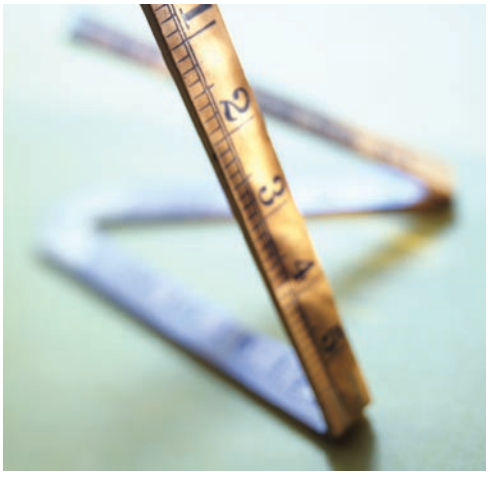

Measuring Stick

If you don't understand the assumptions behind return figures, mutual fund measurement may be misleading.

By Craig L. Israelsen

Measuring the performance of an investment is surprisingly complex. The math isn't hard, but nailing down the assumptions behind the reported returns can be. The total percentage return figures that are reported everywhere (Morningstar, Lipper, etc.) contain a variety of assumptions:

- Single lump-sum investment at the start of the period;
- No additional investments and no withdrawals during the period;
- Reinvestment of interest, dividends and capital gains;
- No accounting for taxes; and
- No accounting for inflation.

There is nothing wrong with these assumptions—we just need to remember that they do not completely simulate the reality of investing. For instance, very few people make a single lump-sum investment. On the contrary, those who have 401(k) retirement plans through their employers invest on a regular basis, usually monthly. The fact that most investors contribute via an annuity pattern creates an immediate disconnect with the lump-sum performance figures supplied to investors to help them gauge the success of their investments.

This study examines the difference in mutual fund performance when the first two assumptions are considered. Specifically, this study assesses the performance differentials in 40 of the largest mutual funds when three different investing assumptions are implemented: lump-sum investment of $1,000 into the fund, annuity investment of $1,000 into the fund at the start of each year and annuity withdrawal of $5,000 at the end of each year from the fund assuming a starting balance of $100,000.

THREE ASSUMPTIONS

As shown in "The Top 40," on page 80, the variation in return between the three assumptions can be dramatic. For instance, Fidelity Growth Co. had a 10-year average annualized return between Jan. 1, 2000, and Dec. 31, 2009 of -0.9%, assuming a single lump-sum investment on Jan. 1, 2000. Under a different assumption of a $1,000 investment at the start of each year, Fidelity Growth Co. produced a 10-year annualized return of 3.5%. This annuity investment return is more indicative of what actual investors achieved—at least those investors who were investing in that fund systematically over the 10-year period (such as 401(k) participants and/or investors who are using an automatic investment plan).

For those in retirement, the third measure of return in this analysis is most salient—namely the performance of a fund that is experiencing systematic withdrawals. In this case, Fidelity Growth Co. generated an annualized rate of rate of -2.9% over the 10-year period assuming a $100,000 initial investment on Jan. 1, 2000, and 10 subsequent $5,000 withdrawals at the end of each year starting on Dec. 31, 2000. The difference in performance over the same 10-year period across three different investing assumptions is significant and material.

Interestingly, mutual fund returns that are typically published by data providers assume a lump-sum investment—which is the most unlikely real-

world condition. As a result, investors end up selecting funds on the basis of their lump-sum performance despite the fact that they intend to invest money systematically or systematically withdraw money from that very same fund. The measurement system used to evaluate mutual funds typically doesn't match the intended use of the fund.

THE TOP 40

The performance of many of the 40 biggest mutual funds can vary widely based on the investing assumption used.

