

Nasdaq US Smart Sector Index Family

June 2022

Nasdaq Index Research

Introduction

The seven Nasdaq US Smart Sector Indexes were created in 2016 to track the performance of key sectors and subsectors in the US, which collectively form part of the broader and well diversified NASDAQ US Benchmark Index (NQUSB). NQUSB Index tracks the performance of over 3,000 eligible US-listed securities across all major industries listed on the Nasdaq, NYSE and CBOE exchanges.

The analysis in this research compares the performance of the seven indexes across multiple time horizons. It also highlights the methodology, number of companies in each index by traditional subsector classification, and provides a view of the top 10 constituents of each index.

Each index from the Nasdaq US Smart Sector Index Family selects securities by the strength of their liquidity. The indexes utilize a multifactor scoring approach to weight its constituents.

Methodology

The seven Nasdaq US Smart Sector Indexes comprise the 30 most liquid stocks for Bank (NQSSBA™), Food & Beverage (NQSSF™), Pharmaceutical (NQSSPH™), Semiconductor (NQSSSE™) and Transportation (NQSSSTR™) sectors, and 50 most liquid stocks from the Oil & Gas (NQSSOG™) and Retail (NQSSRE™) sectors.

The companies chosen for the seven indexes must be included in the Nasdaq US Benchmark Index™ (NQUSB™).

Industry or sector eligibility

The selected securities for the different indexes are classified as per the Industry Classification Benchmark (ICB) at reconstitution. In case of multiple listings for a company, then the security with the highest three-month average daily will generally be selected for Index inclusion.

Float eligibility criteria

A company must have a minimum of 20% of its total shares outstanding as float shares.

Index Calendar

Reconstitution:

- The index reconstitution is conducted once annually in March.
- The security eligibility criteria are applied using market data as of the end of February.
- Index reconstitutions are effective at market open on the first trading day after the third Friday in March.

Rebalance:

- The index is rebalanced quarterly in March, June, September, and December.
- Index rebalances use value factor data for index securities as of each previous quarter-end (December, March, June, and September, respectively) and volatility and growth factor data of all Index Securities as of the prior month-end (February, May, August, and November, respectively).
- Index rebalance changes become effective at market open on the trading day following the third Friday in March, June, September, and December.

Constituent weighting scheme

The index is a modified factor-weighted index.

Constituent weighting process

Index securities receive factor values for three factors: Volatility, Value and Growth:

- Volatility is calculated as the trailing one-year volatility as of the last trading day in the prior month.
- Value is defined as the Cash Flow to Price ratio, which is calculated as the most recent reported cash flow data divided by market capitalization as of the previous quarter. (The Value scores are subject to an 80% winsorization: no score can be above the 90% percentile value or below the 10% percentile value.)
- Growth is calculated as the average of the three-month, six-month, nine-month and twelve-month price returns as of the last trading day in the prior month.

Index securities' factor scores are calculated as the averages of the index securities' normalized Volatility, Value, and Growth factor z-scores. Negative factor scores are adjusted to equal the minimum positive factor score. Initial index weights are calculated as these adjusted factor scores divided by the sum of the adjusted factor scores of all securities in the Index. The indexes then each undergo a three-stage weight adjustment process.

Stage 1

Initial index weights are adjusted to meet the following Stage 1 constraint, producing the Stage 1 weights:

- No index security weight may exceed 8%.

Stage 2

Stage 1 weights are adjusted to meet the following Stage 2 constraints, producing the Stage 2 weights:

- For the index securities with the five highest adjusted Factor Scores, stage 1 weights are maintained.
- For all other index securities, no weight may exceed 4%.

Stage 3

Stage 2 weights are adjusted to meet the following Stage 3 constraints, producing the final weights:

- No Index security weight may be less than 0.25%.

