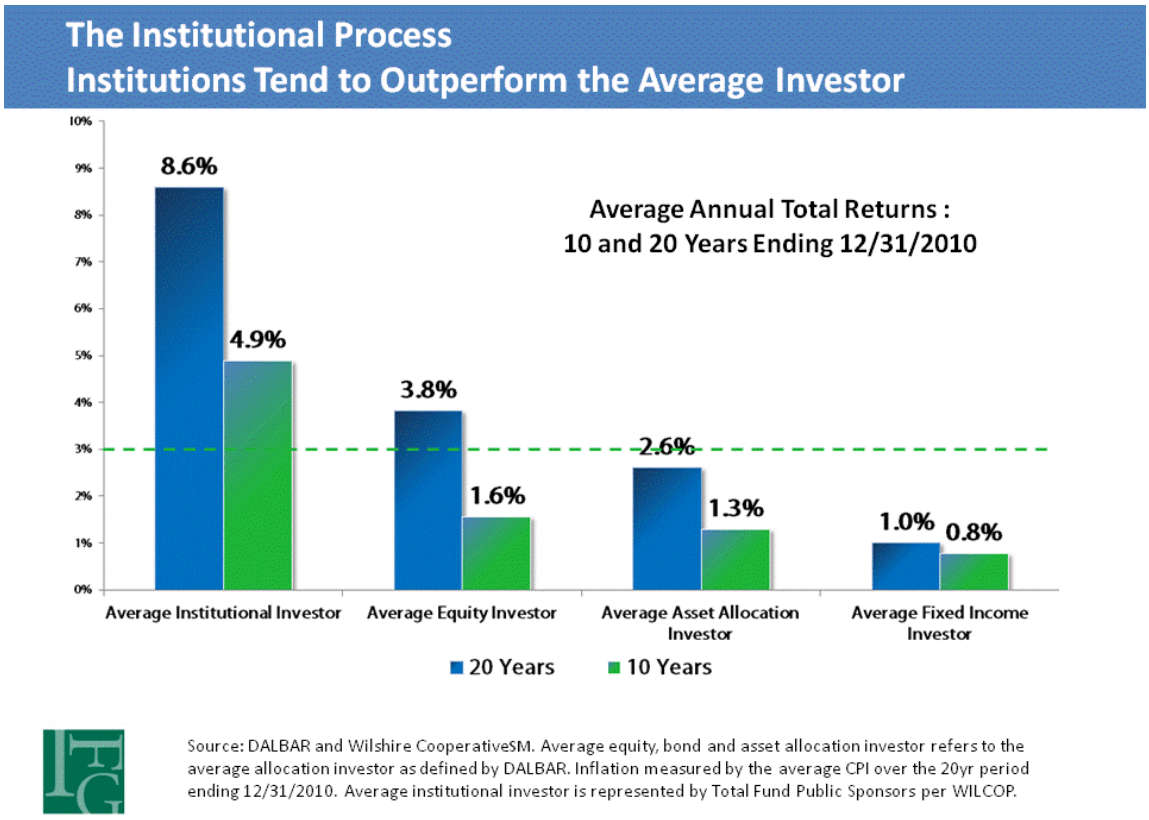
[3] *Equity Asset Valuation*, chapter 2 "*Return Concepts*", Pinto, Henry, Robinson, and Stowe, John Wiley & Sons, 2010.
[4] *Variance Drain*, tom Messmore, *Journal of Portfolio Management* (Summer 1995): 104-110.

