

*Dhruv Mandavkar*TECHNICAL METHODOLOGY · QUANTITATIVE FRAMEWORK  
V2.0 · MARCH 2026

## TECHNICAL METHODOLOGY — QUANTITATIVE SCREENING MODEL

# Equity Mutual Fund Screening Methodology

A Quantitative Framework for Ranking Indian Equity Mutual Funds

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Data Source: ACE MF | Reference Date: March 2026 | Version 2.0

<p>STAGE 1 — UNIVERSE</p> <p>260 Regular Growth funds across 8 SEBI equity categories + 2 info-only categories</p>	<p>STAGE 2 — GATES</p> <p>3 pass/fail filters: AUM · Vintage · Alpha → 177 qualifying funds</p>	<p>STAGE 3 — SCORING</p> <p>5-factor composite score 0–100 percentile rank → 5-tier rating output</p>
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**260**

STARTING UNIVERSE

**177**

SCORED FUNDS

**8**

SEBI CATEGORIES

**5**

SCORING FACTORS

## EXECUTIVE SUMMARY

This document sets out the full methodology behind the v2.0 Equity Mutual Fund Screening Model, a five-factor quantitative ranking system applied to Regular Growth plan equity mutual funds available in the Indian market. The model sources data from ACE MF and covers 8 SEBI-defined equity categories.

Starting from a universe of 260 Regular Growth funds across 8 scored categories, a three-gate filter reduces the investable set to 177 funds that pass minimum AUM, vintage, and alpha thresholds. Each qualifying fund is then scored on a 0–100 composite scale derived from risk-adjusted return metrics and cost. Funds are rated Strong Buy, Buy, Hold, Underweight, or Avoid.

Two additional categories (Dividend Yield: 10 funds, Contra: 2 funds) are listed for informational completeness but are not scored due to small universe size and limited comparability.

## Key Findings — v2.0

FINDING	DETAIL
<b>Alpha present, not universal</b>	81% of scored funds generated positive 3-year alpha vs. stated benchmark. However, only 37% rated Strong Buy or Buy, indicating wide quality dispersion.
<b>Gate attrition is significant</b>	260 funds enter the model; 83 (32%) fail at least one gate. AUM is the most common failure point in newer categories like Multi Cap and Large & Mid Cap.
<b>ELSS lock-in premium</b>	ELSS funds show higher consistency scores relative to peers — consistent with the behavioural benefit of the 3-year lock-in reducing panic redemptions.
<b>Mid Cap skews best</b>	Mid Cap has the highest average composite score across categories, driven by strong 3Y and 5Y alpha generation over benchmark.
<b>Cost is not a differentiator</b>	Expense ratios are tightly clustered within each category (typically 1.5–2.5% for Regular plans). Cost alone does not separate top from bottom-rated funds.

## SECTION 1 · DATA UNIVERSE AND PIPELINE

### 1.1 Data Source

All data is sourced from ACE MF, a widely used institutional data platform for Indian mutual fund analytics. Data is extracted as a standard 51-column Excel export. The reference date for all metrics is March 2026.

- **Returns:** Compound Annual Growth Rate (CAGR) over 1Y, 3Y, 5Y, and 10Y horizons for both the fund and its primary stated benchmark.
- **Risk:** Sharpe ratio, Sortino ratio (3-year, computed by ACE MF).
- **Cost:** Expense ratio for Regular plan and Direct plan (used to compute distributor spread).
- **Fund profile:** AUM, age from inception date, category, AMC name, benchmark index.

