

NASDAQ AlphaDEX® US Index Family Methodology

Index Description

The NASDAQ AlphaDEX® US Index Family employs the AlphaDEX® stock selection methodology to select stocks from the Nasdaq US Select Index Family and the Nasdaq US Select Style Index Family. The NASDAQ AlphaDEX® US Index Family is constructed by ranking the stocks in the Index families mentioned above separately on growth and value factors.

Index Calculation

The NASDAQ AlphaDEX US Indexes are modified market capitalization weighted indexes. The value of the Indexes equal 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 Price¹, 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 Indexes began on January 11, 2016 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 each of the Indexes are calculated in USD and the Large Cap Core and Small Cap Core are calculated in GBP and EUR, as shown in [Appendix A](#).

- The price return index is ordinarily calculated without regard to cash dividends on Index Securities.
- The total return index reinvests cash dividends on the ex-date.
- The net total return index reinvests cash dividends on the ex-date based on the securities incorporation withholding rate.

All Indexes reflect extraordinary cash distributions.

¹ 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 and disseminated once per second from 9:30:01 to 17:16:00 Eastern Time (ET) in USD. The closing value of the Index(es) may change up until 17:15:00 ET due to corrections to the Last Sale Price of the Index Securities.

Eligibility

Index eligibility is limited to specific security types only. The security types eligible for the Index include common stocks, and REITs.

Eligibility Criteria

To be eligible for inclusion in the NASDAQ AlphaDEX US Indexes, a security must meet the following criteria:

- 1) **AlphaDEX Large, Mid and Small Cap Core Indexes:**
 - be a component of the Nasdaq US 500 Large Cap Index (NQUS500LC); or
 - be a component of the Nasdaq US 600 Mid Cap Index (NQUS600MC); or
 - be a component of the Nasdaq US 700 Small Cap Index (NQUS700SC).
- 2) **AlphaDEX Large, Mid and Small Cap Value and Growth Indexes:**
 - be a component of the Nasdaq US 500 Large Cap Value (NQUS500LCV) or Growth Index (NQ500LC); or
 - be a component of the Nasdaq US 600 Mid Cap Value (NQUS600MCV) or Growth Index (NQUS600MCG); or
 - be a component of the Nasdaq US 700 Small Cap Value (NQUS700SCV) or Growth Index (NQUS700SCG).
- 3) **AlphaDEX Multi Cap Value and Growth Indexes:**
 - be a component of the Nasdaq AlphaDEX Large (NQDXUSLCV), Mid (NQDXUSMCV) or Small Cap (NQDXUSSCV) Value Indexes; or
 - be a component of the Nasdaq AlphaDEX Large (NQDXUSLCG), Mid (NQDXUSMCG) or Small Cap (NQDXUSSCG) Growth Indexes.
- 4) **AlphaDEX Mega Cap Index:**
 - be a component of the Nasdaq US 500 Large Cap Index (NQUS500LC) that ranks in the top 100 by market capitalization.

In addition, a security must meet the following criteria:

- have a five-day global rolling average daily dollar trading volume over the last 60 trading days greater than USD 500,000; and
- one security per issuer is permitted.

Ranking Review

Rebalancing and selection take place quarterly, utilizing market data as of the last business day of March, June, September and December. Securities which meet the applicable eligibility criteria are 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

AlphaDEX Large, Mid and Small Cap Core Indexes:

1. Stocks are selected from each size class (Large, Mid, or Small) as outlined in the eligibility criteria and ranked on the sum of ranks for both growth and value factors outlined in the ranking review section. A stock must have data available for all growth and/or value factors to receive a rank for that factor.
2. Stocks are classified as either a value stock or growth stock, as determined by Nasdaq. Stocks classified as a value stock will receive their value rank and stocks classified as a growth stock will receive their growth rank from Step 1 as their "selection score".
3. Based on the "selection score" determined in Step 2, the best scoring stocks comprise the "selected stocks" universe:
 - a. Nasdaq US 500 Large Cap Index (NQUS500LC) top 375 stocks
 - b. Nasdaq US 600 Mid Cap Index (NQUS600MC) top 450 stocks
 - c. Nasdaq US 700 Small Cap Index (NQUS700SC) top 525 stocks
4. Each universe of "selected stocks", as determined in Step 3a, 3b and 3c, are then split into quintiles based on their selection score. The top ranked quintile receives 5/15 (33%) of the universe weight with successive quintiles receiving 4/15 (26.7%), 3/15 (20.0%), 2/15 (13.3%) and 1/15 (6.7%), respectively. Within each sub portfolio (Large, Mid, and Small), stocks are equally weighted within each quintile.