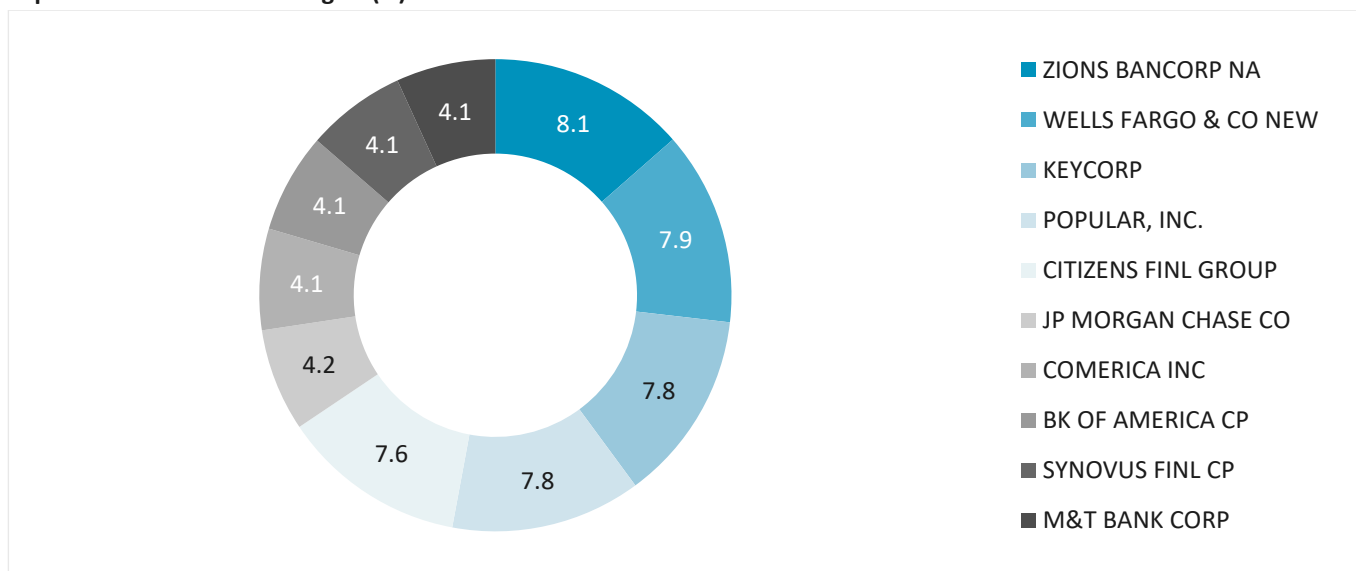
For further information on the index methodology including index maintenance and other index policies, please visit the Nasdaq US Smart Sector Index Family Methodology [here](#).

Sector Composition

The composition description and performance overview of the smart sector indexes are as follows:

Nasdaq US Smart Banks Index™ (NQSSBA)

Top 10 Index Constituent Weights (%)*

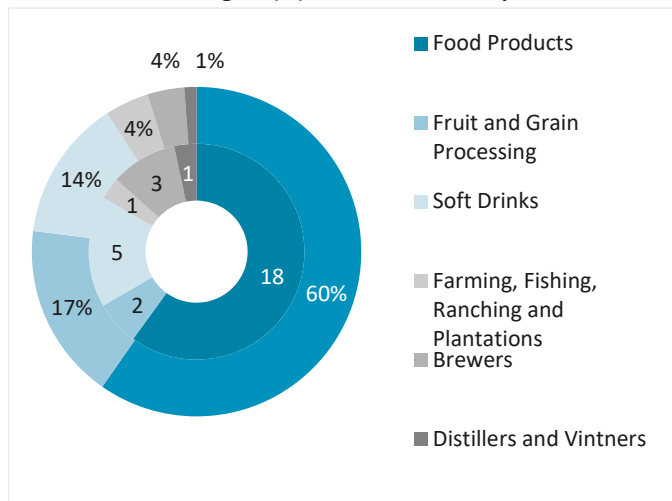


*As of 3/31/2022

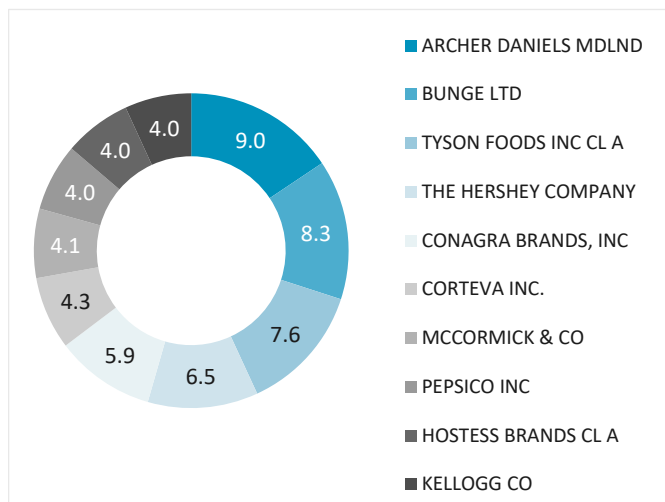
The Nasdaq US Smart Banks Index has 30 constituents, all of which are classified as Banks per ICB subsector. The top ten index weights include some of the largest banks in the US by asset size, such as Wells Fargo, Bank of America, and JP Morgan Chase, along with a number of smaller regional banks. The top ten have a combined index weight of 59.7%, while the top five have a weight of 39.2%. The combined market capitalization of all the banks in the index exceeded \$1.6 trillion, as of March 31, 2022.