PERFORMANCE BASED ON THREE DIFFERENT INVESTING ASSUMPTIONS OVER THE 10-YEAR PERIOD FROM 2000–2009

Fund Name (Listed by Total Assets)	Morningstar Category	Lump Sum 10-Year Annualized Return	Annuity Investment 10-Year Annualized Return	Annuity Withdrawal 10-Year Annualized Return
PIMCO Total Return Instl.	Intermediate-Term Bond	7.65%	7.31%	7.74%
American Funds Growth Fund of America A	Large Growth	2.34%	3.30%	2.02%
Vanguard Total Stock Market Index Inv.	Large Blend	-0.27%	1.72%	-1.06%
American Funds EuroPacific Gr. A	Foreign Large Blend	3.72%	7.37%	2.38%
Vanguard 500 Index Investor	Large Blend	-1.03%	0.86%	-1.80%
SPDR S&P 500	Large Blend	-1.00%	0.91%	-1.78%
Vanguard Institutional Index Instl.	Large Blend	-0.91%	0.97%	-1.68%
Vanguard Total Bond Market Index Inv.	Intermediate-Term Bond	6.06%	5.37%	6.25%
American Funds Capital World G/I A	World Stock	7.16%	7.82%	6.98%
American Funds Capital Inc. Builder A	World Allocation	7.31%	6.00%	7.65%
Fidelity Contrafund	Large Growth	3.17%	5.05%	2.53%
American Funds Income Fund of America A	Moderate Allocation	6.01%	4.96%	6.30%
American Funds Invmt. Co of America A	Large Blend	2.50%	2.69%	2.44%
Franklin Income A	Conservative Allocation	7.78%	6.49%	8.10%
Vanguard Wellington Inv.	Moderate Allocation	6.15%	5.76%	6.26%
American Funds American Balanced A	Moderate Allocation	5.68%	4.09%	6.11%
American Funds Washington Mutual A	Large Value	2.81%	1.78%	3.12%
BlackRock Global Allocation Instl.	World Allocation	8.88%	9.11%	8.82%
American Funds Fundamental Investors A	Large Blend	3.60%	4.54%	3.30%
American Funds New Perspective A	World Stock	3.97%	6.18%	3.22%
Templeton Global Bond A	World Bond	10.66%	11.31%	10.49%
Dodge & Cox Stock	Large Value	5.65%	3.16%	6.30%
American Funds Bond Fund of America A	Intermediate-Term Bond	4.89%	4.02%	5.14%
Vanguard Total Intl Stock Index Inv.	Foreign Large Blend	2.29%	5.75%	0.96%
Vanguard Short-Term Investment-Grade Inv.	Short-Term Bond	4.92%	4.56%	5.02%
Fidelity Spartan 500 Index Inv.	Large Blend	-1.04%	0.87%	-1.82%
Vanguard GNMA Inv.	Intermediate Government	6.23%	5.65%	6.39%
Fidelity Diversified International	Foreign Large Blend	3.94%	5.45%	3.45%
Fidelity Growth Co.	Large Growth	-0.85%	3.53%	-2.90%
Vanguard Windsor II Investor	Large Value	4.16%	3.08%	4.47%
Davis NY Venture A	Large Blend	2.42%	2.46%	2.41%
Harbor International Instl.	Foreign Large Blend	7.26%	9.41%	6.61%
Fidelity Low-Priced Stock	Mid-Cap Blend	11.04%	8.43%	11.62%
Vanguard Interm.-Term Tx.-Ex. Inv.	Muni National Interm	4.96%	4.49%	5.10%
Vanguard PRIMECAP Inv.	Large Growth	3.23%	5.15%	2.57%
Thornburg International Value A	Foreign Large Blend	6.48%	8.06%	6.01%
First Eagle Global A	World Allocation	12.36%	11.37%	12.58%
Ivy Asset Strategy C	World Allocation	9.46%	10.35%	9.22%
PowerShares QQQ	Large Growth	-6.41%	2.68%	-13.56%
T. Rowe Price Growth Stock	Large Growth	1.12%	2.71%	0.54%

Source: Morningstar raw data. Calculations by author.

SEQUENCE OF RETURNS

Another fund in the Top 40—PowerShares QQQ—demonstrates big differences in the three measures of performance. QQQ failed to survive the entire 10-year period in the annuity withdrawal analysis, producing an annualized return of -13.6% by the time it hit a zero balance in the ninth year.

So, how do we anticipate which funds will perform better based on the intended use? The sequence of returns is the key. The timing, or sequence of returns, does not affect lump-sum performance. In other words, the order in which the annual returns occur does not affect the ending balance (and therefore the annualized percentage return) of a lump-sum investment scenario.

On the other hand, the sequence of returns can have a dramatic impact on performance under the assumption of annuity investment or annuity withdrawal (see "The Right Sequence," on page 81). For example, two different funds, Janus Overseas T and Vanguard Intermediate Term Tax-Exempt, end up with a 10-year lump-sum annualized return that is essentially identical (4.94% vs. 4.96%). But, based on the sequence of returns, Janus had a much higher annualized return under an annuity investment scenario (11.8% vs. 4.5%) than Vanguard. This is due to the extraordinary return of 78.1% in the last year of the time period.