### 1.2 Universe Construction

The starting universe applies three filters to the raw ACE MF export:

FILTER	LOGIC	RATIONALE
<b>Plan type</b>	Scheme name contains "(G)" AND does NOT contain "Dir" or "IDCW"	Selects Regular Growth plans only — the plan type relevant to distributor-advised clients.
<b>Primary benchmark</b>	Each fund appears twice in the export (once per benchmark). Deduplicate by keeping the first row per scheme name — ACE MF lists the primary stated benchmark first.	Ensures alpha is computed against the fund's primary stated benchmark, not a secondary index.
<b>Category scope</b>	8 equity categories from SEBI classification (listed in Section 4). Two categories retained as information-only (Dividend Yield, Contra).	Maintains SEBI mandate comparability within peer groups.

After applying these filters, the universe comprises 232 unique Regular Growth equity funds (from the primary equity data file) plus 28 Focused Fund schemes (extracted from the hybrid data file, as ACE MF classifies Focused Funds under the hybrid export). Total starting universe: **260** funds.



FIG. 1 – MODEL PIPELINE: UNIVERSE → GATES → SCORING → RATING

## SECTION 2 · LAYER 1 — PASS/FAIL GATES

Before any scoring is applied, each fund must clear three quantitative gates. Funds that fail any single gate are excluded from scoring and listed separately as "Below Gate" in the output. Gates are applied within each SEBI category independently.

GATE	THRESHOLD	EXCEPTION	RATIONALE
<b>AUM Gate</b>	AUM ≥ INR 500 Cr	ELSS: ≥ INR 300 Cr (lower threshold reflects category-specific flow constraints from 3-year lock-in)	Eliminates funds with insufficient scale. Smaller funds face higher fixed-cost drag, potential redemption pressure risk, and thinner management resources.
<b>Vintage Gate</b>	Age ≥ 3 years	None	A minimum 3-year track record is required before the primary scoring metric (3Y alpha) is meaningful. Younger funds have insufficient data for reliable percentile ranking.
<b>Alpha Gate</b>	3Y Alpha > -5%	None	A fund that has significantly underperformed its benchmark over three years on a compounded basis is fundamentally unsuitable for client recommendation, regardless of other metrics.

### Alpha Calculation

Alpha is computed as a simple excess return, not a regression-adjusted alpha:

$$\text{Alpha (nY)} = \text{Fund CAGR (nY)} - \text{Benchmark CAGR (nY)}$$

where n = 1, 3, 5, or 10 years. Both CAGRs are sourced directly from ACE MF against the fund's

primary stated benchmark. This is a return-differential measure, not an OLS alpha, which is appropriate given the point-to-point nature of the data and the objective of ranking within-category peers.

### Gate Results — v2.0

CATEGORY	PRE-GATE	POST-GATE	FAILED	AUM GATE
Large Cap Fund	30	17	13	INR 500 Cr
Flexi Cap Fund	38	27	11	INR 500 Cr
Mid Cap Fund	30	26	4	INR 500 Cr
Small Cap Fund	30	23	7	INR 500 Cr
ELSS	33	24	9	INR 300 Cr *
Multi Cap Fund	30	19	11	INR 500 Cr
Large & Mid Cap Fund	29	22	7	INR 500 Cr
Focused Fund	28	19	9	INR 500 Cr
<b>TOTAL</b>	<b>248</b>	<b>177</b>	<b>71</b>	<b>—</b>

\* ELSS AUM gate set at INR 300 Crore; all other categories use INR 500 Crore.

Note: Pre-gate count refers to scored categories only (excludes Dividend Yield: 10, Contra: 2).