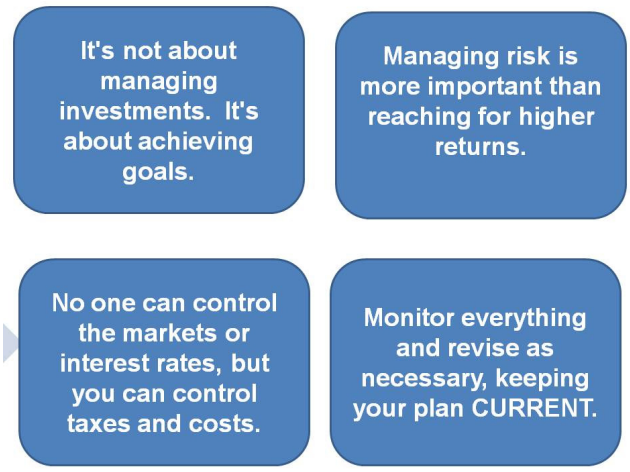
But, that's only a piece of the puzzle. While a manager may be doing a great job in managing risk vs. return for the investor, the investor often inserts him/herself into the equation by adding or withdrawing money during the process; and, that often does more harm than good.

How do individual investors do vs. the average institutional investor? Take a look at this data from Dalbar:



Source: DALBAR and Wilshire CooperativeSM. Average equity, bond and asset allocation investor refers to the average allocation investor as defined by DALBAR. Inflation measured by the average CPI over the 20yr period ending 12/31/2010. Average institutional investor is represented by Total Fund Public Sponsors per WILCOP.

As you can see, the average equity investor doesn't even come close to the average institutional investor. When you consider that most individual investors are investing through institutional managers (mutual funds either inside or outside their 401(k) or other retirement plans), it appears to lead to only one likely conclusion: Investors are inserting themselves into the management process through their deposit and withdrawal behavior. This brings us to the ***Four Pillars of Investment Success***:



Why is all this important? The fact is cash flows can have a huge impact on the investor's performance, as the Dalbar chart on the previous page seems to indicate. This is why two investors, using the same manager over the same period, can have two entirely different outcomes.

The Impact of Cash Flows

Consider this scenario: You've invested $500,000 with a manager who has a track record of achieving 11.6% average compounded return over the long term.[5] The same person who enlightened me about computing returns at the onset of this paper just might be the same person who believes in another exercise in simplistic math leading to the conclusion reflected in this chart to the right: If you invest $500,000 and withdraw 11.6% per year, you should come out about even, given this manager's track record.

	$	500,000
11.6%	$	499,868
11.6%	$	499,721
11.6%	$	499,556
11.6%	$	499,373
11.6%	$	499,168
11.6%	$	498,940
11.6%	$	498,685
11.6%	$	498,401
11.6%	$	498,084
11.6%	**$**	**497,730**

Of course, the assumption is based on the fact that returns never come evenly and consistently. As stated earlier when we referred to variance, they occur in often randomly.

Let's take a look at these two hypothetical return series. Both have the same average annual compounded return over a ten-year period – and they even have the same statistical variance of returns around the mean (average). But, do two investments with the same average return and the same

Starting Value:			
Year 1	35.0%	$	617,000
Year 2	30.0%	$	744,100
Year 3	25.0%	$	872,125
Year 4	20.0%	$	988,550
Year 5	15.0%	$	1,078,833
Year 6	10.0%	$	1,128,716
Year 7	5.0%	$	1,127,152
Year 8	0.0%	$	1,069,152
Year 9	-5.0%	$	957,694
Year 10	-10.0%	**$**	**803,925**
Compound Return:			11.6%
Average Return:			12.5%
Standard Deviation:			15.1%

	$	500,000
-10.0%	$	392,000
-5.0%	$	314,400
0.0%	$	256,400
5.0%	$	211,220
10.0%	$	174,342
15.0%	$	142,493
20.0%	$	112,992
25.0%	$	83,240
30.0%	$	50,212
35.0%	**$**	**9,786**
		11.6%
		12.5%
		15.1%

variance of returns provide the same outcome?

It should be noted that even though the return series of each investment is different – actually, all I did was reverse the order – the outcomes would have been identical if there had been no cash withdrawals from the investment. But, a retiree has no choice if the investments are funding a retirement lifestyle.

In both cases, the investors is withdrawing 11.6% per year from a portfolio that had a compound (geometric) return of 11.6% and an average (arithmetic) return of 12.5%. As you can see, there are now two very different outcomes.

