

Why risk-adjusted returns matter and how to calculate them

While evaluating the performance of any product, merely looking at the returns in isolation can give you an incomplete picture. You need to factor in the risk taken to generate this performance.

How to interpret risk?

LOWER RISK

If two assets have the same return, the one with the lower risk is better.

HIGHER RETURN

If two assets have the same level of risk, the one with the higher return is better.

Here are a few important ratios which help you evaluate risk.

Sharpe Ratio

It measures the performance of a fund or stock compared to the risk-free rate (Treasury Bill) by taking into account the volatility of returns (standard deviation).

$$\text{Sharpe Ratio} = \frac{(\text{Return of portfolio} - \text{Risk-free return})}{\text{Standard Deviation of the portfolio's excess return}}$$

Higher the Sharpe Ratio, the better the asset's risk-adjusted returns. One flipside of this ratio is that it penalises both positive and negative dispersion of return from the mean (simple average).

Sortino Ratio

Unlike Sharpe Ratio, Sortino Ratio takes into account only the downside risk (negative returns). This tells you how much the fund has been able to perform by protecting the downside.

$$\text{Sortino Ratio} = \frac{(\text{Actual or Expected portfolio return} - \text{Risk free return})}{\text{Standard Deviation of the Downside}}$$

Higher the Sortino Ratio better the fund is able to deliver by mitigating downside risk. In other words, Sortino Ratio measures the volatility caused by negative returns.

Treynor Ratio

Also known as Reward to Volatility Ratio, Treynor Ratio measures the excess return of an asset for each unit of risk, adjusting for systematic risk which is measured by beta. Beta measures the sensitivity of the portfolio's return (fund or stock) to the changes in overall market return.

$$\text{Treynor Ratio} = \frac{\text{Return of portfolio} - \text{Risk-free return}}{\text{Beta of the portfolio}}$$

Higher the Treynor Ratio better the risk-adjusted return.

Jensen's Alpha

It measures the risk-adjusted return generated by a portfolio over or below that predicted by Capital Asset Pricing Model (CAPM). It is measured as:

$$\text{Jensen's alpha} = \text{Portfolio Return} - [\text{Risk Free Rate} + \text{Portfolio Beta} * (\text{Market Return} - \text{Risk Free Rate})]$$

Higher the Sortino Ratio better the fund is able to deliver by mitigating downside risk. In other words, Sortino Ratio measures the volatility caused by negative returns.

- Positive Alpha = Benchmark-beating returns
- Negative Alpha = Returns lower than benchmark

A positive alpha indicates that the fund manager is able to beat the market with his/her stock picking skills.

To sum up, looking at return in isolation can give you an incomplete picture.

Use these ratios collectively to evaluate the performance the portfolio/fund in the context of risk and the benchmark to make sound investment decisions.

It is not advisable to make an investment decision by relying on any

one single ratio.