

Formula & Methodology

Sr. No.	Parameter	Calculation methodology / formulae
1	Expense Ratio (Month-end Total TER separately for Regular Plan & Direct Plan)	Weighted Average i.e. Total Expense of the month / Average Asset / number of days in month * days in a year
2	Investment in securities	Disclosure of all securities with a weight of 1% or more and disclosure of all securities up to 90% of the total portfolio sorted in descending order of unhedged exposure. Securities with less than 1% weight can be clubbed as "Other securities with less than 1% weight".
3	Allocation by Sectors for Equity Funds	Top 10 Sectors, along with aggregate of other sectors under 'Other Sector'. (Tabular Representation or Graphical Representation)
4	Allocation by Asset Class for Hybrid & Solution Funds	To show Equity (hedged) & Equity (un-hedged), along with Debt, Gold, Silver, wherever applicable. (Tabular Representation or Graphical Representation)
5	Allocation by Credit Rating for Hybrid, Fixed Income Funds	Allocation to be provided based on Short & Long Term Ratings for securities including maturity less than 1 year. (Tabular Representation or Graphical Representation)
6	Standard Deviation for Equity Funds (%)	Measure as a sample standard deviation (STDEV()) in Microsoft Excel The Standard Deviation formula used is: $\text{Standard Deviation} = \sqrt{\frac{\sum (R_i - \bar{R})^2}{n - 1}}$ Where: R_i = Return Series $\bar{R}$ = Mean of the return series n = Number of observations/values Annualized Standard Deviation = Monthly Standard Deviation × sqrt (12) - Standard Deviation should reflect both for fund as well as for the relevant benchmark - For Standard Deviation, Beta and Tracking Error should be computed taking similar data points.
7	Beta for Equity Funds	Beta to be calculated as: $\beta = \frac{\text{Covariance (Fund Returns, Benchmark Returns)}}{\text{Variance (Benchmark Returns)}}$ Expanded Formula $\beta = \frac{\sum_{i=1}^n (R_{f,i} - \bar{R}_f)(R_{m,i} - \bar{R}_m)/(n - 1)}{\sum_{i=1}^n (R_{m,i} - \bar{R}_m)^2/(n - 1)}$ Where: $R_{f,i}$ = Fund return for period i $R_{m,i}$ = Benchmark (market/index) return for period i $\bar{R}_f$ = Average fund return

		• $\bar{R}_m$ = Average benchmark return • n = Number of observations/values For Standard Deviation, Beta and Tracking Error should be computed taking similar data points.
8	Tracking Error (TE) for Passive Funds (%)	Methodology • Step 1: Obtain the NAV values and the TR Index values for each day of the total time period required • Step 2: Calculate the percentage change in the NAV and TR Index for each day over its previous day Percentage change in the NAV = NAV as on day (t) – NAV as on day(t-1) NAV as on day (t-1) • Step 3: Calculate the difference between the percentage change in the NAV and the percentage change in the TR Index for each day • Step 4: Calculate the standard deviation of the difference obtained from day(1) to day(n) in • Step 5: Calculate the Annualised Tracking error as per the formula given below Formula $\text{Tracking Error} = \sqrt{\frac{\sum_{i=1}^n (R_{f,i} - R_{b,i} - \bar{D})^2}{n - 1}}$ Where: • $R_{f,i}$ = Fund return for period i • $R_{b,i}$ = Benchmark return for period i • $D_i = R_{f,i} - R_{b,i}$ = Active return • $\bar{D}$ = Average active return • n = Number of observations • <i>Active Return</i> = Fund Return – Benchmark Return 1-year & 3-year TE data shall be provided for Schemes that have completed 3 years. 1-year data for Schemes more than 1 year but not completed 3 years. For Standard Deviation, Beta and Tracking Error should be computed taking similar data points.
9	Tracking Difference	Formula Tracking Difference = Scheme returns – Benchmark index return 1 year, 3 years, 5 years, 10 years & since the date of allotment of units of the Scheme
10	Sharpe Ratio for Equity Funds	Formula $\text{Sharpe Ratio} = \frac{R_p - R_f}{\sigma_p}$ Where: • R_p = Average portfolio (fund) return • R_f = Risk-free return • σ_p = Standard deviation of portfolio returns TREPS would serve as a more appropriate risk-free rate as Mutual Funds deploy idle cash in TREPs.
11	Annual Portfolio Turnover Ratio (PTR) for Equity / Hybrid Funds	PTR to be disclosed for both Gross Exposure (Equity + Debt + Derivatives) and Net Equity Exposure for Funds with Security Derivative Exposure Formula: <i>Lower of Purchases or Sales during the period ÷ Average AUM during the period</i>