An annuity investment return is a dollar-weighted return, whereas a lump-sum return is a time-weighted return. Over time, the growing balance of an annuity investment is more sensitive to the performance of the fund in the latter years of the measurement period.

THE DOLLAR-WEIGHTED OPTION

The annuity investment scenario involves $1,000 invested at the beginning of each year. Toward the end of the investment period, the amount of money at risk is growing due to each successive annual investment.

In the case of Janus Overseas, the large return of 78.1% in 2008 came at a perfect time, when the account balance was larger than it was at the start of the 10-year period—hence the term "dollar-weighted" return. In addition, Janus had several significant losses in the early years, which created a dollar-cost averaging effect in which the initial annual

THE RIGHT SEQUENCE

Two funds can have the same lump-sum annualized return over a 10-year period, but the sequence of returns can have a dramatic impact on performance under other assumptions.

PERFORMANCE BASED ON THREE DIFFERENT INVESTING ASSUMPTIONS OVER THE 10-YEAR PERIOD FROM 2000-2009

Annual Returns	Janus Overseas (%)	Vanguard Intermediate Tax-Exempt (%)
2000	-18.57	9.24
2001	-23.11	5.05
2002	-23.89	7.91
2003	36.79	4.46
2004	18.58	3.23
2005	32.39	2.24
2006	47.21	4.43
2007	27.76	3.43
2008	-52.75	-0.14
2009	78.12	10.22
10-Year Results		
Lump-sum annualized % return	4.94	4.96
Lump-sum growth of $10,000	$16,198	$16,231
Annuity investment annualized % return ($1,000 annual investment at the start of each year)	11.82	4.49
Annuity investment ending account balance	$19,457	$12,834
Annuity wthdrawal annualized % return ($100,000 starting balance, $5,000 end of each year withdrawal)	2.07	5.10
Annuity withdrawal Ending account balance	$67,797	$101,252

Source: Morningstar data. Calculations by author.

investments of $1,000 were purchasing shares at relatively low prices. Thus, poor returns in the early years followed by a very strong return in the last year create ideal conditions for an annuity investment scenario.

Unfortunately, what is good in one circumstance is often bad in another. Despite excellent annuity investment performance over this specific 10-year period, Janus Overseas had dismal performance under annuity withdrawal conditions (2.1% vs. 5.1%).

An annuity withdrawal scenario places a large amount of money (i.e., the retirement nest egg) "at risk" on day one. As a result, if a portfolio experiences negative returns in the first several years of a retirement annuity withdrawal simulation, the impact can be devastating. Such was the case with Janus Overseas.

Vanguard Intermediate Term Tax-Exempt fared much better under the assumption of annuity withdrawal. The returns in the early years (2000-2002) were positive—thus preserving the nest egg as the annual withdrawals began to occur. Annual withdrawals have an erosive effect on a portfolio—and this erosion must not be magnified by market losses (as was the case with Janus Overseas).

WHAT WE KNOW

We know that an annuity investment portfolio (systematic investments) benefits by strong returns in the latter years when portfolio balances are larger. Riskier funds with historically larger standard deviations are likely candidates to produce the desired large return. However, this is a two-edged sword. Such funds could also deliver a large loss in the latter years (like Janus Overseas in 2008).

Observing this, investors who are approaching retirement might be tempted to maintain positions in aggressive funds too close to the retirement event in hopes of having a big return near the end. This is unwise. Within five to eight years of the transition to retirement, an investor should begin to ratchet down the risk of his or her portfolio because the amount of money at risk is too large to be cavalier about it.

As a side note, this is the precise problem with nearly all target-date funds—too much risk near the stated target date because the asset allocation is too heavy in equities. As a painful reminder, the average 2010 target-date fund lost 23.1% in 2008. This is unacceptable for a person who was 63 years old in 2008 and planning on retiring in 2010.

We know that a retirement annuity withdrawal portfolio (systematic withdrawals) benefits from and is preserved by avoiding negative returns. Avoiding losses is important in the early years of the withdrawal period. Early losses are hard to recover from because the losses are affecting the entire starting balance. Funds with historically lower standard deviation tend to be better candidates for the withdrawal phase of a portfolio.

Finally, we know that conventional performance figures do not usually reveal the variation that can exist among funds that may appear similar when based on a lump-sum investment assumption. It takes some time, but it's worth the effort to calculate the performance of a mutual fund under different investing assumptions. **FP**

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