[5] Purely hypothetical. I don't know of any investment that fits this description and you shouldn't assume it exists.

One investor made money and the other investor almost went broke, despite the fact the returns and statistical variance of the investments were both the same. The *order of returns* can impact outcomes *where withdrawals (or deposits) are involved*.
Of course, some people are still working and investing for retirement in the future! How do cash flows impact them?

It's no different. If you review that Dalbar chart a couple of pages back, you'll remember that the average individual investor typically underperforms the average institutional investor. For many, if not most, the reason appears to be grounded in market timing.

All the gurus on television are filling our heads every day with what stocks to buy, sell, or wait for the right time. Do we really believe the institutional money managers for the Harvard Foundation are listening for or following ANY of these tips?

Why Market Timing Doesn't Work

2009 Market Performance	S&P 500 Appreciation	# of Trading Days
Entire year	27.8%	252 days
Feb 9 – Mar 6	-21.4%	18
Mar 6 – April 24	26.8%	34
July 13 – Aug 7	14.94%	200

- Almost all positive returns occurred during 34 of 252 trading days.
- Almost 96% was attributable to 34-day run-up (Mar 6 –Apr 24)

This phenomenon has been repeated of many years in many markets with the same results.

Source: Ibbotson SBBI 2010 Classic Yearbook, 28 © Morningstar

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As you can see, it's hard to be right BEFORE things happen. Maybe that's why so few professionals really try to time the markets.

"But Jim, it's like Las Vegas! I have to be right only 51% of the time!"

Really? Let's take a look.

Here's some market data spanning an 88-year period. Notice, you had to be right 71% of the time just to match an index using a simple buy-and-hold strategy. In fact, if you'd been right 50% of the time, your 6.6% return would been about 30% below the buy-and-hold market returns.

Is Making the Right Call 51% of the Time Enough?

For the 88-Year Period from 1901-1988	Compound Return
Buy-and-Hold Stock Return	9.4%
Perfect Forecasting of All Bull/Bear Markets	15.8%
Correct Forecasting 50% of the Time	6.6%
Correct Forecasting of Bear Markets, 50% Bull Markets	8.7%
Correct Forecasting of 71% of Bear/Bull Markets	9.4%

Source: John Bowen, CEG Worldwide

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As Dalbar has shown us, investors are often their own worst enemy.

But, there's more…

Inflation – The Other Fly in the Ointment

If cash flows, variance, geometric vs arithmetic returns, and all those other niggling details aren't enough, there's something else to be concerned about – REAL returns.

Let's face it – if you make 3% and inflation is 3%, your real return is 0 percent. Inflation is an issue that has, or should have, real meaning particularly for a retiree. Take a look at this example:

The Impact of Inflation
Widow, age 54, 30-year life expectancy
4% Interest Rate
3% Inflation Rate
$2,500,000 invested

Year	(A) Capital Purchasing Power	(B) Interest Rate	(C) = A x B Real Yield
Now	$2,500,000	4%	$100,000
10	$1.860,235	4%	$ 74,409
20	$1,384,189	4%	$ 55,368
30	$1,029,967	4%	$ 41,199

Source: Asset Allocation, Roger C. Gibson, McGraw Hill, 4th Edition.

As you can see, our poor widow is losing purchasing power – just what her money will buy at the cash register - as she ages. At twenty years, with still maybe twenty years ahead of her, the income from her investments provide only about half the purchasing power she initially had. And, just as bad, the purchasing power of the remaining capital has declined significantly, as well.

Important note: Her income was certain. Her outcome was just as certain. But, she apparently didn't know it. No one ever explained it to her or she never bothered to learn.

"If you think education is expensive, try ignorance."
- Anonymous

Did I Mention Taxes?

Take a look at our widow in the chart above. If she was in the 28% marginal tax bracket, her 4% return would be more like 2.88% after taxes. With inflation at 3%, her after-tax real return is -0.12%.... and she's drawing-down her nest-egg. She loved knowing her income was certain; but, as I indicated above, so was her outcome.

