

# NASDAQ AlphaDEX® Europe Methodology

## Index Description

The NASDAQ AlphaDEX® Europe Index employs the AlphaDEX® stock selection methodology to select stocks from the NASDAQ Europe Index. The Index is constructed by ranking the stocks in the NASDAQ Europe Index separately on growth and value factors.

## Index Calculation

The NASDAQ AlphaDEX® Europe Index is a modified market capitalization weighted index. The value of the Index equals the aggregate value of the Index share weights, also known as the Index Shares, of each of the Index Securities multiplied by each such security's Last Sale Price<sup>1</sup>, and divided by the divisor of the Index. The divisor serves the purpose of scaling such aggregate value to a lower order of magnitude which is more desirable for reporting purposes. If trading in an Index Security is halted on its primary listing market, the most recent Last Sale Price for that security is used for all index computations until trading on such market resumes. Likewise, the most recent Last Sale Price is used if trading in a security is halted on its primary listing market before the market is open. The Index began on February 11, 2015 at a base value of 1000.00.

The formula for index value is as follows:

Aggregate Adjusted Market Value/Divisor

The formula for the divisor is as follows:

(Market Value after Adjustments/Market Value before Adjustments) X Divisor before Adjustments

Three versions of the Index are calculated – a price return index, a total return index and a net total return index calculated in USD.

- The price return index (Nasdaq: NQDXEU) is ordinarily calculated without regard to cash dividends on Index Securities.
- The total return index (Nasdaq: NQDXEUT) reinvests cash dividends on the ex-date.
- The net total return index (Nasdaq: NQDXEUN) reinvests cash dividends on the ex-date based on an Index security's country of incorporation withholding rate.

All Indexes reflect extraordinary cash distributions.

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<sup>1</sup> For purposes of this document, Last Sale Price refers to the last regular way trade reported on such security's Index Market. The Index Market is the listing market for which prices are received and used by Nasdaq in the Index calculation and generally will represent the most liquid trading market of the Index Security. If a security does not trade on its Index Market on a given day or the Index Market has not opened for trading, the most recent last sale price from the Index Market (adjusted for corporate actions, if any) is used. For securities where Nasdaq is the Index Market, the Last Sale Price may be the Nasdaq Official Closing Price (NOCP) when Nasdaq is closed.

The Indexes are calculated during the trading day and are disseminated once per second. The Indexes are calculated five (5) days a week, Monday through Friday, during European and American hours.

## **Eligibility**

Index eligibility is limited to specific security types only. The security types eligible for the Index include common stocks, ordinary shares, depositary receipts, shares of beneficial interest of REITs and preferred shares.

## **Eligibility Criteria**

To be eligible for inclusion in the Index, a security must meet the following criteria:

- be a component of the NASDAQ Europe Index (NQEUE);
- not be classified in a country in the emerging markets as determined by Nasdaq;
- be a member of an eligible exchange as determined by Nasdaq;
- not be classified as a trust or limited partnership;
- have a five-day global rolling average daily dollar trading volume over the last 60 trading days greater than USD 500,000;
- one security per issuer is permitted; and
- have a market capitalization greater than the midcap breakpoint (50% percentile) as determined by Nasdaq.

## **Ranking Review**

Rebalancing and selection take place semi-annually, utilizing market data as of the last business day of March and September. If, after applying the eligibility criteria, there are less than 267 securities, the next largest stock above the midcap breakpoint meeting all other eligibility criteria is added until there are 267 eligible securities. Securities which meet the applicable eligibility criteria are then ranked by growth and value factors.

The growth factors used for ranking eligible securities are:

- 3-, 6- and 12-month price appreciation
- sales to price
- 1-year sales growth

The value factors used for ranking eligible securities are:

- book value to price
- cash flow to price
- return on assets

## **Stock Selection**

1. Stocks are ranked separately on the sum of ranks for both growth and value factors. A stock must have data available for all growth and/or value factors to receive a rank for that factor.
2. Each stock receives the best rank from step 1 as its "selection score".

3. Based on the "selection score" determined in step 2, the best scoring 200 stocks comprise the "selected stocks" universe.
4. The "selected stocks", as determined in step 3, are then split into quintiles based on their selection score. The top ranked quintile receives 5/15 (33%) of the portfolio weight with successive quintiles receiving 4/15 (26.7%), 3/15 (20.0%), 2/15 (13.3%) and 1/15 (6.7%), respectively. Stocks are equally weighted within each quintile.
5. After weights are assigned, each stock is tested in order of its selection score rank to check if the weight assigned to that stock violates a sector and or country weighting constraint.
6. Sector and country constraints are set at 15% above the NASDAQ Europe Index weight for each sector/country.
7. Stocks will fail the sector and/or country constraint if the weight assigned to the stock, when added with the weight assigned to all higher ranking stocks in its sector/country, is greater than the sector/country constraint determined in step 6.
8. Stocks failing the sector/country constraint test are lowered in rank to the highest rank in the next quintile. Stocks previously lower in rank than the failing stock move up one rank. This may result in a weighting change for these stocks if they move up to a higher quintile. The failing stock will later be retested for constraint violations with its new lower assigned weight in the order determined by its new rank. Stocks in the lowest quintile that fail a constraint are removed from the portfolio and replaced by the highest scoring stock not originally selected, subject to sector/country constraints.
9. The stocks remaining in each of the five quintiles will make up the final Index Securities.

### **Index Evaluation**

The Index is evaluated semi-annually in March and September. Security additions and deletions are made effective at the market open on the 9<sup>th</sup> business day of the following month.

Additionally, if at any time during the year other than the Evaluation, an Index Security is determined to have become ineligible for continued inclusion in the Index due to bankruptcy, delisting, or a definitive agreement that would likely result in the security no longer being Index eligible, the security is removed from the Index and is not replaced. Ordinarily, a security will be removed from the Index at its Last Sale Price. If, however, at the time of its removal the Index Security is halted from trading on its primary listing market and an official closing price cannot readily be determined, the Index Security may, in Nasdaq's discretion, be removed at a zero price. The zero price will be applied to the Index Security after the close of the market but prior to the time the official closing value of the Index is disseminated, which is ordinarily 17:16:00 ET

### **Index Maintenance**

Index Share changes are not made between Index Evaluations however changes arising from stock dividends and stock splits are made to the Index on the evening prior to the

effective date of such corporate action. In the case of certain spin-offs or rights issuances, the price of the Index Security is adjusted and a corresponding adjustment is made to the Index Shares such that the weight of the Index Security does not change as a result of the action. However, for a spin-off event, if there is a no when-issued trading available for the spin-co security, the spin-co security may be added to the index at a zero value. In this case, the spin-co security will be removed from the Index after two full days of trading.

A special cash dividend announced by the listing exchange, will result in an adjustment to the Last Sale Price of an Index Security prior to market open on the ex-date for the special amount distributed. A corresponding adjustment will be made to the Index Shares of the security such that the weight of the Index Security will not change as a result of the action. A special dividend may also be referred to as extra, extraordinary, non-recurring, one-time, unusual, etc.

Ordinarily, whenever there is a change in Index Shares, a change in an Index Security or a change to the price of an Index Security due to spin-offs, rights issuances or special cash dividends as mentioned above, the divisor is adjusted to ensure that there is no discontinuity in the value of the Index which might otherwise be caused by any such change.

Nasdaq may, from time to time, exercise reasonable discretion as it deems appropriate in order to ensure Index integrity.

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