

## INDEX METHODOLOGY

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### INTRODUCTION

This document sets forth the methodology for the following Indexes (the “Indexes”):

- Northern Trust Quality Dividend Index
- Northern Trust Quality Dividend Dynamic Index
- Northern Trust Quality Dividend Defensive Index
- Northern Trust International Quality Dividend Index
- Northern Trust International Quality Dividend Dynamic Index
- Northern Trust International Quality Dividend Defensive Index

The indexes are calculated and disseminated by Thomson Reuters.

### OVERVIEW

#### *Northern Trust Quality Dividend Index*

The Northern Trust Quality Dividend Index is designed to provide exposure to a high-quality income-oriented universe of long-only U.S. equity securities, with an emphasis on long-term capital growth and a targeted overall beta<sup>1</sup> that is similar to that of the Northern Trust 1250 Index (the parent index). Companies included in the index are selected based on expected dividend payment and fundamental factors such as profitability, management expertise, and cash flow.

#### *Northern Trust Quality Dividend Dynamic Index*

The Northern Trust Quality Dividend Dynamic Index is designed to provide exposure to a high-quality income-oriented universe of long-only U.S. equity securities, with an emphasis on long-term capital growth and a targeted overall beta that is generally between 1.0 to 1.5 times that of the Northern Trust 1250 Index (the parent index). Companies included in the index are selected based on expected dividend payment and fundamental factors such as profitability, management expertise, and cash flow.

#### *Northern Trust Quality Dividend Defensive*

The Northern Trust Quality Dividend Defensive Index is designed to provide exposure to a high-quality income-oriented universe of long-only U.S. equity securities, with an emphasis on long-term capital growth and a targeted overall beta that is generally between 0.5 to 1.0 times that of the Northern Trust 1250 Index (the parent index). Companies included in the index are selected based on expected dividend payment and fundamental factors such as profitability, management expertise, and cash flow.



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## *Northern Trust International Quality Dividend Index*

The Northern Trust International Quality Dividend Index is designed to provide exposure to a high-quality income-oriented universe of long-only international securities issued by non-U.S.-based companies, with an emphasis on long-term capital growth and a targeted overall beta that is similar to that of the Northern Trust International Large Cap Index (the parent index). Companies that are included in the index are selected based on expected dividend payment and fundamental factors such as profitability, management expertise, and cash flow.

## *Northern Trust International Quality Dividend Dynamic Index*

The Northern Trust International Quality Dividend Dynamic Index is designed to provide exposure to a high-quality income-oriented universe of long-only international securities issued by non-U.S.-based companies, with an emphasis on long-term capital growth and a targeted overall beta that is generally between 1.0 to 1.5 times that of the Northern Trust International Large Cap Index (the parent index). Companies that are included in the index are selected based on expected dividend payment and fundamental factors such as profitability, management expertise, and cash flow.

## *Northern Trust International Quality Dividend Defensive Index*

The Northern Trust International Quality Dividend Defensive Index is designed to provide exposure to a high-quality income-oriented universe of long-only international securities issued by non-U.S.-based companies, with an emphasis on long-term capital growth and a targeted overall beta that is generally between 0.5 to 1.0 times that of the Northern Trust International Large Cap Index (the parent index). Companies that are included in the index are selected based on expected dividend payment and fundamental factors such as profitability, management expertise, and cash flow.

## INDEX ELIGIBILITY

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

In order to be eligible for inclusion in the Northern Trust International Quality Dividend Indexes, a security must be a constituent of the Northern Trust International Large Cap Index and have an average daily traded value<sup>ii</sup> of at least 125,000 USD in the ninety days prior to a reconstitution.

## DETAILED METHODOLOGY

The construction of the Indexes begins with a universe of eligible securities (defined in “Index Eligibility” section). Securities ranking in the lowest quintile of quality<sup>iii</sup> based on our proprietary scoring model<sup>iv</sup>, as well as those which do not pay a dividend are removed prior to optimization<sup>v</sup>. All remaining eligible securities are then optimized based on their exposure to quantitative factors such as:

- Quality, as defined by our proprietary scoring model



- Dividend yield
- Beta

The main objective of the optimization is to maximize our exposure to the quality factor, realize a dividend yield above the parent index (previously defined in “Overview” section), and achieve our desired beta target (previously defined in “Overview” section) all while minimizing the overall risk of the index versus its parent index as measured by standard risk models<sup>vi</sup>. In addition to that main objective, systematic risk is managed during the optimization utilizing several constraints. These constraints are listed below (bounds shown as relative weightings to parent index unless otherwise noted):

- Dividend yield constraint: the optimized index targets a dividend yield above that of the parent index
- Security level constraint: to limit an index constituent’s maximum or minimum weight versus the parent index (+/- 5%)
- Liquidity<sup>vii</sup> constraint: to limit a constituent’s maximum weight in the index to its weight in the parent index, when the constituent’s liquidity score in the parent index falls in the bottom decile
- Industry (+/- 10%), sector (+/- 6%), country (+/- 6%), region (+/- 4%), style factor (each of which is minimized as defined by our risk model), and region/sector (+/- 5%) constraints
- Turnover constraint: to limit the maximum turnover to approximately 25% on any reconstitution 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.

### RECONSTITUTION & REBALANCING

The Northern Trust Quality Dividend & Northern Trust International Quality Dividend Indexes are reconstituted quarterly (i.e. February, May, August, and November) 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 Indexes’ quarterly reconstitution occurs on the last business day of the month in which the U.S. equity markets are open for a full day of trading<sup>viii</sup>, and becomes effective immediately after the close. The Northern Trust Quality Dividend & Northern Trust International Quality

Dividend Indexes reserve the right to postpone the quarterly reconstitution date for up to one week with prior client notification of such 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 Indexes will adopt all corporate action related policies and procedures used by Thomson Reuters. A complete list of Thomson Reuters' 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> 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 a basket of securities. 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>ii</sup> Average daily traded value is calculated by multiplying the ninety day average daily volume by the last close price in USD.

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

<sup>iv</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 Expertise (eg. corporate finance activities), Profitability (eg. assess the reliability and the sustainability of financial performance), and Cash Flow.

<sup>v</sup> An optimization is an algorithmic approach to minimize or maximize an objective function. An algorithm is able to achieve its objective by changing input variables sets until an optimal set has been found. For example, we may want to find index weights that minimize a quantitative measure of total risk but meet certain requirements or constraints. The optimization being performed during our index construction utilizes a multi-dimensional mean variance approach, which seeks to find the best available outcome given the constraint hierarchy set provided.

<sup>vi</sup> Risk models are a statistical application which helps provide predictive risk estimates, by quantitatively de-constructing individual equity price movements and attributing those movements to common factors (e.g. Sector, industry, style, etc). The use of standard risk models in our process provides an additional



layer of constraints on our optimization outcome, and assists in reducing the index's overall active risk exposure to any one single factor.

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

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