

M² – Measuring Risk Adjusted Return

Investment professionals deal in risk and return, which under modern finance theory are inextricably linked. An interpretational problem arises, however, from the fact that risk and return are usually expressed on different scales: return is expressed in percent per year, and risk is expressed as standard deviation from the mean return. It is desirable to have one number expressing risk adjusted return.

For the purpose of incorporating in a single number the concept of risk adjusted return, Nobel Laureate Franco Modigliani and his granddaughter constructed a statistic they called "M²." M² is expressed as the under performance in percent per year (a negative number) or the out performance in percent per year (a positive number) of a security in relation to a benchmark with the number being adjusted for relative risk.

M² is calculated by (i) multiplying the excess return of the security times (ii) the ratio of the benchmark standard deviation to the fund standard deviation, and (iii) deducting the excess return of the benchmark. Excess return is the security or benchmark return less the return on the 30-day Treasury Bill. In the interest of full disclosure (but at the risk of merely confusing the reader), we include the formula for calculating M-Squared as follows:

$$M - Squared = \left(\bar{r}_i - \bar{r}_f \right) * \left(\frac{\sigma_{bmk}}{\sigma_i} \right) - \left(\bar{r}_{bmk} - \bar{r}_f \right), \text{ where}$$

\bar{r}_i is the average return on fund or security i .

\bar{r}_f is the average risk-free rate.

σ_i is the standard deviation of returns of asset i .

σ_{bmk} is the standard deviation of returns of the benchmark or index.

\bar{r}_{bmk} is the average return of the benchmark or index.

A higher positive number is better.

James H. White, III
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