STARR: A SHARPE(R) MEASURE OF RISK-ADJUSTED RETURNS?

Since 1966, the financial industry’s tried-and-true measure of a portfolio’s risk-adjusted returns has been the Sharpe Ratio. Simply stated, the Sharpe ratio, named after economist and Nobel laureate William Sharpe, measures the return of a portfolio minus the risk-free rate of return divided by the standard deviation of the portfolio’s returns.

**Sharpe Ratio = (Rp-Rf)/Std Dev**

Note the denominator of the Sharpe ratio uses standard deviation, which quantifies the volatility of an investment’s returns, to measure risk. After 20 years in the investment industry, I can safely attest that a certain level of volatility will always be present within the investment world. At times, volatility has provided wonderful upside gains. And of course, volatility has also proven painful on the downside. It would be perfectly normal to equate volatility with risk, and, in fact, almost the entire financial industry utilizes and discusses standard deviation as a proxy for risk. **Stop.** Volatility is not in and of itself risk.

Within those 20 years, while I painfully remember some of the worst times (2002, 2008), there were many other wonderful times (1999, 2009) that provided similar standard deviations to those down markets, but to the upside. However, the bad times seem to leave a huge imprint on our psyche (and wealth), and thus we equate volatility with risk. As Kahneman and Tversky presented in their studies on Prospect Theory, people are more acutely sensitive to loss than to gain.1

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THE JOY OF VOLATILITY

In finance, however, volatility works both ways. Volatility when owning the technology benchmark in 1999 was incredible. Volatility while owning emerging market small cap stocks in 2009 was a wonderful occurrence.

MSCI Emerging Markets Small Cap Index\(^2\)

My point here is that volatility is not the same as risk. Perhaps we have associated volatility with risk in the financial industry because downside volatility causes pain. Perhaps it is because when the word “volatility” is used outside of finance, it is generally a negatively connoted word. For example, “that person is so volatile (dangerous)” or “that is a volatile mixture and could explode.”

However, in the world of finance volatility is not risk... it’s just volatility and may represent both upside potential and downside potential. Thus, standard deviation is not really a pure risk measure per se, at least as it pertains to measuring the risk we really care about, which is downside risk or maximum loss potential. An investment could have a very low Sharpe ratio and still provide excellent risk adjusted results... if all of its standard deviation was captured on the UPSIDE.

AN INTERMEDIATE STEP IN DOWNSIDE RISK MEASUREMENT

Some practitioners looking at ways to view a portfolio in one simple metric moved on to the Sortino ratio. The Sortino ratio calculates the return of the portfolio minus the Minimum Account Return (MAR) divided by downside deviation.

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\text{Sortino Ratio} = \frac{(R_p - \text{MAR})}{\text{Downside Dev}}
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This ratio calculates all returns above the MAR (let’s say 0%) as a zero in the downside deviation calculation and all returns that fail to meet that return are then squared. What you end up with is a ratio that does incorporate downside risk, but the investor has to set the MAR, and thus Sortino ratios may differ significantly across accounts. Due to this lack of consistency, the measure has never really gained widespread adoption.

2. Source: FactSet, 05/31/17.
FOUR RISK PILLARS

When we look at risk-adjusted return here at Franklin Templeton Portfolio Construction Services, we hold a few truths about investors, return, and risk to be inherent.

1. Risk is generally more consistent than return and is more easily measured.
2. Standard deviation as calculated does not adequately represent investment risk.
3. You must look at portfolios through multiple lenses of risk and risk-adjusted return.
4. Risk-adjusted results should utilize a more appropriate measure of risk than standard deviation alone, and we would define that as potential portfolio loss.

A STARR IS BORN

Keeping each of these principles in mind, we would like to introduce a relatively newer concept to advisors as a way to measure ex-ante risk-adjusted return—STARR.