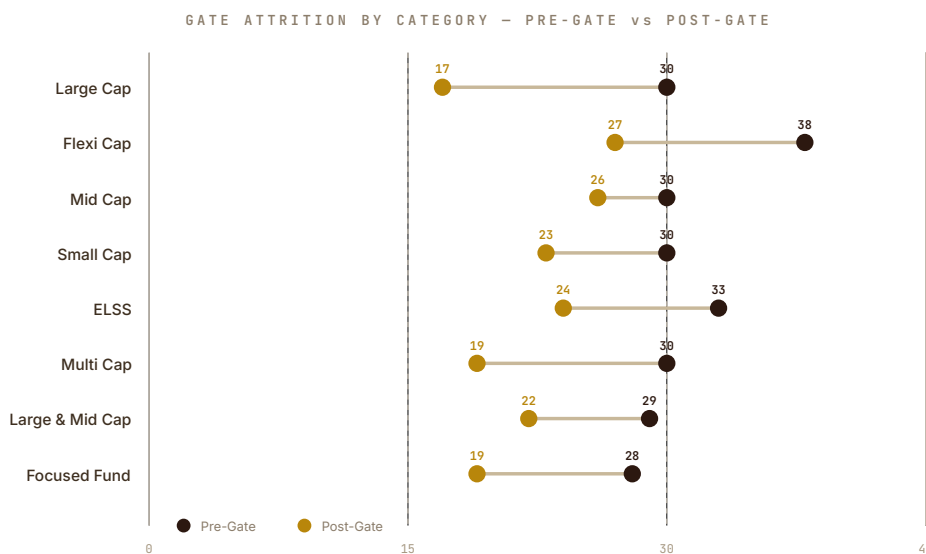


FIG. 2 — GATE ATTRITION: PRE-GATE VS POST-GATE FUND COUNT BY CATEGORY

## SECTION 3 · LAYER 2 — FIVE-FACTOR QUANTITATIVE SCORING

Funds that clear all three gates are ranked within their SEBI category using a five-factor composite score. Each factor is converted to a percentile rank within the category (0–100 scale), then combined as a weighted average. This produces a final composite score between 0 and 100.

### 3.1 Percentile Ranking Methodology

For each factor, funds are ranked from best to worst within the category. A higher percentile always represents a better outcome. For factors where a higher raw value is better (alpha, Sharpe, Sortino, consistency), the ranking is ascending. For the cost factor, where a lower expense ratio is better, the ranking is inverted (descending raw value = ascending percentile).

$$\text{Percentile (fund } i) = (\text{rank}_i / n) \times 100$$

where  $\text{rank}_i$  is the fund's rank within the category (1 = worst) and  $n$  is the total number of scored funds in the category.

### 3.2 The Five Factors

FACTOR	METRIC (SOURCE)	FORMULA / COMPUTATION	WHAT IT CAPTURES
<b>Alpha</b>	3-Year CAGR excess return vs. primary benchmark (ACE MF)	Fund 3Y CAGR minus Benchmark 3Y CAGR. Percentile rank: higher is better.	Primary active value creation. Rewards managers who consistently beat their mandate benchmark on a compounded basis.
<b>Sharpe Ratio</b>	3-Year Sharpe ratio (ACE MF)	Return per unit of total risk (standard deviation). Percentile rank: higher is better.	Risk-adjusted return quality. Penalises funds that generate returns through excessive volatility rather than skill.
<b>Consistency</b>	Average percentile of 1Y, 3Y, and 5Y alpha (ACE MF)	Compute percentile rank of 1Y alpha, 3Y alpha, and 5Y alpha separately. Consistency = mean of those three percentiles.	Cross-horizon stability. A fund that scores well on one time horizon but poorly on others is less reliable than one that consistently outperforms across all horizons.
<b>Sortino Ratio</b>	3-Year Sortino ratio (ACE MF)	Return per unit of downside deviation only. Percentile rank: higher is better.	Downside risk management. Unlike Sharpe, Sortino does not penalise upside volatility. Rewards funds that protect capital during drawdown periods.
<b>Cost</b>	Regular plan expense ratio (ACE MF)	Raw expense ratio (%). Percentile rank: lower ratio = higher percentile (inverted ranking).	Cost efficiency. A lower total expense ratio is a direct return headwind. Given tight clustering within categories, this factor carries a lower weight (5%).