Nasdaq US Smart Food & Beverage Index™ (NQSSFBI)

Subsector Index weights (%) and Count of Companies*



Top 10 Index Constituent Weights (%)*

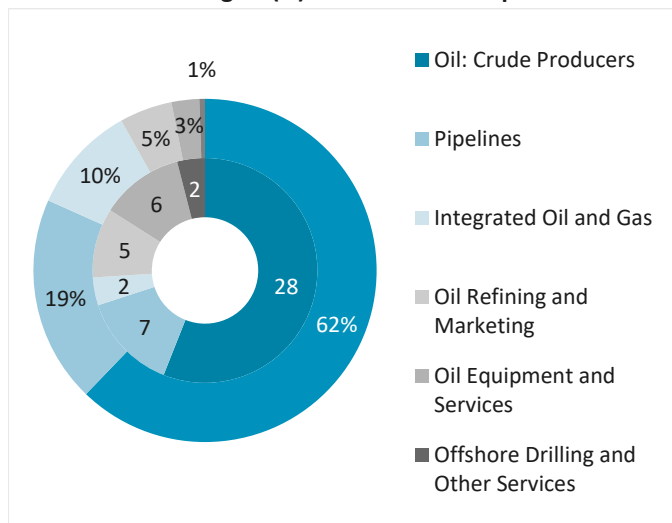


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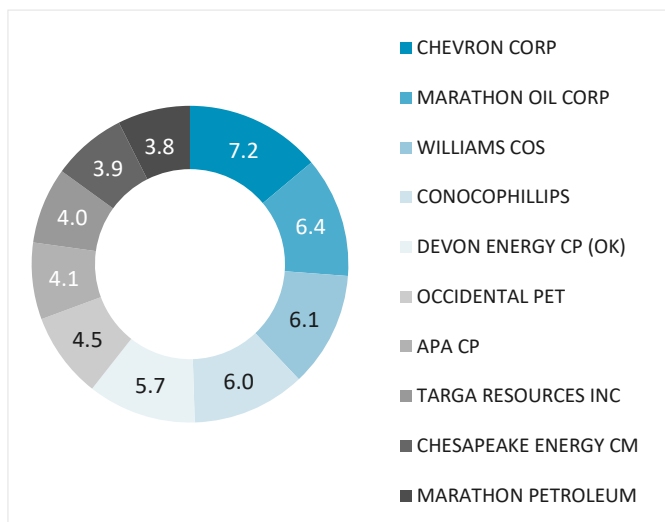
The Nasdaq US Smart Food & Beverage Index has 30 constituents, with a combined market capitalization of \$1.2 trillion across 6 subsectors (there are 7 eligible subsectors – no securities from the Sugar subsector are currently in the index). The Food Products subsector is the largest, with 18 companies and the majority of the index weight at 59.7%. The top 10 constituents contribute an aggregate index weight of 57.7%, with the two largest constituents coming from the Fruit and Grain Processing subsector; other subsectors present in the top 10 include Food Products, Soft Drinks, and Farming, Fishing, Ranching and Plantations. Six of the top 10 are Food Products companies, with a combined 32.1% index weight.

Nasdaq US Smart Oil & Gas Index™ (NQSSOG)

