Seeking Alpha

A Statistical Analysis Of S&P 500 Returns

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Summary

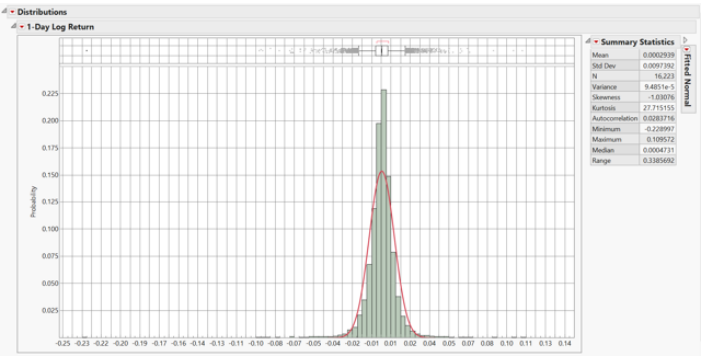
- A statistical analysis of the distribution of returns can be used to determine many key characteristics of a stock's behavior.
- Volatility is not the only useful measure of risk that can be determined via quantitative analysis. Kurtosis and skewness can be equally helpful.
- Quantitative measure can be used as a tool for comparing different stocks.

Investors today have access to more data than any single person could ever make use of. There are thousands of investments to choose from and an endless number of ways to try to sort through them. Even a basic statistical analysis of a stock can provide some insight into the stock's behavior and risk profile. I will use the daily log returns for the S&P 500 (hereinafter SPX) to demonstrate the potential utility of this approach for investors.

I explained the reason for log returns in one of my previous articles, and to quote myself:

> *The reason for logarithmic returns is that, unlike percentage changes, they are symmetric. So if the log return is -0.05 on a given day, then a log return of +0.05 the next day will leave the index with the same value it started.*

I usually use the closing value and it is good practice to be consistent in order to ensure that the statistics are comparable. I used freely available daily prices from Yahoo Finance for all of the analysis in this article. Now, I've talked about the distribution of log returns before in the context of market efficiency, but my primary focus at the time was on the deviation from a normal distribution. Here, the focus is on the summary statistics rather than the best fit for the distribution. Should you find yourself lacking fancy statistical software, Excel has functions for all of the sample statistics. Let's start with SPX.



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