



Betas

Beta is a statistic used in Modern Portfolio Theory (MPT) generated from a linear regression of a security's return against a benchmark's return.

Betas are often referred to as beta versus the benchmark, which is usually an index such as the S&P 200.

It measures a security's sensitivity to movement of the underlying benchmark.

For example, a security that has a beta of 1.10 means that for every return in the benchmark the security's returns, on average, will be 1.10 times the benchmark return.

So if the S&P returns 10%, the fund will return 11%.

The reverse is true if the benchmark declines. If the benchmark returns -10%, the fund will return -11%.

Conversely, a beta of 0.85 indicates that the security is less sensitive than the benchmark to which it is being compared. ie : If the S&P returned 10%, the security will only return 8.5%.

Therefore, by definition, the beta of the benchmark is 1.

A negative beta implies that there is a negative correlation between the security and the benchmark. For example, if a security has a beta of -0.50 against the S&P, it implies that if the S&P returns 10.00%, the security would return -5.00%.

A security that has a beta of 0.00 against a benchmark implies that there is no correlation in the returns of the two instruments. (A beta of -1.00 implies a direct negative correlation - ie : If the index returns 10.00%, the security will have a negative return of 10.00%)

A low beta does not mean that the fund has a low level of volatility. A low beta means only that the fund's market-related risk is low.

A specialty fund that invests primarily in gold, for example, will often have a low beta relative to the S&P, as its performance is tied more closely to the price of gold and gold-mining stocks than to the overall stock market.

As a result, one should be careful as to selecting what benchmark to use when calculating betas.

Implementation within Risk101

To calculate the beta of an entire fund, Risk101 calculates the betas of each security in the fund, and then weights them by each security's delta-adjusted exposure. (These numbers are calculated in R7: Advanced exposure analysis)

Note:

- The default for Risk101 is to force in a beta of 1.00 for securities where there was not enough historical information to calculate the beta.

- Risk101 has boundary limits, and will not accept betas of less than -5.00 on the lower side, and +5.00 on the upper side. In addition, Risk101 generates a warning if the beta is in the 3.00 to 5.00 range as well

In certain modules, once the betas have been calculated and/or saved to the info-pad, you are able to adjust the spread by the beta of each security when stress-testing the portfolio.

ie: If you have selected a spread of 10.00% and security has a beta of 1.20 against the benchmark, when we run the stress test, the benchmark will be adjusted by a spread of 10.00% either way, and the security by a spread of 12.00% up and down.

In cases where there are options and other derivatives in the portfolio as well, it should be noted that the **beta of the underlying security is used** when adjusting the spread. ie: If a beta has been calculated for any derivative, it is ignored completely.

A word of warning: Be careful of the "minor-adjustment-to gross-assumptions" adage when using this feature. You can produce meaningless answers by making extremely small adjustments to the beta.