Subsector Index weights (%) and Count of Companies*



Top 10 Index Constituent Weights (%)*



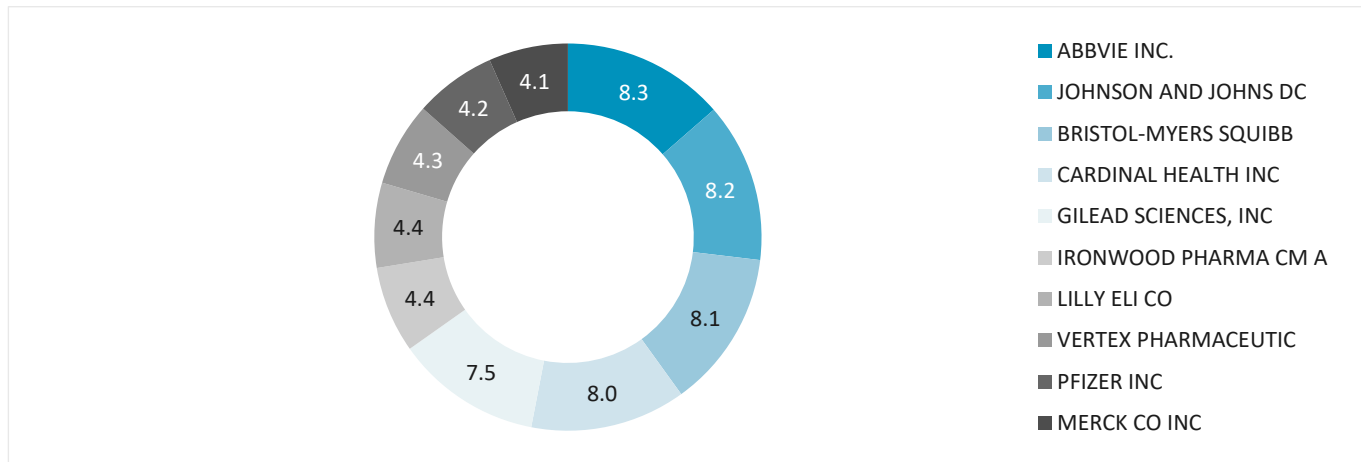
*As of 3/31/2022

The Nasdaq US Smart Oil & Gas Index is heavily skewed towards the Oil: Crude Producers subsector, with 28 of the total 50 constituents and a combined index weight of 62.2%. The Pipelines subsector is the next largest, with seven companies and a weight of 19.5%. In contrast, the six constituents from the Oil Equipment and Services subsector represent only 2.6% of the index weight. Of the top 10 constituents, six companies in the Oil: Crude Producers subsector collectively have an index weight of 30.6%, whereas

two Pipeline companies have an index weight of 10.1%; the single largest constituent was Chevron, an Integrated Oil and Gas subsector company with a weight of 7.2%. The combined market capitalization of the companies in the index was over \$1.7 trillion.

Nasdaq US Smart Pharmaceuticals Index™ (NQSSPH)

Top 10 Index Constituent Weights (%)*

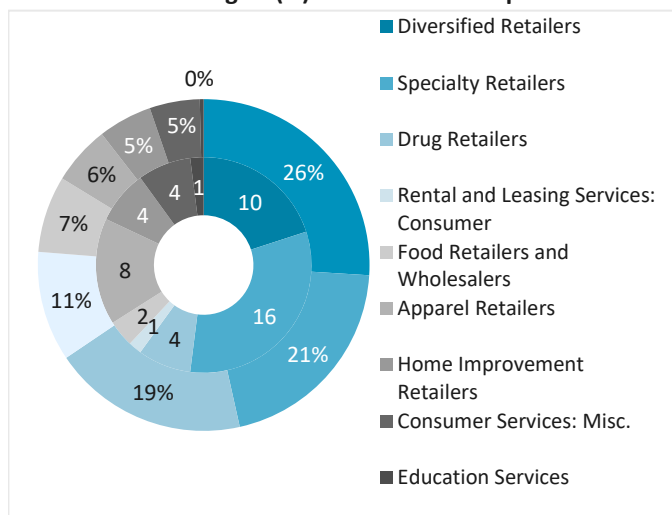


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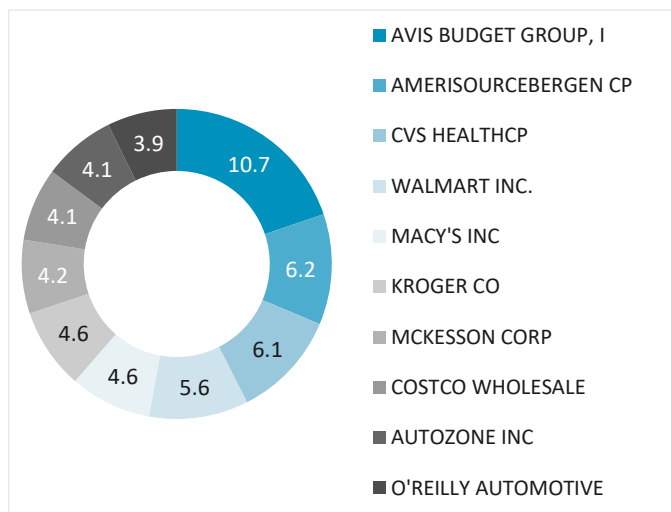
The Nasdaq US Smart Pharmaceuticals Index has 30 constituents, all of which are classified as Pharmaceuticals per ICB subsector, with an aggregate market capitalization of \$2.2 trillion. The top ten constituents - with a combined index weight of 61.4% - include some of the biggest industry players, such as Johnson & Johnson, Gilead Sciences, and Pfizer.