### 3.3 Factor Weights

Weights are calibrated per category to reflect category-specific characteristics. Two weight configurations are in use:

CATEGORY	ALPHA	SHARPE	CONSISTENCY	SORTINO	COST
Large Cap, Flexi Cap, Mid Cap, Small Cap, Multi Cap, Large & Mid Cap, Focused Fund ( <i>default</i> )	25%	25%	25%	20%	5%
ELSS (Equity Linked Savings Scheme)	20%	25%	30%	20%	5%

#### ELSS WEIGHT RATIONALE

The ELSS category receives an elevated consistency weight (30%) and reduced alpha weight (20%). The rationale: the mandatory 3-year lock-in period means clients cannot exit in downturns. This makes cross-horizon performance stability more critical than raw alpha magnitude. The lock-in also attracts more patient capital, making consistency a stronger proxy for manager quality in this category.

### 3.4 Composite Score

$$\text{Composite Score} = (\text{Alpha\_pct} \times w\_alpha) + (\text{Sharpe\_pct} \times w\_sharpe) + (\text{Consistency\_pct} \times w\_consistency) + (\text{Sortino\_pct} \times w\_sortino) + (\text{Cost\_pct} \times w\_cost)$$

All factor weights sum to 1.0. The composite score is expressed on a 0–100 scale and rounded to one decimal place.

## SECTION 4 · CATEGORY-SPECIFIC FRAMEWORKS

The eight scored categories follow SEBI's equity fund classification mandate. The table below summarises the regulatory definition, AUM gate applied, benchmark note, and scoring configuration for each category.

## 4.1 Large Cap Fund

SEBI MANDATE	Minimum 80% of total assets in equity of large cap companies (top 100 by market cap).
UNIVERSE	30 funds pre-gate   17 funds post-gate
AUM GATE	INR 500 Crore minimum
BENCHMARK NOTE	Each fund uses its own primary stated benchmark (most commonly Nifty 50 TRI or Nifty 100 TRI). Alpha is computed fund-by-fund against the stated benchmark.
SCORING CONFIG	Default weights: Alpha 25%, Sharpe 25%, Consistency 25%, Sortino 20%, Cost 5%.

**CATEGORY NOTES:** Highly competitive category. Index funds and ETFs (excluded from this model as passive products) represent a growing share of Large Cap AUM, raising the bar for active alpha generation. Gate attrition is high (13 of 30 fail), primarily on AUM and alpha gates.

## 4.2 Flexi Cap Fund

SEBI MANDATE	Minimum 65% of total assets in equity. No market cap restriction — fund manager has full discretion to allocate across large, mid, and small cap.
UNIVERSE	38 funds pre-gate   27 funds post-gate
AUM GATE	INR 500 Crore minimum
BENCHMARK NOTE	Primary stated benchmark varies by fund. Most commonly Nifty 500 TRI or Nifty 50 TRI. Alpha computed per fund against stated benchmark.
SCORING CONFIG	Default weights: Alpha 25%, Sharpe 25%, Consistency 25%, Sortino 20%, Cost 5%.

**CATEGORY NOTES:** Largest category by fund count in the scored universe. The broad mandate creates wide performance dispersion, making peer ranking particularly meaningful here. Alpha is the dominant differentiator.

### 4.3 Mid Cap Fund

**SEBI MANDATE** Minimum 65% of total assets in equity of mid cap companies (rank 101–250 by market cap).

**UNIVERSE** 30 funds pre-gate | 26 funds post-gate

**AUM GATE** INR 500 Crore minimum

**BENCHMARK NOTE** Most funds use Nifty Midcap 150 TRI or S&P BSE Mid-Cap TRI as primary stated benchmark.

**SCORING CONFIG** Default weights: Alpha 25%, Sharpe 25%, Consistency 25%, Sortino 20%, Cost 5%.

**CATEGORY NOTES:** Highest average composite score in the v2.0 model. Strong alpha generation historically, though higher volatility relative to Large Cap. Low gate attrition (only 4 funds fail).

