



Like a Golf Score, a Lower Risk-to-Return Ratio Wins

▶ The lower the score, the better with an investment strategy that takes performance and volatility into consideration.

By Craig L. Israelsen

Performance always comes with a catch: volatility. Volatility simply means that the investor will experience more highs and lows — highs are fun, lows are not.

Moreover, negative returns punish a portfolio disproportionately. For example, a 50 percent loss requires a 100 percent gain to break even. A 75 percent loss requires a 300 percent gain to break even. Thus, avoiding large losses is (or should be) an investor's primary mantra — particularly if they are drawing money out of a retirement portfolio.

But performance also is important. So, not surprisingly, it's important to consider performance and volatility together. That's where the risk-to-return ratio comes in.

Risk-to-return ratio is like a golf score — the lower the score, the better. The ratio is shown below:

In general, a risk-to-return ratio of 1-to-1 is excellent. In fact, achieving a 1-to-1 ratio among equitylike asset classes is very difficult to do on a consistent basis. For example, as shown in the Risk-to-Return Ratio: 1970-2014 table, U.S. large cap stock (as represented

Standard Deviation / Return = Risk-to-Return Ratio

20% standard deviation / 10% return = 200 Risk-to-Return Ratio

10% standard deviation / 10% return = 100 Risk-to-Return Ratio

lower is better

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by the S&P 500 Index) occasionally can achieve a 1-to-1 risk-to-return ratio over 10-year periods, but the ratio can spike upward in a subsequent 10-year period. There were 36 rolling 10-year periods examined in this analysis.

For example, in the 10-year period ending in 2000 (1991-2000), the S&P 500 Index had a 10-year rolling return of 17.46 percent and a 10-year standard deviation of annual returns of 15.28 percent, which produced a risk-to-return ratio of 0.88. That is an excellent ratio. In the subsequent 10-year rolling period, the ratio increased to 1.34, and then to 2.22 for the 10-year period ending in 2002. The ratio shot up to 22.24 for the period ending in 2009. In short, the risk-to-return attributes of a single asset class can be relatively unstable.

By contrast, consider a 60 percent large cap U.S. stock/40 percent U.S. bond portfolio (also shown the table). As is evident, the risk-to-return ratio for a blended portfolio of equities and fixed income is far more consistent and lower in every rolling 10-year period than a 100 percent U.S. large cap stock portfolio. The 60/40 portfolio had the lowest risk-to-return ratio in seven of the 36 rolling 10-year periods — or 20 percent of the time. (The 100 percent U.S. large cap stock never had the lowest risk-to-return ratio.)

Finally, a diversified seven-asset portfolio is shown. As shown by the yellow highlighting, the seven-asset portfolio had the lowest risk-to-return ratio (compared with the 100 percent U.S. stock and a 60/40 model) in 29 of the rolling 10-year periods (or 80 percent of the time). The seven asset classes in this model included large cap U.S. stock, small cap U.S. stock, non-U.S. developed stock, real estate, commodities, U.S. bonds and U.S. cash — all held in equal 14.29 percent allocations and rebalanced at the start of each year.

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Summarizing the Results

The summary table shows the performance statistics in this analysis: 10-year annualized return, 10-year standard deviation of return and 10-year risk-to-return ratio (with the superior result highlighted in yellow).

The 100 percent U.S. large cap stock model had the highest average 10-year rolling returns. The diversified seven-asset model was close behind, with an average 10-year rolling return of 10.88 percent (versus 11.21 percent for all U.S. stock). The 60/40 portfolio had an average 10-year rolling return of 10.35 percent.

In terms of volatility (as measured by the rolling 10-year standard deviation of annual returns), the seven-asset portfolio was the winner with an average of 9.65 percent. The 60/40 portfolio was in second place, and the all-U.S. stock model with a 16.88 percent average standard deviation came in third place.

The average risk-to-return ratio over the 36 rolling 10-year periods was lowest for the seven-asset model (1.08), followed by the 60/40 model (1.42) and then the all-stock model (3.05). As you recall, a 1-to-1 risk-to-return ratio is an enviable goal for an investor. The diversified seven-asset model achieved that goal over the past 45 years while delivering 97 percent of the return achieved by an all-equity model. Equitylike return with a 1-to-1 risk-to-return ratio is the holy grail of investing.

Implementing a Multi-Asset Portfolio

Building a multi-asset portfolio (such as the seven-asset model illustrated here) is easier now than it ever has been. Many mutual funds and exchange traded funds (ETFs) are found in the asset classes being highlighted (large cap U.S. stock, small cap U.S.

stock, non-U.S. stock, real estate investment trusts, commodities, U.S. bonds and money market funds).