Nasdaq US Smart Retail Index™ (NQSSRE)

Subsector Index Weights (%) and Count of Companies*



Top 10 Index Constituent Weights (%)*



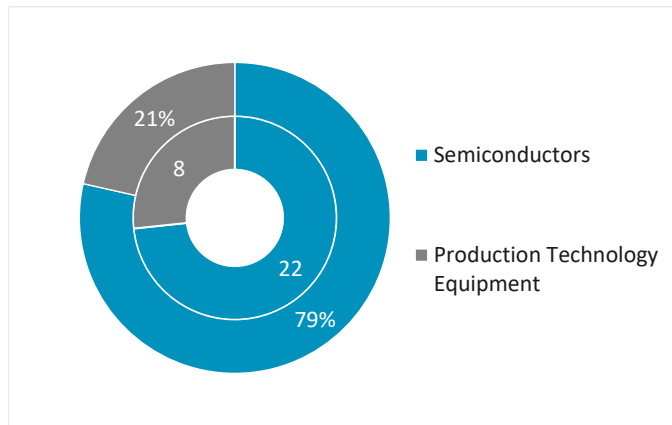
*As of 3/31/2022

The Nasdaq US Smart Retail Index consists of 50 constituents across nine subsectors (there are 12 eligible subsectors), with a combined market capitalization of \$3.9 trillion. Specialty Retailers and Diversified Retailers are the two largest subsectors with 16 and 10 companies, respectively, and index weights of 20.5% and 26.0%, respectively. Drug Retailers was the next largest subsector by weight with 19.0%, but only four constituents. In contrast, the eight companies from the Apparel Retailers subsector account for only 5.7% of the index weight. Education services sector was less prominent with just one company in the index with a weight of

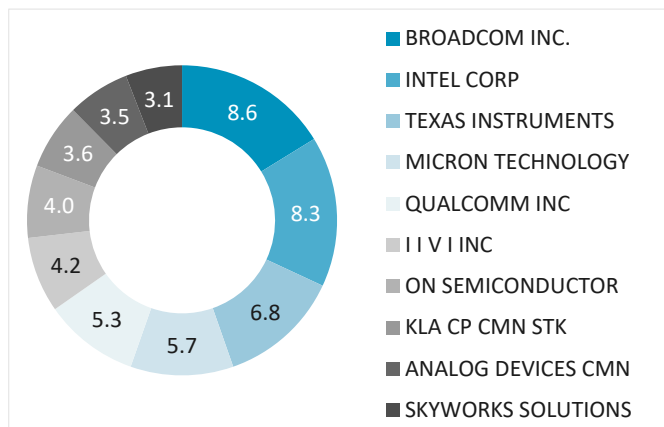
0.4%. The top 10 constituents represent 54.2% of the index weight and five subsectors; the single largest constituent was Avis Budget Group, a Rental and Leasing Services: Consumer company with a weight of 10.7%.

Nasdaq US Smart Semiconductor Index™ (NQSSSE)

Subsector Index Weights (%) and Count of Companies*



Top 10 Index Constituent Weights (%)*

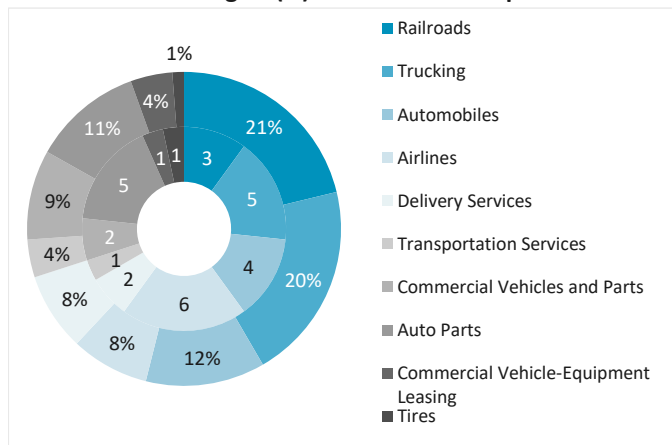


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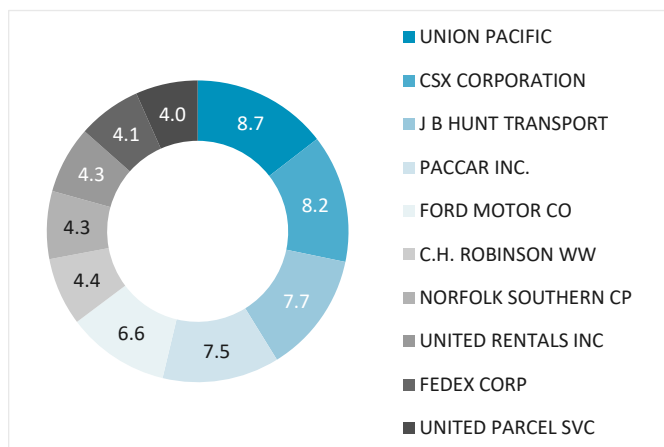
The Nasdaq US Smart Semiconductor Index has 30 constituents, with 22 classified in the Semiconductor subsector and eight in the Production Technology Equipment subsector. The Semiconductor companies contributed 78.5% of the index weight, and \$2.1 trillion of the total index market capitalization of \$2.4 trillion. The top 10 constituent companies had a combined index weight of 53.1%, and included two Production Technology Equipment companies.