		• Period considered: last one year. • CBLO, Repo, FD, Margin FD, MFU and SLB are excluded from purchase/sale calculations. • Fixed income securities and equity derivatives are included.
12	Average Maturity (years) for Hybrid & Fixed Income Funds**	Average Maturity represents the weighted average maturity of the assets. It represents the weighted average time remaining until the underlying debt securities in the portfolio mature. Formula If weights add up to 100%: $\text{Average Maturity} = \sum (w_i \times M_i)$ Where: • MV_i = Portfolio weight of security i • M_i = Remaining maturity of security i
13	Macaulay Duration (years) for Hybrid & Fixed Income Funds	Macaulay Duration measures the weighted average time required to receive all cash flows from a bond, including coupons and principal repayment. It is expressed in years. Formula $\text{Macaulay Duration} = \frac{\sum \left(\frac{PV(CF_t)}{\text{Price}} \times t \right)}{\sum \left(\frac{PV(CF_t)}{\text{Price}} \right)}$ Where: • CF_t = Cash flow at time t • $PV(CF_t)$ = Present value of cash flow • t = Time in years
14	Modified Duration (years) for Hybrid & Fixed Income Funds	Modified Duration measures the approximate percentage sensitivity of a bond's price to a small change in yield. Yield and compounding frequency should be expressed on a consistent basis. Formula $\text{Modified Duration} = \frac{\text{Macaulay Duration}}{1 + (\text{YTM}/m)}$
15	Yield to Maturity (%) for Hybrid & Fixed Income Funds	YTM is the implied annualized rate of return on a bond if it is held until maturity and all coupon payments are reinvested at the same rate. It is not an assured return. Formula YTM is the value of r that satisfies: $P = \sum_{t=1}^n \frac{C}{(1+r)^t} + \frac{F}{(1+r)^n}$ Where: • P = Current market price • C = Coupon payment • F = Face value (principal) • n = Number of periods to maturity • r = Yield to Maturity Since r cannot usually be solved directly, financial calculators, Excel, or iterative methods are used.
16	Annualized Portfolio Yield (%) for Hybrid & Fixed Income Funds	YTM Formula $\text{Portfolio YTM} = \sum (w_i \times YTM_i)$ Where: • w_i = Weight of security i

		• YTM_i = Yield to Maturity of security i
17	Performance/ Returns for all schemes	Lumpsum Performance of ₹10,000 shows what a one-time investment of ₹10,000 would have grown to over different periods namely 1-year, 2-years, 3-years, 5-years, 7-years and since inception. Formula $\text{Current Value} = 10,000 \times (1 + r)^n$ Where: • ₹10,000 = Initial investment • r = Absolute return for $n \leq 1$; for such periods, Current Value = ₹10,000 $\times (1 + r)$ CAGR for $n > 1$ • n = Investment period in years
18	SIP Returns for Equity Oriented Schemes only - Regular & Direct	The SIP return calculation is based on Rs. 10,000 invested every month. Returns would be 1-year, 3-years, 5-years, 7-years and since inception. SIP Return is calculated using the XIRR (Extended Internal Rate of Return) methodology, with each instalment treated as an outflow on its actual investment date and the closing market value treated as an inflow on the valuation date.

