

The Most Comprehensive Family of Smart Beta Indexes Globally

Breadth of the Nasdaq AlphaDEX® Index Family Offering

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Introduction

Nasdaq AlphaDEX indexes comprise one of the most comprehensive families of “smart beta” equity indexes currently available. The Nasdaq AlphaDEX family has 183 individual indexes providing investors with a wide range of smart beta strategies. There are 11 AlphaDEX subfamilies focused on individual international countries, 12 domestic size and style subfamilies, four regional subfamilies, four broad international subfamilies, and two global subfamilies. Each subfamily includes a price return index, a total return index, and a net total return index and many subfamilies offer indexes calculated in multiple currencies. Two subfamilies, Japan and Eurozone, also offer hedged U.S. dollar calculated indexes.

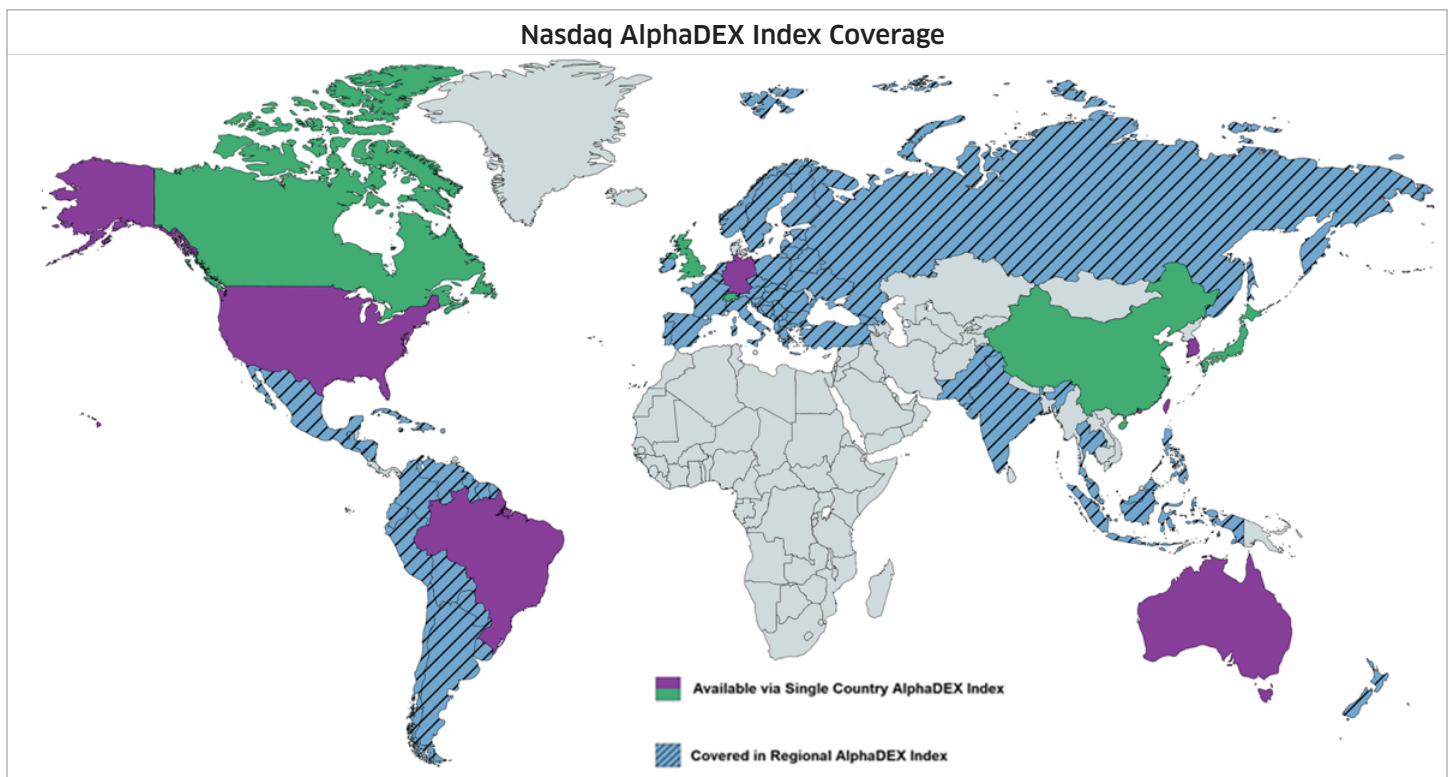
AlphaDEX was one of the first factor-based “smart beta” investment products, having been introduced as a suite of Exchange Traded Funds (ETFs) by First Trust Advisors, LP in 2007. Since 2014, Nasdaq has computed many of the indexes that the First Trust AlphaDEX ETFs track and has generated back tested index data going back to 2001.