Nasdaq US Smart Transportation Index™ (NQSTR)

Subsector Index Weights (%) and Count of Companies*



Top 10 Index Constituent Weights (%)*

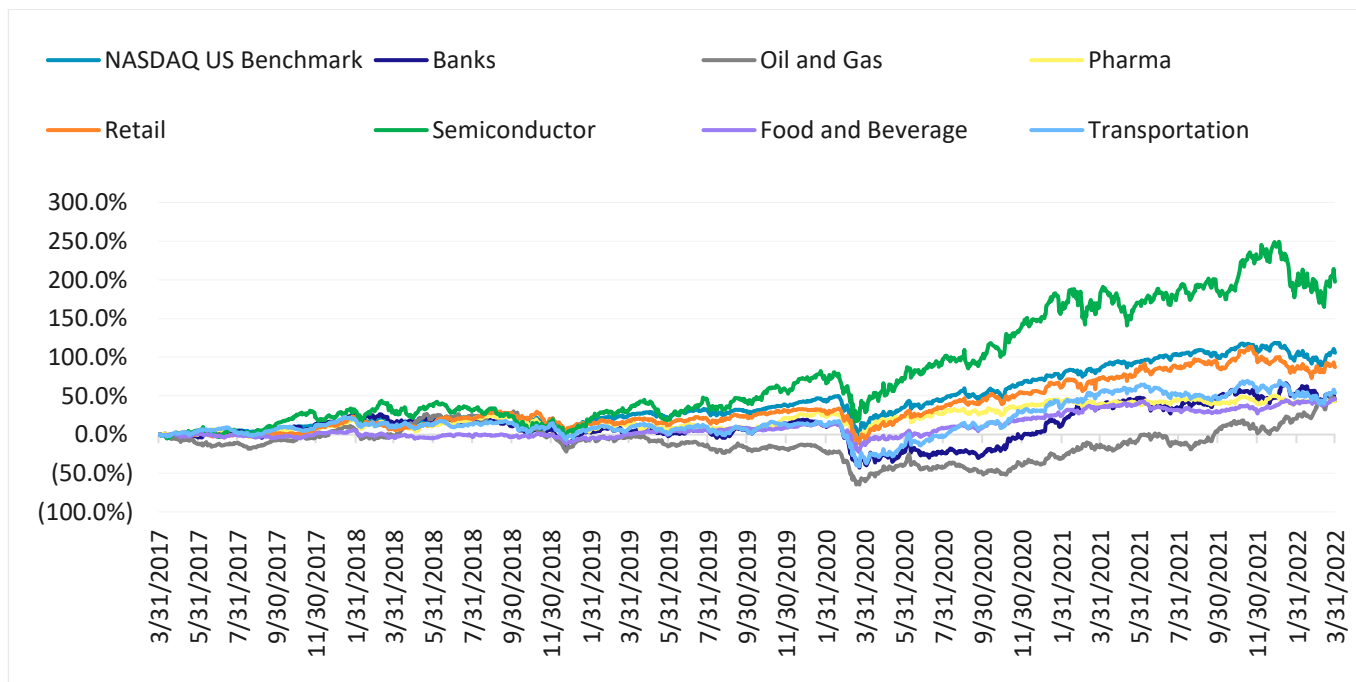


*As of 3/31/2022

The Nasdaq US Smart Transportation Index has 30 constituents spread across ten different subsectors (there are 13 eligible subsectors). The Airline industry contributes the most companies with six, but representing only 8.1% of the index weight. Railroads and Trucking represent 21.2% and 20.4% of index weight, with three and five constituents, respectively. The Automobile subsector is represented by four companies, with a weight of 12.3%. The top 10 constituents contribute 59.7% of the index weight across six of the subsectors. The combined market capitalization of index constituents was \$2.1 trillion.

Index Performance: Five-year Returns*

The cumulative total return performance of the Smart Sector Indexes over the last five years has not surprisingly been varied given the swath of sectors covered. The Oil & Gas Index substantially lagged the other indexes from 2017 through the depths of the oil market crash during the onset of the Covid-19 pandemic, but has strongly rallied since then, up nearly 200% since the end of October 2020. The Semiconductor Index has been the consistent outperformer, while most of the rest have generated below-market returns trailing the Nasdaq US Benchmark Index (NQUSB) in the five-year period from March 31, 2017, to March 31, 2022.