### 4.4 Small Cap Fund

**SEBI MANDATE** Minimum 65% of total assets in equity of small cap companies (rank 251 and below by market cap).

**UNIVERSE** 30 funds pre-gate | 23 funds post-gate

**AUM GATE** INR 500 Crore minimum

**BENCHMARK NOTE** Most funds use Nifty Smallcap 250 TRI or S&P BSE Small Cap TRI.

**SCORING CONFIG** Default weights: Alpha 25%, Sharpe 25%, Consistency 25%, Sortino 20%, Cost 5%.

**CATEGORY NOTES:** Wide return dispersion and higher drawdown risk relative to large and mid cap categories. The Sortino component is particularly relevant here as downside protection is a meaningful differentiator. Higher AUM gate failure rate versus mid cap.

## 4.5 Equity Linked Savings Scheme (ELSS)

SEBI MANDATE	Minimum 80% in equity. Tax-saving category under Section 80C of the Income Tax Act. 3-year statutory lock-in period per investment.
UNIVERSE	33 funds pre-gate   24 funds post-gate
AUM GATE	INR 300 Crore minimum (category exception – lower threshold applies)
BENCHMARK NOTE	Most funds use Nifty 500 TRI or Nifty 50 TRI.
SCORING CONFIG	ELSS weights: Alpha 20%, Sharpe 25%, Consistency 30%, Sortino 20%, Cost 5%. Consistency elevated; alpha reduced.

**CATEGORY NOTES:** The lock-in period changes the investor behaviour profile. Clients cannot panic-sell in a drawdown, which structurally rewards consistency over peak performance. The lower AUM gate reflects that high-quality ELSS funds may have lower AUM due to the cap on tax deductible contributions (INR 1.5 lakh/year per investor under 80C).

## 4.6 Multi Cap Fund

SEBI MANDATE	Minimum 75% in equity, with mandatory minimum 25% each in large cap, mid cap, and small cap stocks. Unlike Flexi Cap, allocation is constrained across all three bands.
UNIVERSE	30 funds pre-gate   19 funds post-gate
AUM GATE	INR 500 Crore minimum
BENCHMARK NOTE	Most use Nifty 500 Multicap 50:25:25 TRI as primary benchmark, reflecting the SEBI-mandated allocation constraint.
SCORING CONFIG	Default weights: Alpha 25%, Sharpe 25%, Consistency 25%, Sortino 20%, Cost 5%.

**CATEGORY NOTES:** Relatively new category (SEBI mandate issued October 2020). AUM gate failure is common (11 of 30 funds fail) reflecting the category's youth. Many funds migrated from other categories post-mandate, making long track records less directly comparable.

## 4.7 Large & Mid Cap Fund

SEBI MANDATE	Minimum 35% in large cap equity AND minimum 35% in mid cap equity.
UNIVERSE	29 funds pre-gate   22 funds post-gate
AUM GATE	INR 500 Crore minimum
BENCHMARK NOTE	Most use Nifty LargeMidcap 250 TRI as primary benchmark.
SCORING CONFIG	Default weights: Alpha 25%, Sharpe 25%, Consistency 25%, Sortino 20%, Cost 5%.
<p><b>CATEGORY NOTES:</b> Blended mandate sits between large and mid cap risk-return profiles. Good risk-adjusted return potential with partial downside cushion from the large cap floor. Reasonable gate pass rate (22 of 29).</p>	

## 4.8 Focused Fund

SEBI MANDATE	Maximum 30 stocks. Minimum 65% in equity. Can invest across all market cap segments.
UNIVERSE	28 funds pre-gate   19 funds post-gate
DATA NOTE	ACE MF classifies Focused Funds under the hybrid export. These 28 funds are extracted separately and included in the equity model.
AUM GATE	INR 500 Crore minimum
BENCHMARK NOTE	Most use Nifty 500 TRI. Individual fund benchmarks vary widely given the flexible mandate.
SCORING CONFIG	Default weights: Alpha 25%, Sharpe 25%, Consistency 25%, Sortino 20%, Cost 5%.
<p><b>CATEGORY NOTES:</b> High-conviction, concentrated portfolios. Return dispersion can be extreme in either direction. Risk-adjusted metrics (Sharpe, Sortino) are particularly relevant here as concentrated bets amplify both upside and downside volatility.</p>	