Smart beta strategies seek to combine the benefits of passive and active investing, i.e. they seek to allow investors to achieve returns greater than that of traditional indexes at a lower cost than actively managed strategies. As in traditional passive investing, smart beta strategies follow indexes which are rules-based and transparent. However, unlike traditional market capitalization weighted indexes, smart beta indexes use alternative construction rules to capture investment factors or market inefficiencies with the goal of producing higher risk-adjusted returns, i.e. alpha, than traditional cap-weighted indexes. Smart beta strategies generally try to capture one or more

AlphaDEX Index Offerings

CLASSIFICATION	SUBFAMILY	# OF INDEXES	# OF CURRENCIES
International - Single Country	Australia	3	1
	Brazil	3	1
	Canada	3	1
	China	3	1
	Germany	9	3
	Hong Kong	3	1
	Japan*	18	5
	South Korea	3	1
	Switzerland	12	4
	Taiwan	3	1
	United Kingdom	9	3
U.S.	US Large Cap Core	9	3
	US Large Cap Growth	3	1
	US Large Cap Value	3	1
	US Mega Cap	3	1
	US Mid Cap Core	3	1
	US Mid Cap Growth	3	1
	US Mid Cap Value	3	1
	US Multi Cap Growth	3	1
	US Multi Cap Value	3	1
	US Small Cap Core	9	3
	US Small Cap Growth	3	1
	US Small Cap Value	3	1
	US Total Market	3	1
Regional	Asia Pacific Ex-Japan	12	4
	Europe	9	3
	Eurozone*	3	3
	Latin America	3	1
Broad International	Developed Markets Ex-US	3	1
	Developed Markets Ex-US Small Cap	3	1
	Emerging Markets	9	3
	Emerging Markets Small Cap	3	1
	Global	9	3
Global	Global	9	3
	Global Dividend	9	3

* - available in USD hedged and unhedged versions.



of five major primary investment factors: size, quality, value, momentum, and low volatility.

There are two major factors that differentiate AlphaDEX from other smart beta strategies. The first is breadth. While there is a decidedly U.S.-centric theme in the smart beta space, the AlphaDEX indexes offer smart beta strategies that offer exposure to a variety of

individual countries, regions, domestic sizes and styles, and broad international categories. Second, while a large portion of smart beta strategies focus on a single factor, e.g. momentum or low volatility, the AlphaDEX indexes analyze and rank the benchmark index components on both growth and value factors thus offering exposure to multiple sources of potential alpha.

The AlphaDEX Methodology

The AlphaDEX methodology uses a weighting scheme that is different than the traditional index methods such as market capitalization weighting. The Nasdaq AlphaDEX indexes seek to overweight growth and value stocks by examining six fundamental factors. The construction process starts with a specific traditionally cap-weighted benchmark, which serves as the AlphaDEX index's starting universe. The benchmark constituents must meet minimum market capitalization and liquidity standards to be eligible for further consideration. The remaining eligible components are then analyzed based upon the six fundamental factors mentioned previously and given an ordinal ranking on each factor.

The growth factors are:

- 3-, 6-, and 12-month price appreciation,
- Sales-to-Price ratio,
- 1-year Sales growth.

