

Methodology Document of NIFTY Low Volatility 50 Index

August 2018

Contact

Email: iisl@nse.co.in

Tel: +91-22-26598386

**Address: Exchange Plaza, Bandra Kurla Complex,
Bandra (East), Mumbai - 400 051(India).**

Contents

Introduction:	3
Index Construction & Review Methodology:.....	3
Index Maintenance:	4
Corporate Actions	4
Index Governance:	6
Index Calculation	8
Index Dissemination.....	9
About Us:	10

NIFTY Low Volatility 50 Index

Introduction:

The index aims to measure the performance of the least volatile securities listed on NSE. In order to make the 50 stock index investible and replicable, criteria's such as turnover and market capitalization are applied while selection of securities.

Weights of securities in the index are assigned based on the volatility values. Least volatile security in the index gets the highest weight. In order to derive the volatility of the securities, standard deviation of daily price returns (log normal) for last one year is considered.

Index Construction & Review Methodology:

Calculation Methodology

The index is constructed using divisor methodology similar to other NSE Indices Limited (formerly known as India Index Services & Products Limited-IISL) equity indices and theme based weighting methodology where weights are assigned based on volatility values of the securities.

Selection Criteria

1. Companies must rank within the top 300 companies by average free-float market capitalization and average daily turnover for the last six months.
2. The company should have a listing history of 1 year.
3. At the time of index reconstitution, a company which has undergone a scheme of arrangement for corporate event such as spin-off, capital restructuring etc. would be considered eligible for inclusion in the index if as on the cut-off date for sourcing data of preceding twelve months for index reconstitution, a company has completed twelve calendar months of trading period after the stock has traded on ex. basis subject to fulfilment of all eligibility criteria for inclusion in the index.
4. The company's trading frequency should be 100% in the last one year period.
5. The company should have a positive net worth as per the latest annual audited results.
6. Volatility of eligible securities are calculated using 1 year trailing prices (Adjusted for corporate actions) are ranked in ascending order.
7. Top 50 securities with least volatility form part of the index.
8. In order to reduce the replacements of scrip's in the index, a buffer of 100% shall be applied at the time of each review. This means that if the existing constituent at the time of the review ranks within the top 100, the same can be retained in the index.

Constituent Selection:

Volatility of eligible securities shall be calculated using 1 year trailing prices (Adjusted for corporate actions). The eligible securities are then ranked in ascending order of volatility values. Top 50 companies based on volatility rankings form part of the index. In order to reduce

the replacements of scrip's in the index, a buffer of 100% shall be applied at the time of each review.

Constituent weighting:

At each rebalancing, the weight 'W' for each index constituent 'i' is reset based on its volatility. Least volatile constituent in the index gets the highest weight.

$$w_i = \frac{\frac{1}{Volatility_i}}{\sum_{i=1}^N \frac{1}{Volatility}}$$

Base Date:

The base date is December, 31 2003. The base value is 1000, for price index as well as total return index. The index values are available from December, 31 2003.

Index Maintenance:

Rebalancing

Index maintenance plays a crucial role in ensuring the stability of the index. The indices are reconstituted on a quarterly basis. The replacement of stocks in the index (if any) is generally implemented from the first working day after F&O expiry of March, June, September and December. Quarterly rebalancing of weights is carried out considering the closing prices of the index constituents 5 working days prior to the effective date of the changes.

Additional index reconstitution may be undertaken in case any of the index constituent undergoes a scheme of arrangement for corporate events such as merger, spin-off, compulsory delisting or suspension etc. The equity shareholders' approval to a scheme of arrangement is considered as a trigger to initiate the exclusion of such stock from the index through additional index reconstitution.

The review is carried out using data of six month period ending last trading day of February, May, August and November of each year respectively. Volatility is calculated using closing prices of last one year (adjusted for corporate actions) period ending last trading day of February, May, August and November for each review respectively.

Calculation Frequency

The index is calculated end of day basis on all days that the National Stock Exchange of India is open for trading in equity shares.

Corporate Actions

Maintaining the index include monitoring and completing the adjustments for company additions and deletions, stock splits, stock dividends etc. Some corporate actions, such as stock splits and stock dividends, require simple changes in the stock prices of the companies in the index. Other corporate actions, such as special dividend (defined under Total Return (TR) Index Calculation section) require a divisor adjustment to prevent the value of the index from changing.

