Term of the week

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An Investor Education Initiative

Mutual Fund Ratios – Tracking Error

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Definition:

The investment objective of an index fund is to achieve returns which are commensurate to that of the target Index. An Index Fund is a mutual fund scheme that invests in the securities in the target Index in the same proportion or weightage of the securities as it bears to the target index.

An investment manager attempts to replicate the investment results of the target index by holding all the securities in the Index. Still there are instances, which are mentioned below, that leads to mismatch of the returns of the index with that of the fund. This mismatch or the difference in the returns of the Index with that of the fund is known as Tracking Error.

Formula:

Tracking error is the standard deviation of the differential return, which is defined as the difference between fund return and its benchmark return. In other words, tracking error measures the extent to which the differential returns varies from the average differential return.

Formula for tracking error

$$TE = \sqrt{\frac{1}{n-1} \sum \{D - \bar{D}\}^2}$$

TE = Tracking error
n = Number of observations
D = Differential return
D = Average Differential return

Reasons of Tracking Error

- **Expenditure incurred by the fund**: The fund has to incur expenses towards its day to day management, transaction fees payable at the time of purchase or sale of securities.

  The lower the expenditure incurred by the fund, the lower will be the tracking error.

- **Cash balance:** Ideally, the full corpus of the fund has to be invested in the underlying index. But this may not be possible due to the funds obligation to meet redemption, receipt of dividend or incur expenses.

  So when the fund holds more cash, it has that much less to invest in the underlying index and thus it leads to mismatch in the returns.

- **Corporate Actions:** Whenever there is a corporate action such as debenture or warrant conversion, rights, merger, change in constituents, bonus, forfeiture, preferential issue, etc. the fund has to realign its portfolio to the benchmarked Index.
  This leads to buying and selling which add up to the expenditure which again affect the returns of the fund. Also, the realignment has to be proper; otherwise there would be a mismatch in the investment in each security of the benchmarked Index vis-a-vis the actual weightage of each security in the benchmarked Index.

Significance

- Closer the weightage of the stocks in the portfolio to the Index, lower will be the tracking error.
- Expenses like transaction costs including broker' commission, bid and ask spread, etc. gets subtracted from the returns of the fund. Higher the expenses incurred, greater will be the tracking error
- When the fund holds more cash, it has that much less to invest in the underlying index and thus leads to higher tracking error.
- Tracking Error is the most important ration while choosing which index fund to be invested in. (index funds with the same objective). Funds with lower tracking error will provide investors returns inline with the benchmark indices.

  Index Funds are not mandated to outperform or underperform their benchmark indices. Therefore, if an index fund has a high tracking error compared with other similar index funds, it implies that the fund is not performing as per its stated objectives.

Mutual fund investments are subject to market risks, read all scheme related documents carefully.