When Does MORE Risk Actually Reduce Risk?

The Diversification Key: It's All About Correlation

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Standard deviation is a fancy mathematical term used to describe how far investment returns are likely to vary from their average.

For example, suppose you're considering investing in an investment that has a provided a compounded average annual return of 8% over the last five years. But, of course, you know it didn't provide a constant 8% each and every year. In fact, it's likely that it NEVER provided a 9% return…. It's just an average over time. The question becomes, how much did those returns vary from the 8% average?

For the answer, we look at the investment's five-year standard deviation number (that number for other time periods can, and likely will be, different, but you want to keep the return period and the standard deviation period in comparable in any comparison). Your research indicates the five-year standard deviation figure for that investment is 12%. What does that mean?

It means that during that 5-year period (60 months), returns varied from the 8% norm by +/- 12 points during 2/3 of the observations. So, in 40 of those 60 months, returns fluctuated between +20% and a negative 4%. That's known among math nerds as one standard deviation.

So, a higher standard deviation, or fluctuation, means more risk, right? Well, maybe. Maybe not.

Let's say you own an investment that has an expected return of 8% and a standard deviation of 15%. If you want to diversify your portfolio, presumably to reduce risk, which investment would you choose?

Correlation and Volatility

You currently hold Investment A and are considering adding either Investment B or C.

	Expected Return	Standard Deviation	Correlation with A
Investment A	8%	15%	--
Investment B	6%	10%	0.3
Investment C	6%	8%	0.9

- B and C provide the same return; however C is less volatile (lower standard deviation).
- While B may be more volatile than C, B's volatility is less correlated with A.

Source: The New Wealth Management, 2011; Harold Evensky, CFP · Stephen Horan, CFA · Thomas Robinson, CFA

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Investment C has less volatility than B, and provides the same expected return as B! Maybe C should be the choice…

But, while B has greater volatility than C, it has a lower correlation with A.

What's correlation? Picture the pistons in a car's engine. No two pistons move in the same direction at exactly the same time. If they did, they would be perfectly correlated. There are, however, two pistons that move in perfect opposition to each other. They're negatively correlated. If your money were placed equally on those two pistons, it wouldn't matter when the engine shut down, you'd still have the same overall stability due to their perfect negative correlation.

In the real investment world, nothing is perfect, but there are degrees. As you can see from the previous chart, Investment B's correlation with a is 0.3, or to make it simpler, 30%. But, C's correlation with A is 0.9, or 90%. And, that can make a big difference.

Correlation and Volatility

You currently hold Investment A and are considering adding either Investment B or C.

	Expected Return	Standard Deviation
Investment A & B	7%	10.19%
Investment A & C	7%	11.24%

While B appears riskier, it's addition reduces overall portfolio risk when combined with A

Source: The New Wealth Management, 2011; Harold Evensky, CFP · Stephen Horan, CFA · Thomas Robinson, CFA

When you combine A with either B or C equally, the expected return is 7%; but, when standard deviation is calculated, B reduces portfolio risk more than C, despite its higher volatility, due to B's reduced correlation with A.

Hmmm. Sometimes, taking on more risk can actually reduce overall risk – and enhance predictability.

And, that's a good thing.

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