A diversified asset allocation model

can be built with actively managed funds, index funds or ETFs — or a combination of each. Frankly, the asset

RISK-TO-RETURN RATIO: 1970-2014
LOWEST 10-YEAR RISK-TO-RETURN RATIO HIGHLIGHTED IN YELLOW

10-Year Period Ending in...	US Large Cap Stock			60% Stock/40% Bond Portfolio			Diversified 7-Asset Portfolio		
	Rolling 10-Year Return	Rolling 10-Year Standard Deviation	10-Year Risk-to-Return Ratio	Rolling 10-Year Return	Rolling 10-Year Standard Deviation	10-Year Risk-to-Return Ratio	Rolling 10-Year Return	Rolling 10-Year Standard Deviation	10-year Risk-to-Return Ratio
1979	5.88	19.24	3.27	6.70	12.24	1.83	11.71	9.65	0.82
1980	8.48	20.71	2.44	7.77	12.94	1.66	13.78	9.28	0.67
1981	6.50	21.19	3.26	6.50	13.16	2.02	12.31	10.06	0.82
1982	6.72	21.35	3.17	7.62	14.36	1.88	12.32	10.07	0.82
1983	10.66	20.02	1.88	10.11	13.46	1.33	14.23	9.47	0.67
1984	14.81	14.99	1.01	12.78	10.42	0.81	15.73	6.97	0.44
1985	14.34	14.20	0.99	13.00	10.75	0.83	16.05	7.28	0.45
1986	13.85	13.93	1.01	12.68	10.56	0.83	16.01	7.26	0.45
1987	15.29	12.22	0.80	13.51	9.51	0.70	15.54	7.72	0.50
1988	16.33	11.78	0.72	14.41	8.94	0.62	15.76	7.77	0.49
1989	17.55	12.68	0.72	15.67	9.41	0.60	15.22	7.39	0.49
1990	13.93	13.20	0.95	13.71	10.25	0.75	12.58	9.09	0.72
1991	17.59	12.07	0.69	16.30	9.31	0.57	14.30	8.26	0.58
1992	16.17	12.44	0.77	14.48	9.08	0.63	13.19	8.59	0.65
1993	14.93	12.42	0.83	13.78	9.17	0.67	12.30	8.28	0.67
1994	14.38	12.92	0.90	12.68	10.21	0.81	11.72	8.79	0.75
1995	14.88	13.86	0.93	12.86	10.55	0.82	11.31	8.23	0.73
1996	15.29	14.03	0.92	12.66	10.49	0.83	11.15	8.06	0.72
1997	18.05	14.44	0.80	14.62	10.49	0.72	11.60	7.89	0.68
1998	19.21	14.72	0.77	15.35	10.60	0.69	9.82	8.19	0.83
1999	18.21	14.16	0.78	14.14	10.15	0.72	9.68	8.05	0.83
2000	17.46	15.28	0.88	13.85	10.53	0.76	11.14	6.55	0.59
2001	12.94	17.30	1.34	10.94	11.23	1.03	8.68	7.93	0.91
2002	9.34	20.76	2.22	9.09	12.98	1.43	7.84	8.58	1.09
2003	11.07	21.47	1.94	9.94	13.29	1.34	9.15	10.14	1.11
2004	12.07	21.10	1.75	10.86	12.76	1.18	10.44	9.93	0.95
2005	9.07	19.51	2.15	8.41	11.15	1.33	9.53	9.50	1.00
2006	8.42	19.14	2.27	8.03	10.97	1.37	9.06	9.16	1.01
2007	5.91	17.30	2.93	6.36	9.55	1.50	8.54	9.20	1.08
2008	(1.38)	20.45	14.79	2.07	11.47	5.54	4.99	14.72	2.95
2009	(0.95)	21.11	22.24	2.60	12.16	4.68	5.27	14.98	2.84
2010	1.41	21.18	14.98	3.82	12.33	3.23	5.56	15.10	2.71
2011	2.92	20.50	7.02	4.67	11.99	2.57	6.19	14.69	2.37
2012	7.10	18.32	2.58	6.82	10.94	1.60	7.40	14.37	1.94
2013	7.41	18.80	2.54	6.80	10.91	1.61	6.31	13.27	2.10
2014	7.67	18.84	2.46	7.02	10.96	1.56	5.10	13.03	2.55

allocation recipe has more impact on performance than what components (i.e., funds) are used. This means that a perfectly good investment model can be built with actively managed funds, passively managed index funds or ETFs.

If a client has a preference for one type of fund over another, fine — use that type of fund. Spending a lot of time attempting to find the “perfect” large cap U.S. equity fund or the “perfect” non-U.S. equity fund is largely a waste of time if you intend to use those funds in combination with other funds in a broadly diversified, multi-asset portfolio. I’m not saying that all funds are created equal, but adding value to a portfolio is achieved primarily through the asset allocation itself, whereas fund selection has less impact.

One issue to consider is the “style purity” of the funds being used in a broadly diversified portfolio. In other words, you likely won’t want to use a large cap U.S. equity fund that has a significant allocation in other asset classes (such as non-U.S. equity or fixed income), because you already have those other asset classes explicitly included in the model. For this reason, a multi-asset portfolio often is built with index funds and/or ETFs because they are very “style pure,” whereas actively managed funds are more likely to dabble in several asset classes according to the dictates of the fund manager.

All that said, if you build it, performance will come. But don’t expect miracles in the short run. A diversified approach means that you will hit singles and doubles — not home runs. But it’s worth remembering that home run hitters often strike out a lot. [in](#)

Craig Israelsen, Ph.D., is the developer of the 7Twelve Portfolio and is a principal at Target Data Analytics, which develops indexes for the benchmarking and evaluation of target-date/life-cycle funds. He is also the executive-in-residence in the financial planning program at Utah Valley University. Craig may be contacted at craig.israelsen@innfeedback.com.



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