*As of 3/31/2022

Index Performance Overview:

Banks: The performance of the Bank Index has been inconsistent over the last five years. After a strong performance in 2016 along with other cyclical and value-oriented sectors, it underperformed NQUSB in 2017 and 2018. Its strong performance in 2019 was in-line with the broader market, while 2020 saw significant underperformance as a result of the pandemic and many banks taking substantial reserves against potential loan defaults. In 2021, performance was much stronger as the economy recovered, bringing the index’s cumulative five-year total return up to 43.6% as of March 31, 2022. Over that time, the index outperformed the S&P Bank Select Industry Total Return Index by just under 5% cumulatively.

Oil & Gas: The cumulative five-year total return of the index stood at 45.8% as of March 31, 2022, despite enduring one of the most stunning crashes in the history of the commodities complex. West Texas Intermediate (WTI) oil prices traded in a range from around \$40-80 per barrel in the three years leading up to the Covid-19 pandemic crash, which briefly brought prices below \$0 for the first time ever. By the end of 2021, prices had recovered back up to around \$80, and continued going higher in the first quarter of 2022. Factors like a broad-based demand recovery driven by the return of in-person activity, geopolitical tensions surrounding the Russia-Ukraine crisis, and the inability of renewables to generate enough power to facilitate a smooth transition to clean energy, all contributed to the recent rise in prices of oil and gas alike. Renewed investor interest in commodities and stocks related to the oil and gas industry - in anticipation of better earnings - resulted in the best single-year performance of any index across the five-year period, with a gain of 70.4% in 2021. The threat of continued sanctions and embargoes on Russian energy is expected to support higher prices, which may help the index’s oil and gas producers to continue their run of outperformance. Over the five year period ending March 31, 2022, the index outperformed the S&P Energy Select Sector Total Return Index by over 6% cumulatively.

Pharmaceuticals: The cumulative five-year total return of the index stood at 47.2% as of March 31, 2022, almost all of which can be attributed to the past two years of performance. Even so, it has been the worst performing member of the Smart Index suite over that timeframe, and the fourth-weakest over the past five years. The index has underperformed NQUSB in every calendar year since 2016. Yet, it has also demonstrated the value of the Smart Sector methodology, outperforming the Dow Jones U.S. Select Pharmaceuticals Total Return Index by over 7% cumulatively in the trailing five-year period ending March 31, 2022.

Retail: The Retail Index has been the second best-performing index in the suite, delivering a cumulative five-year total return of 87.1% as of March 31, 2022. It modestly underperformed NQUSB in 2017, 2019 and 2020, while modestly outperforming in 2018 and 2021. Similar to Banks and Oil & Gas, Retail suffered from a pronounced initial drawdown brought on by Covid-19, but has experienced a robust recovery. Over the past two years, Apparel Retailers have led in terms of absolute performance among subsectors, while Diversified Retailers and Specialty Retailers have also performed well and contributed the most to overall index performance. Notably, the index has outperformed the S&P Retail Select Industry Index by nearly 23% on a total return basis in the first three months of 2022.

Semiconductor: The Semiconductor Index is the best performing index in the Nasdaq US Smart Sector Index Family. The index has seen a fairly steady rise since early 2017, briefly interrupted by pullbacks in the fourth quarter of 2018 and during the Covid-19 bear market in the first quarter of 2020. Its recovery since then has been particularly strong, up nearly 117% in the two-year period ending March 31, 2022. Demand for semiconductor chips remains strong across various industries due to an increasing market for internet-connected devices, automation, artificial intelligence, and energy storage. The index has seen a pullback in the first quarter of 2022, down approximately 13%, but that is fairly modest in the context of its trailing five-year total return of 197.7%.

Food & Beverage: Similar to Pharmaceuticals, another defensive sector, the cumulative total return performance of the Food & Beverage Index has been generally underwhelming, up only 45.6% over the last five years. It has underperformed NQUSB in each full calendar year since 2016, and was the second-worst performer in the suite. Notably though, it is the only index besides Oil & Gas to have positive year-to-date returns in 2022, up 5.24% as of March 31. The index also outperformed the Dynamic Food & Beverage Intellidex Total Return Index by 2.5% over the first three months of 2022.

Transportation: The index's performance has been generally positive over the past five years, with only one calendar year of negative returns in 2018. However, it too trailed the NQUSB in each full calendar year since 2016, generating a cumulative total return of 53.6%. While it has experienced a nice recovery since the onset of Covid-19 in March 2020, performance dispersion has been significant across subsectors. Autos, Railroads, Trucking, and Transportation Services have outperformed, while Airlines, Tires, Auto Services, and Commercial Vehicles & Parts have dragged overall performance down.

