Thoughts and Clarifications on Risk-adjusted Performance

In this article, the author challenges the use of the term "risk-adjusted performance" as it is typically applied, and states that its use should be more circumspect. We've included an earlier article of the author's to provide further details on what he believes to be the only true risk-adjusted performance measure, M-squared.

David D. Spaulding, DPS, CIPM
has been a thought leader in our industry for more than 30 years, and has an in-depth experience with every major asset class and just about any circumstance. He is arguably the #1 authority on performance measurement. Dave has over 40 years' experience in management and technology, including over 30 years in the financial sector. He has conducted training classes for our clients, the CFA Institute, as well as local societies for 20 years. He has written four books, and been co-author and/or editor of five more. He has also written numerous articles for various industry publications. Dave has served on a variety of industry committees and working groups. He earned a BA in Mathematics from Temple University, an MS in Systems Management from the University of Southern California, an MBA in Finance from the University of Baltimore, and a doctorate in Finance and International Economics from Pace University.

The concept of risk-adjusted performance is not new. In his classic *Pension Funds: Measuring Investment Performance*, Peter O. Dietz (Dietz (1966, republished in 2004)) proposed a simple, but perhaps too simple, way: if the returns of the portfolio and benchmark are identical, the one with the lower risk (standard deviation, beta, etc.) would be considered to have done better on a risk-adjusted basis. He was apparently unaware that around the same time he was completing his dissertation, Jack Treynor's article appeared in *Harvard Business Review*[1] with what later became known as the Treynor ratio or Treynor measure (Treynor (1965)):[2]

$$\frac{\bar{r}_P - \bar{r}_f}{\beta_P}$$

Within a year of its publishing, William Sharpe (Sharpe (1966)) offered an alternative, later called the Sharpe ratio:[3]

$$\frac{\bar{r}_P - \bar{r}_f}{\sigma_P}$$

The similarity is clear: the numerator represents the Equity Risk Premium.[4] That is, the average return of the portfolio minus the average risk free rate.

The difference is how we look at risk. Treynor used beta, which might be considered the idiosyncratic risk of the portfolio, while Sharpe used standard deviation, which is to represent total risk.

While Treynor rightly gets credit for coming up with this concept, Sharpe's measure has become the standard way to evaluate performance relative to risk.

Other measures grew from these formulas. As with Old Testament writings of one person begetting another, and so on, we could say the Treynor ratio begot the Sharpe ratio, that begot the Sortino and Information ratios.[5]

About the same time, Michael Jensen introduced his formula, referred to as Jensen's alpha, to distinguish it from the basic alpha, also called excess return (Jensen (1968)):

$$\alpha_J = \left(R_P - R_f\right)\beta_P - \left(R_B - R_F\right)\beta_B$$

BUT ARE THESE RISK-ADJUSTED RETURNS?

I've been teaching our Fundamentals of Performance Measurement class for over two decades. And always distinguish these ratios from risk measures, which only look at the risk of the portfolio or benchmark.

As just about everyone else has done, I have referred to the ratios as "risk-adjusted returns" or "risk- adjusted performance."

But, after much reflection, I've concluded that this is <u>not</u> what they are.

They're ratios that express the units of return received per unit of risk. The formulas themselves make this pretty clear:

$$\frac{\mathrm{Re}\,turnStatistic}{RiskStatistic} = \frac{UnitsOf\,\mathrm{Re}\,turn}{UnitsOfRisk} =$$

$$UnitsOf\,\mathrm{Re}\,turnPerUnitOfRisk$$

If, for example, your portfolio's Sharpe ratio is 2.5, that means it's getting 2.5 units of return per unit of risk. Is this good? Well, what's the Sharpe ratio of the benchmark? If it's 2.0, then the portfolio is doing a better job managing risk; if the benchmark's is 3.0, then it's not doing as good a job, since the benchmark is getting more units of return per unit of risk.

Is this valuable? To an extent, but we can do better.

MODIGLIANI-MODIGLIANI, THE ONLY TRUE RISK-ADJUSTED RETURN

As of this writing, the only real risk-adjusted return is M-Squared, or Modigliani-Modigliani. Spaulding (2007) explains the measure in detail and justifies why this is a valid statement.

An example from the article demonstrates it: the pre-risk-adjusted return is 30.20 percent; after adjusting for risk, it drops to 26.13 percent. *I.e.*, it is <u>still</u> a return; not a ratio, a return, that <u>has been</u> <u>adjusted</u> for risk. The equivalent for Sharpe, Treynor, etc. would be a ratio that expresses the units of return per unit of risk.

Which is better? In my opinion, M-squared is more meaningful, more understandable, more intuitive.

WHAT ABOUT JENSEN'S ALPHA?

Jensen's alpha is a *risk-adjusted excess return*. Yes, it has value, as it takes risk into consideration, which the standard alpha or excess return does not. If we don't like beta, we can come up with a version of Jensen's alpha that uses a different risk statistic (*e.g.*, tracking error or standard deviation, something this author will attempt in

a forthcoming article).

HOW VALUABLE IS RISK-ADJUSTED PERFORMANCE?