AlphaDEX Large, Mid and Small Cap Value and Growth Indexes:

1. Stocks are selected from each size/style class (Large, Mid, or Small; Value or Growth) as outlined in the eligibility criteria and ranked on the sum of ranks for both growth and value factors outlined in the ranking review section. A stock must have data available for all growth and/or value factors to receive a rank for that factor.
2. Stocks are classified as either a value stock or growth stock, as determined by Nasdaq. Stocks classified as a value stock will receive their value rank and stocks classified as a growth stock will receive their growth rank from Step 1 as their "selection score".
3. Based on the "selection score" determined in Step 2, the best scoring stocks comprise the "selected stocks" universe:
 - a. Nasdaq US 500 Large Cap Growth Index (NQUS500LCG) top 187 stocks
 - b. Nasdaq US 500 Large Cap Value Index (NQUS500LCV) top 187 stocks
 - c. Nasdaq US 600 Mid Cap Growth Index (NQUS600MCG) top 225 stocks

- d. Nasdaq US 600 Mid Cap Value Index (NQUS600MCV) top 225 stocks
 - e. Nasdaq US 700 Small Cap Growth Index (NQUS700SCG) top 262 stocks
 - f. Nasdaq US 700 Small Cap Value Index (NQUS700SCV) top 262 stocks
4. Each universe of “selected stocks”, as determined in Step 3a, 3b and 3c, are then split into quintiles based on their selection score. The top ranked quintile receives 5/15 (33%) of the universe weight with successive quintiles receiving 4/15 (26.7%), 3/15 (20.0%), 2/15 (13.3%) and 1/15 (6.7%), respectively. Within each sub portfolio (Large, Mid, and Small), stocks are equally weighted within each quintile.

AlphaDEX Multi Cap Value and Growth Indexes:

1. Stocks are chosen from each AlphaDEX size/style index listed above as follows:
 - a. AlphaDEX Multi Cap Value Index contains:
 - i. Nasdaq US 500 Large Cap Value Index (NQUS500LCV) top 187 stocks
 - ii. Nasdaq US 600 Mid Cap Value Index (NQUS600MCV) top 225 stocks
 - iii. Nasdaq US 700 Small Cap Value Index (NQUS700SCGV) top 262 stocks
 - b. AlphaDEX Multi Cap Growth Index contains:
 - i. Nasdaq US 500 Large Cap Growth Index (NQUS500LCG) top 187 stocks
 - ii. Nasdaq US 600 Mid Cap Growth Index (NQUS600MCG) top 225 stocks
 - iii. Nasdaq US 700 Small Cap Growth Index (NQUS700SCG) top 262 stocks
2. The quintile weighting is then redistributed as follows to create the final index weights:

Large Cap securities: 50%
Mid Cap securities: 30%
Small Cap securities: 20%

AlphaDEX Mega Cap Index:

1. Stocks are selected from the Large Cap universe as outlined in the eligibility criteria and ranked on the sum of ranks for both growth and value factors outlined in the ranking review section. A stock must have data available for all growth and/or value factors to receive a rank for that factor.
2. Stocks are classified as either a value stock or growth stock, as determined by Nasdaq. Stocks classified as a value stock will receive their value rank and stocks classified as a growth stock will receive their growth rank from Step 1 as their “selection score”.
3. Based on the “selection score” determined in Step 2, the best scoring stocks comprise the “selected stocks” universe:
 - a. Nasdaq US 500 Large Cap Index (NQUS500LC) top 50 stocks
4. Each universe of “selected stocks”, as determined in Step 3a, 3b and 3c, are then split into quintiles based on their selection score. The top ranked quintile receives 5/15 (33%) of the universe weight with successive quintiles receiving 4/15 (26.7%),

3/15 (20.0%), 2/15 (13.3%) and 1/15 (6.7%), respectively. Within each sub portfolio (Large, Mid, and Small), stocks are equally weighted within each quintile.