## 4.9 Information-Only Categories (Not Scored)

Two categories are retained in the output for completeness but are not included in the scoring model:

CATEGORY	FUNDS (REGULAR GROWTH)	REASON NOT SCORED
Dividend Yield	10	Universe too small for meaningful within-category percentile ranking. 10 funds with diverse mandates limit comparability.
Contra Fund	2	Only 2 Regular Growth funds. Peer ranking with n=2 is statistically meaningless. Listed for awareness.

## SECTION 5 · RATING BANDS AND DISTRIBUTION

Composite scores are mapped to a five-tier rating. Ratings are intended as an internal ranking tool — they indicate relative rank within a peer group, not absolute investment suitability. A Strong Buy in a weak category may be inferior to a Hold in a strong category.

RATING	SCORE RANGE	V2.0 COUNT	INTERPRETATION
<b>Strong Buy</b>	≥ 75	41	Top-quartile composite score. Consistent outperformance across multiple factors and horizons. Best-in-category candidates.
<b>Buy</b>	60 – 74	25	Above-average composite. Solid risk-adjusted profile with adequate consistency. Consider for core allocation.
<b>Hold</b>	45 – 59	40	Average composite. No strong case to buy or sell. Appropriate to hold existing positions but not initiate new ones.
<b>Underweight</b>	30 – 44	35	Below-average composite. Underperformance on multiple factors. Reduce exposure in favour of higher-rated peers.
<b>Avoid</b>	< 30	36	Bottom-quartile composite. Persistent underperformance across factors. Not recommended for client portfolios.
<b>Total Scored</b>	0 – 100	177	<b>Across 8 SEBI equity categories. Data as of March 2026.</b>

37% of scored funds (66 of 177) are rated Strong Buy or Buy. 43% (75 of 177) are rated Underweight or Avoid. This distribution reflects genuine quality dispersion in the Indian equity fund universe — active management adds value selectively, not universally.

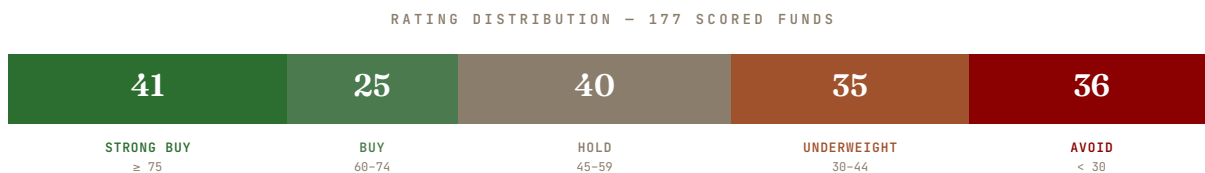


FIG. 3 – RATING DISTRIBUTION: PROPORTIONAL COUNT ACROSS 5-TIER RATING BANDS

## SECTION 6 · DATA SOURCES AND LIMITATIONS

### 6.1 Data Sources

DATA ELEMENT	SOURCE
Fund returns (1Y, 3Y, 5Y, 10Y CAGR)	ACE MF export — fund-specific, point-to-point as of data date
Benchmark returns (1Y, 3Y, 5Y, 10Y CAGR)	ACE MF export — primary stated benchmark per fund, same periods
Sharpe ratio, Sortino ratio	ACE MF export — 3-year, risk-free rate as per ACE MF methodology
AUM	ACE MF export — most recent month-end AUM
Expense ratio (Regular and Direct plan)	ACE MF export — latest available ratio
Fund age, category, AMC name, benchmark index	ACE MF export — scheme details as of data date

