

## Stock Market Perspective: Correlations

Don't worry, I'm not about to get into heavy statistics. The correlation coefficient measures the similarity of how two series of numbers vary. It can have a high value of 1 that indicates the two series vary in the exact same way so that if we know how one changes we can figure out how the other one changed. The other end of the spectrum is a value of -1 that indicates the two series vary in perfectly opposite ways. If one is up, the other is down, and we can figure out by how much from the movement of the one that is up.

The relevance for investing is that highly correlated instruments do not provide much diversification. For example, you may be deceiving yourself if you think owning two large capitalization "value" mutual funds provides meaningful diversification as compared to owning either one by itself.

On the other hand, investments that are weakly or essentially uncorrelated contribute to diversification. The broad stock market and gold have historically been uncorrelated because the price of gold tends to be driven mainly by fears of impending bad news rather than events that directly affect anticipated corporate profits. That means owning a broad market index fund and a precious metals fund provides real diversification.

Negatively correlated holdings can "smooth" the equity curve and reduce risk. When one falls, the other likely will gain to some extent and offset the drop partially or fully. Reducing the chances for a severe drop in value is an important element of risk reduction. The other side of the coin is that spectacularly large gains may be less likely. Negative correlation can be carried too far. In the unlikely case that two investments are perfectly negatively correlated, the combination is likely to have returns that behave like a money market fund, but with more effort and a higher cost.

So-called "Modern Portfolio Theory" (MPT, now more than 50 years old), which won a Nobel Prize for Harry Markowitz, and its successors employ the expected correlations among potential investments when determining "optimal" investment allocations. The idea is getting the largest expected return for a given level of risk or finding the portfolio with a specified expected return with the smallest possible risk. It is a great concept that revolutionized portfolio construction. However, the practical implementation is not as neat as the theories.

► **How good are the assumptions?:** Several inputs are required for MPT and similar approaches. Two of the most important are the expected rates of return of the possible investments in the portfolio and the correlations among them. Usually, historical data, perhaps tempered by judgment and forecasts of economic conditions, are the basis of the expected returns. Some approaches allow for a range and probability distribution of the expected returns. While certainly not accurate on a year-to-year basis, estimates of returns based on past performance usually form a reasonable basis for investment planning over a period of several years or longer.

The correlation assumptions are also typically based on historical data. It is these that I will discuss in more detail because much of the conventional wisdom about how investments should be diversified is based on historical correlation values that may no longer be valid. Moreover, the optimal portfolios generated by MPT-like models are very sensitive to changes in the assumed correlations. In other words, if you think you are adequately diversified but are not in reality, your portfolio may be far riskier than you realize or are willing to accept.

► **Correlations are increasing:** I have seen several studies that show a strong tendency in the past few years for instruments to become

increasingly correlated. The April 3 *Wall Street Journal* "Ahead of the Tape" article by Justin Lahart reports on findings of Merrill Lynch's Rich Bernstein. It says that the 5-year correlation of the Russell 2000, a small cap stock index, to the S&P 500 increased from 0.62 to 0.94 over the past six years. Instead of providing some modest diversification to large capitalization stocks as they used to, small stocks recently have provided next to none.

A commonly recommended diversifier for U.S. stocks has been overseas stocks. The Morgan-Stanley EAFE (Europe, Asia, Far East) index tracks stocks of industrialized nations and is used as a benchmark for foreign stocks of developed countries. Six years ago, its correlation with the S&P 500 based on the prior five years was 0.32, which meant it provided significant diversification and risk reduction potential. However, that correlation has jumped to 0.96, which means there has been very little benefit gained from adding overseas stocks, with the exception of those in emerging markets, to U.S. equity holdings.

What if we move away from stocks? Hedge funds have been promoted as being ideal for diversification (and outstanding returns) for affluent investors since they are able to adopt tactics such as short sales and holding both long and short positions and possibly futures that are not normally employed by traditional mutual funds. According to the article, the diversification effect has gone away over the past six years as the correlation with the S&P has risen from 0.35 to 0.96.

Commodities, although not easy to own or trade directly, still provide a fair degree of diversification to stock holdings, but not nearly to the same extent as six years ago. At that point, the correlation of the Goldman Sachs Commodity index to the S&P was -0.14, so the negative relative behavior provided some smoothing of returns. Now that correlation is

0.33, which is useful, but the amount of risk reduction is reduced and the smoothing effect is gone.

I have seen a recent longer-term (over 20 years, so there are four disjoint 5-year periods to compare) study of the behavior of quite a few indices to U.S. stocks. Overall it shows that the fluctuation in the 5-year correlations over the consecutive periods can be quite large. In some cases, bonds being the most notable, the correlations are positive over some five-year periods and negative over others.

All of the domestic stock indices have become highly correlated with the broad U.S. stock market as measured by the Dow Jones Wilshire 5000 index. The Japanese stock market has been the only one in the industrialized world not recently highly correlated with the U.S. market, and it is somewhat correlated with coefficients around 0.50.

Bonds still provide a fair degree of diversification, and over the past five years, they have been negatively correlated with stocks. That behavior is unusual, so it is probably not a good idea to assume it will continue for an extended period. Real-estate as measured by the Wilshire REIT index has become less correlated with stocks over the past 20 years. The coefficient over the past five years is 0.40, which indicates some, but not really strong correlation. Gold has been consistently weakly or uncorrelated with stocks, so it or stocks that produce it can be useful additions to most portfolios.

► **How can we deal with inconsistent correlations?:** Keep in mind that the main reason for diversification is risk reduction. Being truly diversified means not having too much invested in the poorest performing instruments. On the other hand, it means limited amounts in what turn out to be the best performing investments.

There are other ways to control risk, but you are not likely to hear about them from those who dispense “conventional wisdom” such as the talking heads on CNBC and most brokerage houses and their customer representatives. At best they will recommend owning a portfolio of items that may or may not be truly diversified according to suitable target allocations and periodically rebalancing the holdings when they move too far away from the targets. They will denigrate the idea that there are good times to own certain types of assets and times when they should not be owned. For some reason, they don’t realize (or do not find it profitable to

admit) that not owning assets that are decreasing in value is a great way to reduce risk.

As you no doubt realize, that is not what I advocate. I believe that active management can be a valuable tool for controlling investment risk, and I offer a range of managed account services to that end. I take variable and recently increasing correlations between asset classes into account. However, I do not think that behavior will greatly affect my methods. If many things are going down at the same time, I would rather not own them than worry about how closely the rates of decline are related.