Index Evaluation

The Index is evaluated quarterly in March, June, September and December. Security additions and deletions are made effective at the market open on the 6th business day of the following month. At each quarter, the Index is rebalanced such that each "selected stock" universe will be set at a predetermined weight.

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 during the quarter 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 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.

Appendix A

Symbol	Index Name	Description
NQDXUSLC NQDXUSLCT NQDXUSLCN	NASDAQ AlphaDEX Large Cap Core Index NASDAQ AlphaDEX Large Cap Core Total Return Index NASDAQ AlphaDEX Large Cap Core Net Total Return Index	The NASDAQ AlphaDEX Large Cap Core Index includes the 375 top scoring securities of the NASDAQ 500 Large Cap Index (NQUS500LC) per the NASDAQ AlphaDEX methodology.
NQDXUSLCGBP NQDXUSLCGBPT NQDXUSLCGBPN	NASDAQ AlphaDEX Large Cap Core GBP Index NASDAQ AlphaDEX Large Cap Core GBP Total Return Index NASDAQ AlphaDEX Large Cap Core GBP Net Total Return Index	The NASDAQ AlphaDEX Large Cap Core GBP Index includes the 375 top scoring securities of the NASDAQ 500 Large Cap Index (NQUS500LC) per the NASDAQ AlphaDEX methodology calculated in GBP.
NQDXUSLCEUR NQDXUSLCEURT NQDXUSLCEURN	NASDAQ AlphaDEX Large Cap Core EUR Index NASDAQ AlphaDEX Large Cap Core EUR Total Return Index NASDAQ AlphaDEX Large Cap Core EUR Net Total Return Index	The NASDAQ AlphaDEX Large Cap Core EUR Index includes the 375 top scoring securities of the NASDAQ 500 Large Cap Index (NQUS500LC) per the NASDAQ AlphaDEX methodology calculated in EUR.
NQDXUSLCG NQDXUSLCGT NQDXUSLCGN	NASDAQ AlphaDEX Large Cap Growth Index NASDAQ AlphaDEX Large Cap Growth Total Return Index NASDAQ AlphaDEX Large Cap Growth Net Total Return Index	The NASDAQ AlphaDEX Large Cap Growth Index includes the 187 top scoring securities of the NASDAQ 500 Large Cap Growth Index (NQUS500LCG) per the NASDAQ AlphaDEX methodology.
NQDXUSLCV NQDXUSLCVT NQDXUSLCVN	NASDAQ AlphaDEX Large Cap Value Index NASDAQ AlphaDEX Large Cap Value Total Return Index NASDAQ AlphaDEX Large Cap Value Net Total Return Index	The NASDAQ AlphaDEX Large Cap Value Index includes the 187 top scoring securities of the NASDAQ 500 Large Cap Value Index (NQUS500LCV) per the NASDAQ AlphaDEX methodology.
NQDXUSMC NQDXUSMCT NQDXUSMCN	NASDAQ AlphaDEX Mid Cap Core Index NASDAQ AlphaDEX Mid Cap Core Total Return Index NASDAQ AlphaDEX Mid Cap Core Net Total Return Index	The NASDAQ AlphaDEX Mid Cap Core Index includes the 450 top scoring securities of the NASDAQ 600 Mid Cap Index (NQUS600MC) per the NASDAQ AlphaDEX methodology.
NQDXUSMCG	NASDAQ AlphaDEX Mid Cap Growth Index	The NASDAQ AlphaDEX Mid Cap Growth Index