Annexure 2

Sr.No.	Parameter	Calculation methodology / formulae
1	Total Expense Ratio	Weighted Average i.e. Total Expense of the month / Average Asset / number of days in month * days in a year
2	Sharpe Ratio	$(R_i - R_f) / \text{Stdev of Fund returns}$ Where, R_i = Fund Return R_f = Risk free Return (TREPs) TREPs would serve as a more appropriate risk free rate instead of MIBOR as Mutual Funds deploy idle cash in TREPs.
3	Beta Ratio	Covariance of NAV returns vs Index returns/ Variance of Index returns For Beta, the Scheme's applicable Total Return Index benchmark should be used.
4	Standard Deviation of Returns	Standard Deviation should reflect for the Fund as well as the relevant benchmark – $s = \sqrt{\frac{\sum (x - \bar{x})^2}{n - 1}}$ where, s = Standard Deviation x is the return series $\bar{x}$ is the mean of the return series N is the no of values Note: Standard Deviation of returns may be measured considering the data using the formula STDEV.S() in Microsoft Excel
5	Modified Duration	$= \text{Macaulay Duration} / [1 + (\text{YTM} / \text{Compounding Frequency})]$
6	Macaulay Duration	Macaulay Duration is a measure of the average time it takes to receive a bond's cash flows. It is calculated by summing up all the multiples of the present values of cash flows and corresponding time periods and then dividing the sum by the market bond price. It can be calculated using the following formula: $\text{Macaulay Duration} = \frac{\sum_{t=1}^n \text{PV}(\text{CF}_t) * t}{\text{Market Bond Price}} = \frac{\sum_{t=1}^n \frac{t * C}{(1+Y)^t} + \frac{n * M}{(1+Y)^t}}{\text{Market Bond Price}}$ Where: $\text{PV}(\text{CF}_t)$ – Present value of cash flow (coupon) at period t t – Time period for each cash flow C – Periodic coupon payment n – Total number of periods to maturity M – the Bond's maturity value Y – Periodic yield
7	Portfolio Turnover Ratio (Not applicable to Passive Funds)	Calculation method: Lower of purchase or sale during the period/Average AUM for the period. The period to be considered is last one year. TREPS/CBLO/Repo/FD/Margin FD/ MFU/SLB are not considered for purchase and sale. Should include Fixed income securities and Equity derivatives
8	Average Maturity	Weighted avg maturity of the assets
9	Portfolio Yield	Weighted Average valuation yield of the assets – Disclosure required only for Debt funds.

10	<i>Risk Free Return</i>	TREPs would serve as a more appropriate risk free rate instead of currently used MIBOR as Mutual Funds deploy idle cash in TREPs. Risk Free Return to be taken as WAR TREP of the last working day.
11	<i>Tracking Error</i>	Step 1: Obtain the NAV values and the TR Index values for each day of the total time period required Step 2: Calculate the percentage change in the NAV and TR Index for each day over its previous day Percentage change in the NAV = $\frac{\text{NAV as on day (t)} - \text{NAV as on day (t-1)}}{\text{NAV as on day (t-1)}}$ Step 3: Calculate the difference between the percentage change in the NAV and the percentage change in the TR Index for each day Step 4: Calculate the standard deviation of the difference obtained from day(1) to day(n) in Step 5: Calculate the Annualised Tracking error as per the formula given below <i>Annualised Tracking Error = Standard Deviation (obtained as per Step 4) $\sqrt{250}$</i>
12	<i>Tracking Difference</i>	Tracking Difference = Scheme returns – Benchmark index returns

Note

- Standard Deviation, Beta and Tracking Error should be computed taking similar data points.
- For Schemes that have completed 3 years, 3-year data shall be provided; and for Schemes that have completed more than 1 year but not completed 3 years 1-year data shall be provided.
- For Fund of Funds and International Equity Funds these measures are not required to be reflected.