

A Quick Note About Correlation

Whole chapters in statistics textbooks are written about correlation and we are not talking about option pricing or credit default pricing here, just simple correlation. I thought it would be illustrative to simply display a couple of charts of returns data and their corresponding correlations.

Here is example 1. The blue line is a fund which returns 0.50% in odd months and 0.00% in even months. The red line is a fund which returns 0.30% in odd months and -0.50% in even months. Clearly the correlation between the two funds is (one) 1.00 by construction. I'm not going into the maths on this, you can do this easily in Excel. The chart looks like this.



Here is example 2. The blue line is a fund which returns 0.50% in even months and 0.00% in odd months. The red line is a fund which returns 0.30% in odd months and -0.50% in even months. Clearly the correlation between the two funds is (minus one) -1.00 by construction. Again I'm not going into the maths on this, you can do this easily in Excel. The chart looks like this.



Note that the correlation is now -1.00 even though the charts look almost identical.

Now, a cautionary chart for investors who seek diversification in the form of negative correlation. Here is example 3. The blue line is a fund which returns 0.50% in even months and 0.00% in odd months. The red line is a fund which returns

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The correlation benefits are questionable.

These illustrations are not to discredit correlation analysis but rather a cautionary note that one needs to dig a little deeper and understand the underlying processes that create correlation. The time frame of investment is also very important. Nobody wants to invest in 2 funds that ultimately (at the end of the investment horizon) cancel each other out. Of course we want both funds to make money, but a degree of low or negative correlation at a certain frequency helps to smooth returns within that frequency. Usually that frequency is chosen or dictated by the reporting frequency of the fiduciary. Which says something about how the industry uses or misuses statistics.