Smart Sector Index Periodic Performance: Semiconductor and Retail Outshine other Sectors

Year	Nasdaq US Benchmark	Banks	Oil and Gas	Pharma	Retail	Semiconductor	Food and Beverage	Transportation
1-Year	12.05%	4.59%	74.64%	6.13%	9.07%	9.16%	7.79%	(0.46%)
3-Year	66.11%	43.84%	50.90%	29.85%	59.03%	128.54%	43.74%	44.06%
5-Year	105.85%	43.60%	45.80%	47.18%	87.08%	197.65%	45.62%	53.55%

Smart Sector Index Annual Performance:

	2016*	2017	2018	2019	2020	2021
Nasdaq US Benchmark	4.3%	21.4%	(5.4%)	31.2%	21.3%	25.9%
Banks	29.8%	14.7%	(21.1%)	31.1%	(12.1%)	41.6%
Oil and Gas	5.4%	(1.9%)	(19.7%)	3.9%	(28.3%)	70.4%
Pharma	(7.4%)	19.6%	(7.8%)	23.3%	11.4%	6.8%
Retail	0.8%	10.1%	(1.5%)	21.0%	16.2%	29.7%
Semiconductor	11.4%	32.8%	(13.0%)	62.5%	47.2%	36.0%
Food and Beverage	(0.5%)	6.8%	(11.8%)	24.9%	7.8%	13.1%
Transportation	10.8%	16.4%	(14.5%)	15.3%	15.7%	24.4%

Note: Performance total return for calendar year; *From October 3, 2016

2016*	2017	2018	2019	2020	2021
Banks 29.8%	Semiconductor 32.8%	Retail -1.5%	Semiconductor 62.5%	Semiconductor 47.2%	Oil and Gas 70.4%
Semiconductor 11.4%	NASDAQ US Benchmark 21.4%	NASDAQ US Benchmark -5.4%	NASDAQ US Benchmark 31.2%	NASDAQ US Benchmark 21.3%	Banks 41.6%
Transportation 10.8%	Pharma 19.6%	Pharma -7.8%	Banks 31.1%	Retail 16.2%	Semiconductor 36.0%
Oil and Gas 5.4%	Transportation 16.4%	Food and Beverage -11.8%	Food and Beverage 24.9%	Transportation 15.7%	Retail 29.7%
NASDAQ US Benchmark 4.3%	Banks 14.7%	Semiconductor -13.0%	Pharma 23.3%	Pharma 11.4%	NASDAQ US Benchmark 25.9%
Retail 0.8%	Retail 10.1%	Transportation -14.5%	Retail 21.0%	Food and Beverage 7.8%	Transportation 24.4%
Food and Beverage -0.5%	Food and Beverage 6.8%	Oil and Gas -19.7%	Transportation 15.3%	Banks -12.1%	Food and Beverage 13.1%
Pharma -7.4%	Oil and Gas -1.9%	Banks -21.1%	Oil and Gas 3.9%	Oil and Gas -28.3%	Pharma 6.8%

Note: Performance total return for calendar year; *From October 3, 2016

Conclusion:

The seven Nasdaq US Smart Sector Indexes utilize a liquidity-ranking approach to select constituents, and modified factor-weighting based on Volatility, Value, and Growth factor scores. The index suite offers investors a differentiated solution for tracking key sectors of the economy, and has the potential to outperform market capitalization-weighted and/or equal-weighted sector benchmarks in a market environment wherein the specific multifactor weighting approach generates alpha. Given the widespread market disruptions so far in 2022, investors should consider evaluating their exposure to plain-vanilla indexed products that allocate portfolio weights based on company size or equal weighting.

The Nasdaq US Smart Sector Indexes are tracked by the following ETFs:

- Nasdaq US Smart Banks Index (NQSSBA) - First Trust Nasdaq Bank ETF (FTXO)
- Nasdaq US Smart Food & Beverage Index (NQSSFBS) - First Trust Nasdaq Food & Beverage ETF (FTXG)
- Nasdaq US Smart Oil & Gas Index (NQSSOG) - First Trust Nasdaq Oil & Gas ETF (FTXN)
- Nasdaq US Smart Pharmaceuticals Index (NQSSPH) - First Trust Nasdaq Pharmaceuticals ETF (FTXH)
- Nasdaq US Smart Semiconductor Index (NQSSSE) - First Trust Nasdaq Semiconductor ETF (FTXL)
- Nasdaq US Smart Transportation Index (NQSSSTR) - First Trust Nasdaq Transportation ETF (FTXR)

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