Adjusting the divisor for a change in market value leaves the value of the index unaffected by the corporate action. This helps keep the value of the index accurate as a barometer of stock market performance, and ensures that the movement of the index does not reflect the corporate actions of the companies in it. Divisor adjustments are made after the close of trading and after the calculation of the closing value of the index.

Corporate actions such as splits, stock dividends, rights offerings, and share changes are applied on the ex-date as detailed in the table hereunder:

Corporate Actions:

Sr. No.	Type of corporate action	Base Capitalisation / Divisor Adjustment	Adjustment in divisor
1.	Rights	Yes	Price and modified index shares will be adjusted and divisor will be calculated using the new modified index market capitalization after price adjustment.
2.	Bonus	No	No change in divisor, modified index shares and price will be adjusted as per the bonus ratio resulting in no change in index market capitalization.
3.	Share splits	No	No change in divisor, modified index shares and price will be adjusted as per the split ratio resulting in no change in index market capitalization.
4.	Debt conversion, Warrant Conversion, Further Issue, Forfeiture of shares	No	No impact on modified index shares, resulting no change in index market capitalization and divisor
5	Special Dividend	Yes	Price will be adjusted and divisor will be calculated using the new modified index market capitalization after price adjustment.

6	Spin-off, De-listing, Suspension	No	In case of spin-off, the security will be replaced from the index. The weights and modified index shares will be re-calculated for new index composition using old modified index market capitalization.
---	----------------------------------	----	--

Currency of Calculation

For calculation of the index, all prices in Indian rupees are considered

Index Governance:

Index Committee

A professional team at NSE Indices Limited manages the index. There is a three-tier governance structure comprising the Board of Directors of NSE Indices Limited, the Index Policy Committee, and the Index Maintenance Sub-Committee. NSE Indices Limited has constituted the Index Policy Committee, which is involved in the policy and guidelines for managing its indices. The Index Maintenance Sub-committee makes all decisions on additions and deletions of companies in the Index.

Index Policy

The indices use transparent, researched and publicly documented rules for its maintenance. These rules are applied regularly to manage changes to the indices. Index reviews are carried out periodically to ensure that each security in the index fulfills eligibility criteria.

Announcements:

All index-related announcements are posted on the websites of NSE Indices Limited and NSE. Changes impacting the constituent list are also posted on the Web site. Please refer to the www.niftyindices.com and www.nseindia.com.

Holiday Schedule:

For the calculation of indices, the NSE Indices Limited follows the official holiday schedule. A complete holiday schedule for the year is available on the NSE Indices Limited and NSE website. Please refer to the www.niftyindices.com and www.nseindia.com.

Index Precision

The level of precision for index calculation is as follows:

- Shares outstanding are expressed in units
- Share prices are rounded to two decimal places
- Market capitalization is stated to two decimal places

- Index values are disseminated up to two decimal places

Data Source

Prices of index constituents are sourced from NSE

Index Recalculations

All NIFTY family of indices are recalculated whenever errors occur. Users of the NIFTY indices are notified through appropriate channel of communication.

Market Feedback & Index Methodology Review

NSE Indices Limited is committed to ensure that all NIFTY indices are relevant for the market participants. In order to ensure this, NSE Indices Limited on an on-going basis interacts with the stakeholders inviting the feedback through various channels of communication. The feedback received from the market participants forms a key input for all index related aspects.

Review of methodology of NIFTY indices is carried out on an annual basis. Additionally, NSE Indices Limited also considers any feedback that it may receive with regards to index methodology as part of on-going market interactions. Any changes to the index methodology is approved by the Committee and the same is announced through a press release.

Other

In case of a market stress or disruption, NSE Indices Limited will review and deal with the situation on consultative basis with the National Stock Exchange of India Ltd. (NSE) as NSE is source for price data for computation of equity indices.

All indices are expected to reflect the performance of a basket of stocks selected based on the defined guidelines and theme. Every index user is advised to evaluate the benefits of index and take an informed decision before using the index for self or creation of index-linked products. NSE Indices Limited does not accept any liability for any losses, claims, expenses etc. that may be incurred by any person as a result of usage of NIFTY family of indices as a result of reliance of the ground rules, any errors or inaccuracies.

Index Calculation

Price Index Calculations:

Using the divisor and modified index market capitalization, Index value is calculated as follows.

