PORTFOLIO PERFORMANCE EVALUATION
Risk Adjusted Measures

Any Investor would naturally be interested in tracking the value of his investments, whether he invests directly in the market or indirectly through mutual funds. Periodically, he would have to make an intelligent decision on whether to continue with the investment to get an acceptable return from the fund he has selected or to switch to another fund. He therefore needs to understand the basis of appropriate performance measurement of the fund and acquire the basic knowledge of the different measures of evaluating the performance of a fund.

The fund manager has to constantly monitor the performance of the fund in order to deliver the returns in tune with the investment objectives. Measuring performance would also help the Fund Manager in changing weights (of asset classes, sectors etc..) in the portfolio at the right time.

1.1. Different performance measures
The measurement of fund’s performance can be done on the basis of Returns, Risk, Cost effectiveness and a host of other dimensions.

There are many measures of fund performance. A measure is chosen depending upon the type of fund, the investment objective and the market conditions.

The measures can broadly be categorized into the following groups.

1. Return Based Methods
2. Risk Adjusted Methods.
3. Other Methods

1.2. Risk Adjusted Methods
Return alone should not be considered as the basis of measurement of the performance of a mutual fund scheme, it should also include the risk taken by the fund manager because different funds will have different levels of risk attached to them. Risk associated with a fund, in general, can be defined as variability in the returns generated by it.
Portfolio Performance Evaluation - Risk Adjusted Measures

The main objective of investing in mutual fund scheme is to diversify risk. Though the mutual funds invest in a broad based and diversified portfolio, the fund managers take different levels of risk in order to achieve the scheme’s objectives. Therefore, while evaluating and comparing the performance of the schemes, the returns should be measured taking into the account the risks involved in getting the returns.

The following are some of the popular Risk adjusted measures

1. Differential Return: Jensen’s Alpha

2. Return per unit Risk
   a) Sharpe’s RVAR
   b) Treynor’s RVOL

1.2.1. Differential Return: Jensen’s Alpha

This measure involves evaluation of the returns that the fund has generated vs. the returns it is expected to generate, given the level of its systematic risk.

Here we take the periodic (say quarterly) ex-post returns of our portfolio and a benchmark (Say a relevant Market Index) over the period under evaluation.

We would compute the return in each period and take the mean of the returns on the portfolio under evaluation (Called the Ex-post actual / realized return on the portfolio). Let us denote this as \( \bar{R}_{pa} \).

Similarly, we would compute the return on the benchmark index in each period to arrive at the mean of the returns and variance of these returns. Finally we would compute the Beta of the Portfolio by regressing its returns with that of the index.

Given a good estimate of the risk free rate (alternatively can be averaged over period on the similar lines discussed above), we use the SML to arrive at the expected return on the portfolio

\[
\bar{R}_{pe} = R_f - (\bar{R}_m - R_f)\beta_p
\]

Should \( \bar{R}_{pa} \) be greater than \( \bar{R}_{pe} \) the fund is said to have performed better else otherwise.

Alternatively we can evaluate the fund’s performance through the differential return
\( \bar{R}_{pa} - \bar{R}_{pe} \) called Jensen’s Alpha.
The fund is said to have performed better if Jensen’s Alpha is +Ve else other wise.

1.2.2. Return Per Unit Risk: Sharpe & Treynor’s Measures
The performance of a managed portfolio is measured in terms of return per unit of risk. This involves relating absolute observed return to a measure of risk to develop risk-adjusted measures for ranking fund performance. Accordingly, mutual funds that provide the highest return per unit of risk would be considered as the best performer. Thus, two such measures have been commonly used for performance evaluation. They are:

- Sharpe’s Reward to Variability Ratio (RVAR)
- Treynor’s Reward to Volatility Ratio (RVOL)

A. Sharpe's Reward to Variability Ratio (RVAR)
The calculation of RVAR of a portfolio involves diving its average excess return ($\bar{R}_{pa} - R_f$) by its total risk (SD of the portfolio)

$$RVAR = \frac{\bar{R}_{pa} - R_f}{\sigma_p}$$

Larger the ratio, better is the performance of the fund

B. Treynor’s Reward to Volatility Ratio (RVOL)
The calculation of RVOL of a portfolio involves dividing its average excess return ($\bar{R}_{pa} - R_f$) by its market risk (Beta)

We use same regression model (outlined in the case of Jensen’s alpha) to arrive at the average return on the portfolio ($\bar{R}_{pa}$), the Beta of the portfolio and average risk free rate ($R_f$).

$$RVOL = \frac{\bar{R}_{pa} - R_f}{\beta_p}$$

Larger the ratio, better is the performance of the fund