### 6.2 Key Limitations

- **Point-to-point returns, not rolling:** CAGR figures are point-to-point from a specific date. Rolling return analysis would be more robust but requires a time series of monthly NAV data, which is not in this export format.
- **Simple alpha, not regression alpha:** Alpha is computed as excess return vs. benchmark, not as Jensen's alpha from a regression model. It does not control for factor exposures (size, value, momentum). Two funds with identical regression alphas could receive different scores if their raw benchmark differentials differ.
- **Risk-free rate opaque:** The Sharpe and Sortino ratios are sourced directly from ACE MF. The exact risk-free rate used in ACE MF's calculation is not disclosed in the export. Changes to the assumed risk-free rate could shift ratio values across all funds.

- **Expense ratio lag:** Expense ratios in the export reflect the most recently filed rates, which may lag actual charged ratios by up to 30 days.
- **No qualitative overlay:** The model is purely quantitative. Manager tenure, fund house processes, ownership changes, and style drift are not captured. This model generates a shortlist, not a final recommendation.
- **Benchmark heterogeneity:** Within each category, individual funds have chosen different primary benchmarks. Alpha comparisons are within-fund (fund vs. own benchmark) rather than all-fund vs. a single category benchmark. This is appropriate for assessing each manager's mandate but limits direct cross-fund alpha comparison.
- **Data refresh dependency:** All scores are as of the data extraction date (March 2026). Scores must be refreshed when new ACE MF data is extracted. Historical scores are not retained in the current model version.

## GLOSSARY

TERM	DEFINITION
Alpha	Excess return of a fund over its primary stated benchmark. In this model: Alpha = Fund CAGR minus Benchmark CAGR for a given period.
AUM	Assets Under Management. Total market value of a fund's assets. Used as a proxy for fund viability and scale.
CAGR	Compound Annual Growth Rate. The annualised rate of return that would produce the same cumulative return if applied uniformly over the period.
Composite Score	Weighted average of five factor percentile ranks. Ranges 0–100. Higher = better relative ranking within category peer group.
Consistency	Average of the percentile ranks of 1Y, 3Y, and 5Y alpha within the category. Measures how uniformly a fund outperforms across time horizons.
ELSS	Equity Linked Savings Scheme. Tax-saving equity mutual fund category under Section 80C of the Income Tax Act. Mandatory 3-year lock-in per investment tranche.
Expense Ratio	Annual fee charged by the fund house, expressed as a percentage of AUM. Includes management fees, distributor commission (Regular plan), and fund operating costs.

<b>Gate (Layer 1)</b>	A pass/fail filter applied before scoring. Funds failing any gate are excluded from scoring and listed separately.
<b>Percentile Rank</b>	A fund's relative standing within its category peer group on a given metric. Expressed 0–100 where 100 = best in category. Computed as $(\text{rank} / n) \times 100$ .
<b>Regular Growth Plan</b>	A mutual fund plan that pays distributor commissions (reflected in a higher expense ratio versus Direct plan) and reinvests all returns into the NAV (Growth option — no dividend payout).
<b>SEBI Category</b>	One of the standardised fund categories defined by the Securities and Exchange Board of India. Each category has a prescribed asset allocation mandate that funds must maintain.
<b>Sharpe Ratio</b>	$(\text{Return minus risk-free rate}) / \text{Standard deviation of returns}$ . Measures return earned per unit of total risk. Higher is better.
<b>Sortino Ratio</b>	$(\text{Return minus risk-free rate}) / \text{Downside deviation}$ . Similar to Sharpe but penalises only downside volatility, not upside. Higher is better. More relevant for risk-averse client mandates.
<b>TRI</b>	Total Return Index. A benchmark index variant that includes dividend reinvestment. SEBI mandates TRI benchmarking for equity fund performance reporting in India.

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