The value factors are:

- Book Value-to-Price ratio,
- Cash Flow-to-Price ratio,
- Return on Assets.

Each eligible stock is given an ordinal ranking on each factor, where higher values of the factor are associated with a higher ranking. An overall growth score is obtained by first summing the ranks of the individual factors, then creating a rank based on this sum. The same procedure is used to create an overall value rank. For most indexes, the stock receives as its final score the higher of its value rank or growth rank, and the final rank is based on this composite score.

The final rankings are used to assign weights to the AlphaDEX indexes. Only those stocks ranked above a pre-set threshold receive a positive weight, this threshold determining the final number of index components. These remaining stocks are divided into rank-based quintiles. The highest-ranked quintile has aggregate weight of 5/15 (33%), shared equally among all stocks in the quintile. The remaining quintiles have aggregate weights of 4/15, 3/15, 2/15, and 1/15. Again, all stocks within a quintile have the same weight.

The Alpha of AlphaDEX

Although no two indexes are identical, because of the construction and weighting methodology, AlphaDEX index weightings generally differ substantially from capitalization-weighted indexes. And, as a result, they provide greater exposure to three investment factors:

1. **Size** – AlphaDEX indexes typically have a significantly lower average market capitalization than traditional indexes.
2. **Value** – AlphaDEX indexes typically have higher average book-to-price and cash-flow-to-price ratios and a higher average return on assets (ROA) than traditional indexes.
3. **Growth/Momentum** – AlphaDEX indexes typically have higher average 12-month price momentum, sales growth, and sales-to-price ratios.

Academic research has shown that these factors are associated with higher average returns. The table below shows how the Nasdaq AlphaDEX US Large Cap Core Index and Nasdaq AlphaDEX Germany Index exposures to these factors deviate from the exposure of their cap-weighted large cap counterparts.

Weighted Averages of Stock Characteristics for Components of the US Large Cap Core Index: 2001 - 2016

ALPHADEX CRITERIA	WEIGHTED AVERAGES		
	FACTOR	FLOAT-ADJ. MKT CAP	ALPHADEX
Not Used	Mkt Cap (\$blns)	\$98.30	\$24.30
Growth	12-Month Momentum	13.00%	19.90%
	Sales-to-Price	0.643	0.92
	Sales Growth	8.80%	10.90%
Value	Book-to-Price	0.375	0.447
	Cash Flow-to-Price	0.084	0.104
	Return on Assets	7.76%	6.95%

Weighted Averages of Stock Characteristics for Components of the Germany Index: 2001 - 2017

ALPHADEX CRITERIA	WEIGHT USED IN AVERAGE		
	FACTOR	FLOAT-ADJ. MKT CAP	ALPHADEX
Not Used	Mkt Cap (\$blns)	\$52	\$16
Growth	12-Month Momentum	13%	19%
	Sales-to-Price	1.43	2.11
	Sales Growth	4.30%	7.70%
Value	Book-to-Price	0.62	0.66
	Cash Flow-to-Price	0.13	0.16
	Return on Assets	4.10%	4.90%

Although, not assured, the AlphaDEX indexes' higher exposure to the size, value, and momentum factors are likely to produce excess risk-adjusted returns over the long-term.

Conclusion

The Nasdaq AlphaDEX Indexes and tracking First Trust ETFs are among the most comprehensive available offerings of single country, regional, and global products. With Nasdaq's current 183 indexes and First Trust's subsequent ETFs offered in both the US and Europe, these products are built to provide smart beta exposure in each respective product offering.

For more information on the Nasdaq AlphaDEX indexes, please visit the following website:

<http://business.nasdaq.com/intel/indexes/smart-beta/alphadex-indexes>

For more information on the First Trust AlphaDEX ETFs, please visit the following website:

<https://www.ftportfolios.com/Retail/etf/etflist.aspx?Type=AlphaDEXAll>

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