

## INDEX METHODOLOGY

### INTRODUCTION

#### Northern Trust

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This document sets forth the methodology for the Northern Trust Quality Low Volatility Index.

The Index is currently calculated and disseminated by Refinitiv<sup>i</sup>, and had an inception date of December 31, 2013 at a base value of 1000.

### OVERVIEW

#### Northern Trust Quality Low Volatility Index

The Northern Trust Quality Low Volatility Index is designed to construct a high quality universe of companies that possess lower overall absolute volatility (i.e. risk) relative to the Northern Trust 1250 Index (the “Benchmark”). An emphasis is placed on a company’s income and capital growth, while also reducing overall volatility of returns relative to the benchmark. The proprietary Northern Trust quality factor is used to identify companies that exhibit strength in profitability, management efficiency and cash flow.

### ELIGIBLE SECURITIES

In order to be eligible for inclusion in the Northern Trust Quality Low Volatility Index, a security must be a constituent of the Northern Trust 1250 Index.

In addition, securities ranking in the lowest quintile of quality<sup>ii</sup> based on our proprietary scoring model<sup>iii</sup> are ineligible for inclusion in the index.

### DETAILED METHODOLOGY

The construction of the Index begins with a universe of eligible securities (defined in “Eligible Securities”). All eligible securities are then optimized to achieve a reduction in volatility, as well as a quality tilt within the index relative to the benchmark.

In addition to this main objective, systematic risk is managed during the optimization utilizing several constraints. These constraints are found below (bounds shown as relative weightings to the benchmark unless noted otherwise):

- Security level constraint (+/- 5%) with a minimum absolute weight of 0.02%
- Liquidity<sup>iv</sup> constraint: to limit a constituent’s maximum weight in the index to its weight in the benchmark, when the constituent’s liquidity score in the benchmark falls in the bottom decile
- Sector (+/- 6 %)
- Industry group (+/- 10%)



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- Style Factor constraint (active exposure is minimized except for volatility)
- Historical Beta (0.70x)<sup>v</sup>
- Turnover constraint (to limit the maximum turnover to approximately 12% on any rebalance date)

All of the systematic risk constraints are placed in the constraint hierarchy so when a solution is not feasible due to hard constraints, a relaxed solution can be found.

Any changes to this methodology will be announced to clients at least sixty (60) days in advance prior to becoming effective.

## REBALANCING AND RECONSTITUTION

The Northern Trust Quality Low Volatility Index is reconstituted quarterly and adjusted intra-period only in connection with errors, securities' eligibility, exchange connectivity, float changes and corporate actions, including, but not limited to, initial public offerings and spin-offs.

The index is reconstituted in February, May, August, and November on the last business day of the month in which the U.S. equity markets are open for a full day of trading<sup>vi</sup>, and becomes effective immediately after the close. The Northern Trust Quality Low Volatility Index reserves the right to postpone each reconstitution date for up to one week with prior client notification of such a postponement.

All changes to constituents and weightings will be announced to clients at least two (2) days prior to reconstitution or rebalancing and with definitive weights after the close of the reconstitution or rebalancing date before the following day's market opening.

## INDEX MAINTENANCE / CORPORATE ACTION-DRIVEN CHANGES

The Index will adopt all corporate action related policies and procedures used by Refinitiv. A complete list of Refinitiv's methodology is available by request at [NT\\_Index\\_Services@ntrs.com](mailto:NT_Index_Services@ntrs.com)

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*Disclaimer: Returns of the indexes do not typically reflect the deduction of investment management fees, trading costs or other expenses. It is not possible to invest directly in an index. Indexes are the property of their respective owners, all rights reserved.*

<sup>i</sup> Refinitiv is a subsidiary of The London Stock Exchange Group

<sup>ii</sup> This factor seeks to identify companies that exhibit stable returns relative to the market, a characteristic which we define as quality.

<sup>iii</sup> The core components of the proprietary quality scoring model are based on quantitative ranking of various metrics obtained from company filings. These scores have three components: Management Efficiency (e.g. corporate finance

activities), Profitability (e.g. assess the reliability and the sustainability of financial performance), and Cash Flow (e.g. cash flow generation).

<sup>iv</sup> Liquidity of an asset measures the extent to which that asset can be bought or sold in the market without impacting the price of the asset. Examples of some commonly used liquidity measures include but are not limited to: Share Turnover (number of shares traded divided by the total number of shares outstanding), Average Daily Volume (number of shares traded divided by a period of time), and Bid-Ask Spread (the difference or spread between the price a buyer is willing to pay for an asset, and the price a seller is willing to accept for an asset).

<sup>v</sup> Historical Beta is the coefficient term of the regression of a security versus the market, and is also a measure of the systematic, non-diversifiable risk of a security or portfolio. Beta represents the market sensitivity, relative to a given market index and time period. For example, a security exhibiting a beta of 1.0 indicates that the security has the same sensitivity as the market index it is being compared to, while a security with a beta of 1.5 would indicate that the security has 1.5 times the sensitivity of the market index

<sup>vi</sup> Per the holiday calendar located at [nyse.com](http://nyse.com)

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