STARR stands for Stable Tail-Adjusted Return Ratio. It is the Portfolio Return minus Risk Free Rate of Return divided by Expected Tail Loss (at a specific confidence level).

STARR = (Rp-Rf)/ETL(%)  

Looking at portfolios through multiple lenses of risk is key. Franklin Templeton’s portfolio construction group will still utilize ex-post Sharpe ratio to assist in portfolio evaluation, along with maximum drawdown and other data points. However, the STARR ratio is one measure of ex-ante risk-adjusted return that may add value to portfolio analysis. You will notice immediately that the numerator is identical to that in the Sharpe ratio, while the denominator replaces standard deviation with Expected Tail Loss (ETL). ETL, also known as Expected Shortfall, is the estimated loss you would expect for your portfolio at a certain confidence level. An ETL of 10 at the 99% confidence level implies that 1 time out of 100 your loss in the portfolio or security would be -10%. Usually, this reflects a monthly period, so that is a -10% loss in a one-month time frame.

This downside is really what constitutes risk for most clients when investing—what can I potentially lose? And not only what can I lose in a “normal” environment, but what can I lose in a real world scenario where returns are not clustered around a mean and what we call “tails,” or extreme gains and losses, are more common than what normal distribution models account for?

ARE FAT TAILS NORMAL?

In addition to framing the risk-adjusted return question in a way that incorporates a consistent downside risk measure across portfolios (thus allowing for comparison), STARR also makes a few modifications to the return side of the equation that would be most effective over longer time periods of analysis (i.e. historical periods that incorporate more data points on the upside and downside). As the “Stable” part of the name implies, the return component of the numerator is measured as a mean return on the security accounting for both skewness—asymmetry of the probability distribution around its mean—and kurtosis—the peakedness (and fat or thin-tails)—in the returns. What this means is a more consistent definition of return which accounts for the fact that returns are not normally distributed around a mean.

Investment returns have historically shown a propensity to *not* follow a normal distribution pattern. Instead they tend to skew negatively (higher tendency to have smaller above mean returns and fewer, but larger, below mean returns) and have fatter tails (a greater than expected tendency to have returns farther from the mean).
NORMAL AND NON-NORMAL DISTRIBUTION PATTERNS

While this is certainly beneficial to have the mean returns calculated differently, it does not often lead to large changes in the results of the STARR ratio. The ex-ante Mean Estimated Return is still relatively dependent on the historical time period feeding the results (or the capital markets expectations feeding the model). The real benefit of using STARR ratio in addition to the Sharpe ratio or even the Sortino ratio is to measure return not relative to standard deviation, but to measure it relative to what you could possibly lose in the portfolio. More specifically, it uses what you could lose in the portfolio in a real world market which has pockets of unexpected volatility and does so on an ex-ante forward looking basis. This refinement may lead to a better, more conservative analysis of risk that is more in line with overall client expectations than a ratio like Sharpe or a tail loss based on normal distributions.

THE BOTTOM LINE FOR YOUR MODELS

The Franklin Templeton Portfolio Construction group will use many “lenses” to review a model’s risk, and the Sharpe ratio will continue to be one of those lenses. However, newer measures of risk and risk-adjusted return like STARR or measuring tail return vs. tail risk in an ex-ante environment will also be strongly considered. Further, the ex-post and ex-ante statistics mentioned here are not the only considerations in portfolio evaluation. Hopefully, I’ve conveyed why more comprehensive risk modeling may lead to better profiles and model results that better match your clients’ expectations, while helping them reach their outcomes more consistently. Intelligently-built portfolios help build lasting relationships.

All investments involve risks, including possible loss of principal. Past performance does not guarantee future results.

Your clients should carefully consider a fund’s investment goals, risks, charges and expenses before investing. To obtain a summary prospectus and/or prospectus, which contains this and other information, call us at (800) DIAL BEN/ 342-5236, or visit franklintempleton.com. Your clients should carefully read a prospectus before investing.