1. $\text{Index Value}_t = (\text{Modified Index Market Capitalization} / \text{Index Divisor}_t) * 1000$
2. $\text{Modified Index Market Capitalization} = \sum (\text{Modified Index Shares})_i * \text{Price}_i$
3. $\text{Modified Index Shares}_i = (\text{Weight}_i * \text{Modified Index Market Capitalization}) / \text{Price}_i$
4. $\text{Modified Index Shares}_i (\text{on Base date}) = (\text{Weight}_i * \text{Base Index Divisor}) / \text{Price}_i$

Note: Modified index shares are calculated considering modified index market capitalization of the day prior to the rebalancing date. Modified shares are calculated whenever the index is rebalanced

Total Return (TR) Index Calculation:

The index reflects the return one would get if an investment is made in the index portfolio. As the index is computed real-time, it takes into account only the stock price movements. However, the price indices do not consider the return from dividend payments of index constituent stocks. Only the capital gains and losses due to price movement are measured by the price index. In order to get a true picture of returns, the dividends received from the index constituent stocks also need to be included in the index movement. Such an index, which includes the dividends received, is called the total return index. The total return index reflects the returns on the index from stock prices fluctuation plus dividend payments by constituent index stocks.

The total return version of the index is also available, which assumes dividends are reinvested in the index after the close on the ex-date. Corporate actions like dividend announcement do not require any adjustment in the normal price index (other than special dividend). Special dividend refers to a dividend that's more than 5% of close price of a stock declaring dividend and all cases of dividends (irrespective of the dividend amount), where the listed entity has sought exemption from the timeline prescribed under the provisions of SEBI (Listing Obligations and Disclosure Requirements) Regulations, 2015. A suitable divisor adjustment is made in case of a special dividend.

A separate Total Returns Index (TR) is calculated which shows the returns on Index portfolio, inclusive of dividends.

Calculation of the TR Index:

$$\text{TR Index} = \text{Previous TR index} * \left[1 + \left(\frac{(\text{Today's PR Index} + \text{Indexed Dividend})}{\text{Previous PR Index}} - 1 \right) \right]$$

Index dividend for the day 't' =

Total Dividends of the scrips in the Index/ Index divisor for the day

Total dividends of scrips in the Index = Σ (Dividend per share * Modified index shares)

Index Dissemination

Tickers

Index	Bloomberg	Reuters
NIFTY Low Volatility	NSELV	-

Web site

Daily index values, index constituents, methodology, and press releases are available on www.niftyindices.com and www.nseindia.com.

About Us:

About National Stock Exchange of India Limited (NSE):

The National Stock Exchange of India Ltd. (NSE) is the leading stock exchange in India and the third largest in the world by nos. of trades in equity shares in 2017, according to World Federation of Exchanges (WFE) report. NSE was the first exchange in India to implement electronic or screen based trading. It began operations in 1994 and is ranked as the largest stock exchange in India in terms of total and average daily turnover for equity shares every year since 1995, based on SEBI data. NSE has a fully-integrated business model comprising exchange listings, trading services, clearing and settlement services, indices, market data feeds, technology solutions and financial education offerings. NSE also oversees compliance by trading and clearing members with the rules and regulations of the exchange. NSE is a pioneer in technology and ensures the reliability and performance of its systems through a culture of innovation and investment in technology. NSE believes that the scale and breadth of its products and services, sustained leadership positions across multiple asset classes in India and globally enable it to be highly reactive to market demands and changes and deliver innovation in both trading and non-trading businesses to provide high quality data and services to market participants and clients.

For more information, please visit: www.nseindia.com

About NSE Indices Limited:

(Formerly known as India Index Services & Products Limited-IISL)

NSE Indices Limited, a subsidiary of NSE, provides a variety of indices and index related services for the capital markets. The company focuses on the index as a core product. The company owns and manages a portfolio of indices under the NIFTY brand of NSE, including the flagship index, the NIFTY 50. NIFTY equity indices comprises broad-based benchmark indices, sectoral indices, strategy indices, thematic indices and customised indices. NSE Indices Limited also maintains fixed income indices based on Government of India securities, corporate bonds, money market instruments and hybrid indices. Many investment products based on NIFTY indices have been developed within India and abroad. These include index based derivatives traded on NSE, Singapore Exchange Ltd. (SGX) and Taiwan Futures Exchange (TAIFEX) and a number of index funds and exchange traded funds. The flagship 'NIFTY 50' index is widely tracked and traded as the benchmark for Indian Capital Markets.

For more information, please visit: www.niftyindices.com