NQDXUSMCGT NQDXUSMCGN	NASDAQ AlphaDEX Mid Cap Growth Total Return Index NASDAQ AlphaDEX Mid Cap Growth Net Total Return Index	includes the 225 top scoring securities of the NASDAQ 600 Mid Cap Growth Index (NQUS600MCG) per the NASDAQ AlphaDEX methodology.
NQDXUSMCV NQDXUSMCVT NQDXUSMCVN	NASDAQ AlphaDEX Mid Cap Value Index NASDAQ AlphaDEX Mid Cap Value Total Return Index NASDAQ AlphaDEX Mid Cap Value Net Total Return Index	The NASDAQ AlphaDEX Mid Cap Value Index includes the 225 top scoring securities of the NASDAQ 600 Mid Cap Value Index (NQUS600MCV) per the NASDAQ AlphaDEX methodology.
NQDXUSSC NQDXUSSCT NQDXUSSCN	NASDAQ AlphaDEX Small Cap Core Index NASDAQ AlphaDEX Small Cap Core Total Return Index NASDAQ AlphaDEX Small Cap Core Net Total Return Index	The NASDAQ AlphaDEX Small Cap Core Index includes the 525 top scoring securities of the NASDAQ 700 Small Cap Index (NQUS700SC) per the NASDAQ AlphaDEX methodology.
NQDXUSSCGBP NQDXUSSCGBPT NQDXUSSCGBPN	NASDAQ AlphaDEX Small Cap Core GBP Index NASDAQ AlphaDEX Small Cap Core GBP Total Return Index NASDAQ AlphaDEX Small Cap Core GBP Net Total Return Index	The NASDAQ AlphaDEX Small Cap Core GBP Index includes the 525 top scoring securities of the NASDAQ 700 Small Cap Index (NQUS700SC) per the NASDAQ AlphaDEX methodology calculated in GBP.
NQDXUSSCEUR NQDXUSSCEURT NQDXUSSCEURN	NASDAQ AlphaDEX Small Cap Core EUR Index NASDAQ AlphaDEX Small Cap Core EUR Total Return Index NASDAQ AlphaDEX Small Cap Core EUR Net Total Return Index	The NASDAQ AlphaDEX Small Cap Core GBP Index includes the 525 top scoring securities of the NASDAQ 700 Small Cap Index (NQUS700SC) per the NASDAQ AlphaDEX methodology calculated in EUR.
NQDXUSSCG NQDXUSSCGT NQDXUSSCGN	NASDAQ AlphaDEX Small Cap Growth Index NASDAQ AlphaDEX Small Cap Growth Total Return Index NASDAQ AlphaDEX Small Cap Growth Net Total Return Index	The NASDAQ AlphaDEX Small Cap Growth Index includes the 262 top scoring securities of the NASDAQ 700 Small Cap Growth Index (NQUS700SCG) per the NASDAQ AlphaDEX methodology.
NQDXUSSCV NQDXUSSCVT NQDXUSSCVN	NASDAQ AlphaDEX Small Cap Value Index NASDAQ AlphaDEX Small Cap Value Total Return Index NASDAQ AlphaDEX Small Cap Value Net Total Return Index	The NASDAQ AlphaDEX Small Cap Value Index includes the 262 top scoring securities of the NASDAQ 700 Small Cap Value Index (NQUS700SCV) per the NASDAQ AlphaDEX methodology.

NQDXUSMLTCG NQDXUSMLTCGT NQDXUSMLTCGN	NASDAQ AlphaDEX Multi Cap Growth Index NASDAQ AlphaDEX Multi Cap Growth Total Return Index NASDAQ AlphaDEX Multi Cap Growth Net Total Return Index	The NASDAQ AlphaDEX Multi Cap Growth Index includes a combination of the Large (NQDXUSLCG), Mid (NQDXUSMCG) and Small (NQDXUSSCG) NASDAQ AlphaDEX Growth Indexes.
NQDXUSMLTCV NQDXUSMLTCVT NQDXUSMLTCVN	NASDAQ AlphaDEX Multi Cap Value Index NASDAQ AlphaDEX Multi Cap Value Total Return Index NASDAQ AlphaDEX Multi Cap Value Net Total Return Index	The NASDAQ AlphaDEX Multi Cap Value Index includes a combination of the Large (NQDXUSLCV), Mid (NQDXUSMCV) and Small (NQDXUSSCV) NASDAQ AlphaDEX Value Indexes.
NQDXUSMEGA NQDXUSMEGAT NQDXUSMEGAN	NASDAQ AlphaDEX Mega Cap Index NASDAQ AlphaDEX Mega Cap Total Return Index NASDAQ AlphaDEX Mega Cap Net Total Return Index	The NASDAQ AlphaDEX Mega Cap Index includes the 50 top scoring securities of the NASDAQ 500 Large Cap Index (NQUS500LC) per the NASDAQ AlphaDEX methodology.

December 2018