



# Low truBeta™ Indices

Index Methodology

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## Version History

No.	Date	Author	Comments
1.0	11/1/2018	T. Barchetto	Initial
1.1	12/26/2018	E.Bae	Change to trademark
1.2	10/22/2019	T.Barchetto	Clarification of index committee discretion

## Introduction

Beta is widely familiar to investors in describing the relationship between the risk and return for an asset relative to the overall market. A security with an estimated beta of 1.0 is expected to vary in the same direction and magnitude as the market. A beta of 1.5 would be interpreted to vary 50% more than the overall market; a beta of 0.50 would be expected to vary 50% less, and so on.

While simple to calculate how much of a stock's movement in the past was due to variations in the broader market, beta can be difficult to forecast. The traditional method uses five years of monthly returns to estimate future beta. Other updated models use one year of daily returns, emphasizing more recent data to help improve accuracy in estimating future beta in the near-term.

However, Salt Financial's analysis of these forecasting models seeks to reveal some of the limitations in using past data to estimate future behavior. For one, betas are not stable over time—they can fluctuate significantly and show vast differences between betas calculated using daily versus monthly returns. Secondly, we believe the traditional methods tend to have a persistent bias most visible in high and low beta stocks—overestimating higher betas and underestimating lower betas. This potentially misrepresents the real level of market sensitivity when using the traditional beta measures in estimating portfolio risk.

Salt Financial's truBeta™ is a proprietary beta forecast that uses a blend of long, medium, and short-term interval return data powered by a machine learning algorithm designed to produce a far more accurate forecast for the next quarter in comparison to traditional methods. By incorporating more recent data and correcting for the bias in estimating high and low beta stocks truBeta is intended to provide investors with what we believe is a superior forecast of the market risk embedded in their portfolios.

The **Salt Low truBeta Indices** use truBeta estimates to select stocks with lower sensitivity to the broader market or sector ("Base Market") and lower levels of beta variability as evidenced by their short-term and medium-term historical betas.

## Index Construction – Overview

Constructing the Low truBeta Indices involves the following steps:

- Defining the list of candidate stocks for inclusion (“Eligible Universe”)
- Calculating truBeta forecasts for each stock and limiting the universe to stocks with a truBeta score of less than 1.0
- Calculating a Beta Variability score from the short- and medium-term components used in the truBeta estimate.
- Selecting the stocks with the lowest Beta Variability score

### 1. *Eligible Universe*

Each Low truBeta Index is derived from a Base Market that corresponds to its desired market or sector exposure. The Base Market uses a liquid market or sector ETF such as the SPDR S&P 500 ETF (SPY) as its proxy for comparing returns but does not necessarily limit the selection of the Eligible Universe to the constituents in the index tracked by the ETF. The Eligible Universe is then compiled from the largest stocks in the Base Market, ranked by market capitalization, with an additional screen limiting it to the most liquid stocks to help minimize transaction costs for portfolios tracking the index.

### 2. *Beta Forecasts*

A beta forecast for each candidate in the Eligible Universe is calculated, based on historical long, medium, and short-term returns for the stock and the Base Market using Salt Financial’s truBeta methodology. To target lower volatility, only stocks with a truBeta score of less than 1.0 are considered.

### 3. *Beta Variability*

A Beta Variability score is calculated by the absolute difference between the short-term (intraday) and medium-term (daily) components used to generate the truBeta estimate. A lower score indicates more stability in beta over time.

### 4. *Ranking and Index Selection*

The list is then ranked in ascending order by Beta Variability score and the top  $n$  stocks ( $n$  depends on the individual index) are selected for

index inclusion. All index components are then equally weighted on the rebalancing date.

## Low truBeta Series

### *Salt Low truBeta US Market Index*

The Salt Low truBeta US Market Index targets lower volatility relative to the broader US market using the very liquid and well known SPY as a base to estimate beta. Although the SPY is used to compare returns for calculating beta, stocks in the Eligible Universe for the index are not limited to those in the S&P 500 as long as they meet the minimum market capitalization and other criteria.

<b>Base Market</b>	SPDR S&P 500 ETF (SPY)
<b>Index Tickers</b>	SFSTB (Price Return) SFSTBT (Gross Total Return)
<b>Eligible Universe</b>	The top 500 stocks by 30-day average daily volume from the Solactive US Large & Midcap Index (1000 components ranked by market capitalization).
<b>Number of Stocks</b>	100
<b>Sector Constraints</b>	To avoid over-concentration, the index is capped at 30% of <i>constituents</i> (not market value) in any one sector. Stocks that would violate the sector constraint are replaced by the next lowest ranked stock by Beta Variability from the Eligible Universe.
<b>Multiple Classes and Dual Listing</b>	Companies with multiple classes of stock <i>may be represented by more than one class in the index</i> as long as the class meets the other criteria for inclusion.  Companies that are dually-listed on more than one exchange are only represented once by the listing market with the highest volume in that stock (typically the primary listing).
<b>Rebalance Dates</b>	The Effective Date is after the close on the third Friday of March, June, September, and December with the Selection Date five (5) business days prior to the Effective Date.

## Index Maintenance

### *Rebalancing*

The Low truBeta Series Indices are rebalanced (and reconstituted) *quarterly* according to the following timeline:

- Constituents are selected using prices and other criteria as of the close of trading on the Selection Date.
- Share weighting for each constituent in the index is based on the price at the close on the Selection Date.
- Adjustments to capture the additions, deletions, and rebalancing weights of existing components are as of the close of trading on the Effective Date.

Since the weighting is determined a week prior, the actual index weights at the close on the Effective Date may differ from equal weight due to market movements.

The Index Committee may change the date of a given rebalancing for reasons including market holidays or extraordinary events such as technology or other major market disruptions occurring on or around the scheduled rebalancing date. Any such change will be announced with proper advance notice where possible.

The Index Committee reserves the right to make exceptions when applying the methodology if the need arises. If any changes differ from the stated methodology, clients will receive sufficient notice, whenever possible.

### *Buffer Rule*

To minimize turnover, stocks remain in the index unless their truBeta score on the selection date is 1.0 or higher, regardless of their Beta Variability score. Additions to the index at each rebalancing are selected using the same process as the initial selection, ranking the Index Universe (less the existing Index components with truBeta scores less than 1.0) by Beta Variability and selecting enough stocks by lowest score to arrive at a total of 100 components.

*Corporate Actions*

<b>Action</b>	<b>Adjustment</b>
Spin-off	A spun-off company remains in the index until the next rebalance date.
Stock Split	Index shares are multiplied by and the price is divided by the split factor.
Special Dividends	The price of the stock is reduced by the per share special dividend amount after the close of trading on the day before the ex-date.
Delisting, acquisition, or any other corporate action resulting in deletion of the stock as a listed equity on a public equity exchange.	<p>The stock is dropped from the index with no additions until the next quarterly rebalancing. Absolute weights of the remaining index components change but the relative weightings stay the same.</p> <p>In the event there is no achievable market price for a stock being deleted due to bankruptcy, suspension or other event, it can be removed at zero or some other price at the discretion of the Index Committee.</p>