So, investing for most of us isn't about getting rich – it's really about making sure we don't get poor – or at least trying to make sure. It's when we understand that that the phrase "asset management" begins to have some real meaning. And, for many, it's also about managing our behaviors.

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About James Lorenzen, CFP®, AIF®

Jim Lorenzen has been providing independent financial consulting services since 1991, specializing in retirement planning and wealth management advisory services.

Jim founded, built, and sold five successful businesses in the 1970s and has been a headline speaker at more than 500 conventions throughout the United States, Canada, and the U.K. for companies like Hearst, CapCities/ABC, Media General, Foster Grant, Hobie Cat, and scores of others. Articles by or about Jim have appeared in more than twenty-five publications, including *The Journal of Compensation & Benefits*, the Profit Sharing Council of America's *Insights*, as well as *The Wall Street Journal*'s *Smart Money*. Jim has also been interviewed for American Airlines' *Sky Radio*. Jim's prior business experience includes corporate finance and management consulting, both internationally.

Jim is a *CERTIFIED FINANCIAL PLANNER®* professional and has also been awarded the *ACCREDITED INVESTMENT FIDUCIARY®* designation from the Center for Fiduciary Studies in association with the Joseph M. Katz Graduate School of Business at the University of Pittsburgh. His articles on fiduciary issues have also appeared in the Journal of Compensation & Benefits. Jim is also licensed for insurance as an independent agent under California license #0C00742.

Jim grew up in Chillicothe, Ohio and Alexandria, Virginia, graduated from Emory & Henry College (Virginia) with a degree in economics and served in Vietnam with the U.S. Army before beginning his business career in California. He makes his home in the Mountain Meadows section of Moorpark where he lives with his wife Lourdes, and his 93-year-old mother-in-law, Leonore.

You can learn more about Jim Lorenzen on LinkedIn: http://www.linkedin.com/in/jimlorenzencfp, as well as on Twitter: @JimLorenzen

About The Independent Financial Group (IFG)

IFG is a Simi Valley, Ca.-based independent fee-only financial planner and Registered Investment Advisor (RIA). As an RIA, IFG is legally regarded as a fiduciary and accepts fiduciary status, in writing for all work performed for clients. All financial planning and investment advisory services are 'revenue-neutral' which means compensation is unaffected by the choices made. IFG is truly independent and requires that all client investment service providers not receive third-party hidden compensation of any description.

The IFG Credo

Every client deserves, and has the right to expect, an objective and unbiased advisor who is fully aligned with the client's goals, possesses a moral compass with strict standards of accountability, and who takes a straightforward, common sense collaborative approach, putting the client in control of a hassle-free process incorporating breakthrough technology and unparalleled flexibility… all with openness and transparency.

The IFG Philosophy

IFG does not believe than an advisor who offers retirement, property and casualty insurance, life insurance, and tax and estate planning can really do it all and serve a client's best interests. The "Jack of all trades" approach is more typically the mark of a product salesperson claiming to be a financial planner and advisor.

Clients want an non-conflicted advisor who is willing to accept fiduciary *status*; not simply claim a fiduciary *standard*. They expect clear transparency regarding their compensation, as well as clarity about what the

value the advisor can provide, such as helping clients getting their financial house in order and keeping it that way forever. Often, this is accomplished by avoiding mistakes that would blow-up their long term plans

It's not about being an investment genius.

Advisor value is often added is in the areas of tax efficiency, risk management, and cost control. Often, the correct solution to issues, like making the correct Social Security decisions and effectively integrating projected benefits into a client's plan, can mean tens of thousands of dollars to the outcome.

Building unified tax-efficient portfolios with little turnover and the assets located in the right tax vehicles – taxable, tax-deferred or tax-free – and helping clients to understand just how much they'll need to achieve their goals are all critical services with benefits that can far outweigh the fees they pay to actually achieve their goals.

Feel free to request the IFG "One Sheet" or the complete IFG Profile package.

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