Risk-adjusted returns should be a standard part of evaluating a manager's performance. Morningstar attempts this by using Sharpe ratio; they could do a better job by showcasing M-squared and/or Jensen's alpha. But, comparing the Sharpe ratios of different managers clearly has some value; it's just particularly easy to interpret.

Not everyone gets this message correct, however. Summers (2022),[6] for example, fails to properly explain what risk is or how risk-adjusted performance works.

I agree that "To assess the quality of any investment, you have to compare its expected return to its corresponding risk: its risk-adjusted performance." But, how do we do this? His statement "There are many risk-adjusted performance metrics, each describing a different facet of risk," provides a list of stats that miss the mark, save for his inclusion of "The Modigliani measure."

His states "Risk is not a story; it's not a relationship; it's not a feeling; and risk is not an asset class. Risk is a number: It's the probability of loss weighted by the potential degree of that loss."

I wish risk was that; but, to my knowledge, there is no risk measure that does this.

We cannot agree on what risk is. If we search in the dictionary, we may find that it's the possibility of loss, and no doubt, for many, that's exactly it. But if that is our definition, do we assess it this way? Perhaps it is better to describe risk as failing to meet our objective. I.e., we can avoid loss, but failing to meet our objective creates problems. Imagine a pension fund that needs a return of 7 percent but only gets 4 percent: while they didn't lose money, their failure to meet the objective translates into the need for additional funding.[7]

Spaulding (2016) suggested we should adjust attribution for risk, as well. While this idea seems to have appeal, to date we haven't seen much in the way of application

of the concept; hopefully we will.

GETTING IT STRAIGHT

I'm sort of on a campaign to clarify what these varied statistics represent.

We have risk measures, such as beta, standard deviation, downside risk, and tracking error; we have reward-to-risk ratios, such as Sharpe, Treynor, Information, and Sortino ratios; and we have risk- adjusted returns and excess returns, in the form of M-Squared and Jensen's alpha, respectively.

Each plays a role. We should understand that role, what it means, and why it belongs.

Please share your thoughts.

REFERENCES

Dietz, Peter O. 1966. *Pension Funds: Measuring Investment Performance*. New York: The Free Press.

Dietz, Peter O. 2004. *Pension Funds: Measuring Investment Performance*. Somerset, NJ: TSG Publishing.

Jensen, Michael C. 1968. "The Performance of Mutual Funds in the Period 1945-1964." *Journal of Finance*. May.

Modigliani, Franco and Leah Modigliani. 1997. "Risk-Adjusted Performance." *The Journal of Portfolio Management*. Winter.

Modigliani, Leah. 2001. "Risk Isn't Bad – M², the Basics." Morgan Stanley Equity Research. November 6.

Modigliani, Franco. 2001/2002. "The Journal Interview." *The Journal of Performance Measurement*. Winter.

Modigliani, Leah. 2006. "Risk-adjusted Performance: How to Measure it and Why." *Pmar Conference Proceedings*.

Sharpe, William F. 1966. "Mutual Fund Performance." *Journal of Business*. Sharpe, William F. 1994. "The Sharpe ratio." *Journal of Portfolio Management*.

Spaulding, David D. 2007. "M-squared: a Double-take on Three Approaches to a Primary Risk Measure." *The Journal of Performance Measurement*. Summer.

Spaulding, David. "Risk-adjusted Performance Attribution: Why It Makes Sense and How to Do It." *The Journal of Performance Measurement*. Summer.

Summers, Benjamin D. 2022. "Investing Vs. Gambling: Understanding Risk-Adjusted Performance." *Forbes Finance Council*.

Treynor, Jack L. 1965. "How to Rate Management of Investment Funds." *Harvard Business Review*.

Treynor, Jack L. and Fischer Black. 1973. "How to Use Security Analysis to Improve Portfolio Selection. *Journal of Business.*

ENDNOTES

[1] Would we expect to find such an article in *Harvard Business Review* today? Doubtful. I suspect the *Journal of Finance,* a highly prestigious publication, would have rejected Treynor's piece. Today, we would hope it would be in this publication.

[2] Treynor didn't give the formula a measure. Sharpe referred to it as "reward to volatility," to distinguish it from his measure that he called "reward to variability."

[3] Sharpe did not give it this name but rather, as noted above, he called it "reward to variability." He did succumb to the name, even penning an article with it as its title (Sharpe (1994).

[4] The premium the investor is entitled to for taking on more risk than they would have with the riskless risk-free rate.

[5] The original source for this statistic is unclear. Treynor and Black (1973) is often cited, but this does not seem to be correct. I occasionally search, but a more concerted effort is necessary. I do believe Treynor deserves some credit, but it's not apparent where or how.

[6] Appearing in a "Forbes" piece mistakenly assigns an imprimatur it does not deserve. The Forbes Finance Council is essentially a pay-to-publish part of their business. If you meet their qualifications, you can become a member ("Fee-Based"), which then allows you to write and publish an article under the "Forbes" name. Unfortunately, without paying this fee, this author was unable to offer a response, thus part of the motivation

behind this article, in the non-pay-to-play Journal.

[7] While I do not have a readily available resource to affirm this, Frank Sortino often spoke in these terms, and championed the idea of assessing performance relative to the objective, not a benchmark, but the portfolio's objective.