

Nasdaq Q-50™ Index: Midcap Innovation at Historically Attractive Valuations

August 2023

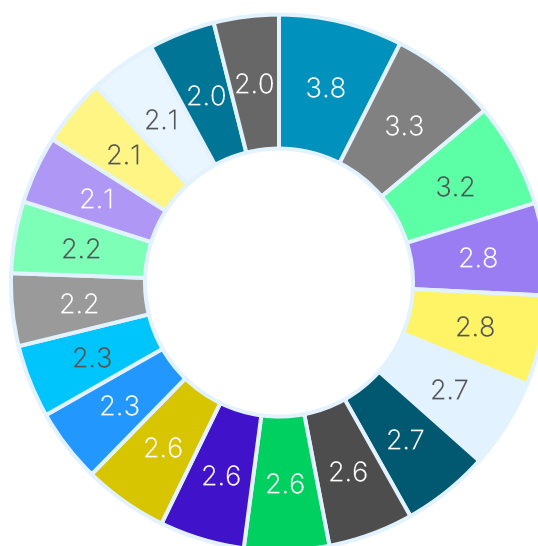
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Methodology

The Nasdaq Q-50 Index (NXTQ™) is a market-capitalization weighted index consisting of companies that are next in line for inclusion into the Nasdaq-100®. It consists of 50 securities that are ranked by their market capitalization and includes companies from most major industry groups including Technology, Consumer Discretionary, and Health Care, while specifically excluding Financials and Real Estate. Companies that are included in the Nasdaq Q-50 are disproportionately focused on innovation and growth, like those of the Nasdaq-100. There is one significant difference between the two indexes, however. While the Nasdaq-100 is reconstituted annually, the Nasdaq Q-50 is reconstituted quarterly. All securities must meet the eligibility criteria for the Nasdaq-100 Index. When an index security is added to the Nasdaq-100, the security is deleted from the Q-50 and is not replaced.

Index Composition

Top 20 Index Weights (%) as of June 30, 2023



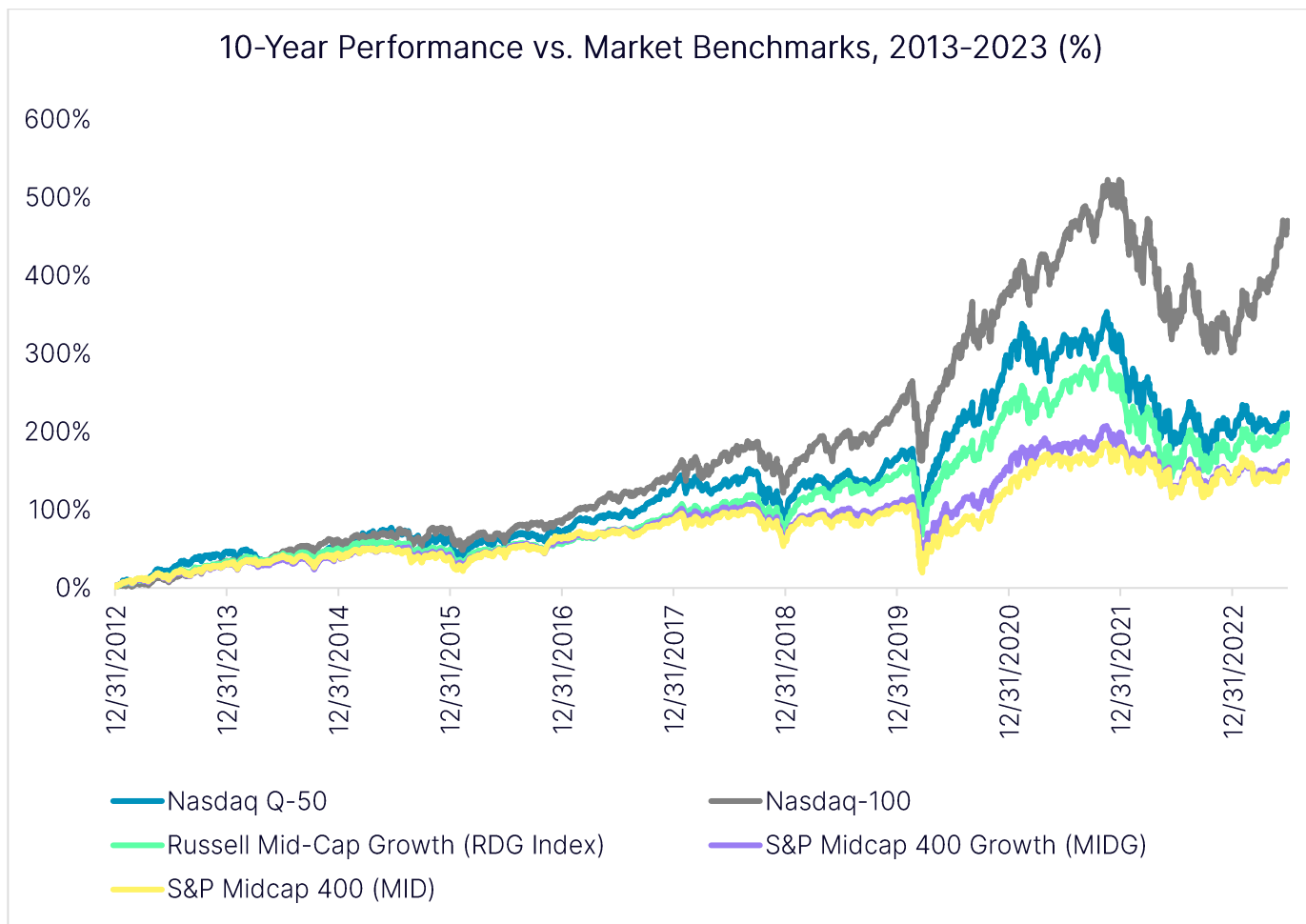
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|------------------------|-----------------------|----------------|--------------------------|
| Trade Desk | Coca-Cola Europacific | MongoDB | Monolithic Power Systems |
| Take-Two Interactive | CDW | Tractor Supply | Alnylam Pharmaceuticals |
| VeriSign | Horizon Therapeutics | Ulta Beauty | ICON |
| First Solar | Insulet | Hologic | Baidu |
| JB Hunt Transport Svcs | Expeditors | Steel Dynamics | United Airlines Holdings |

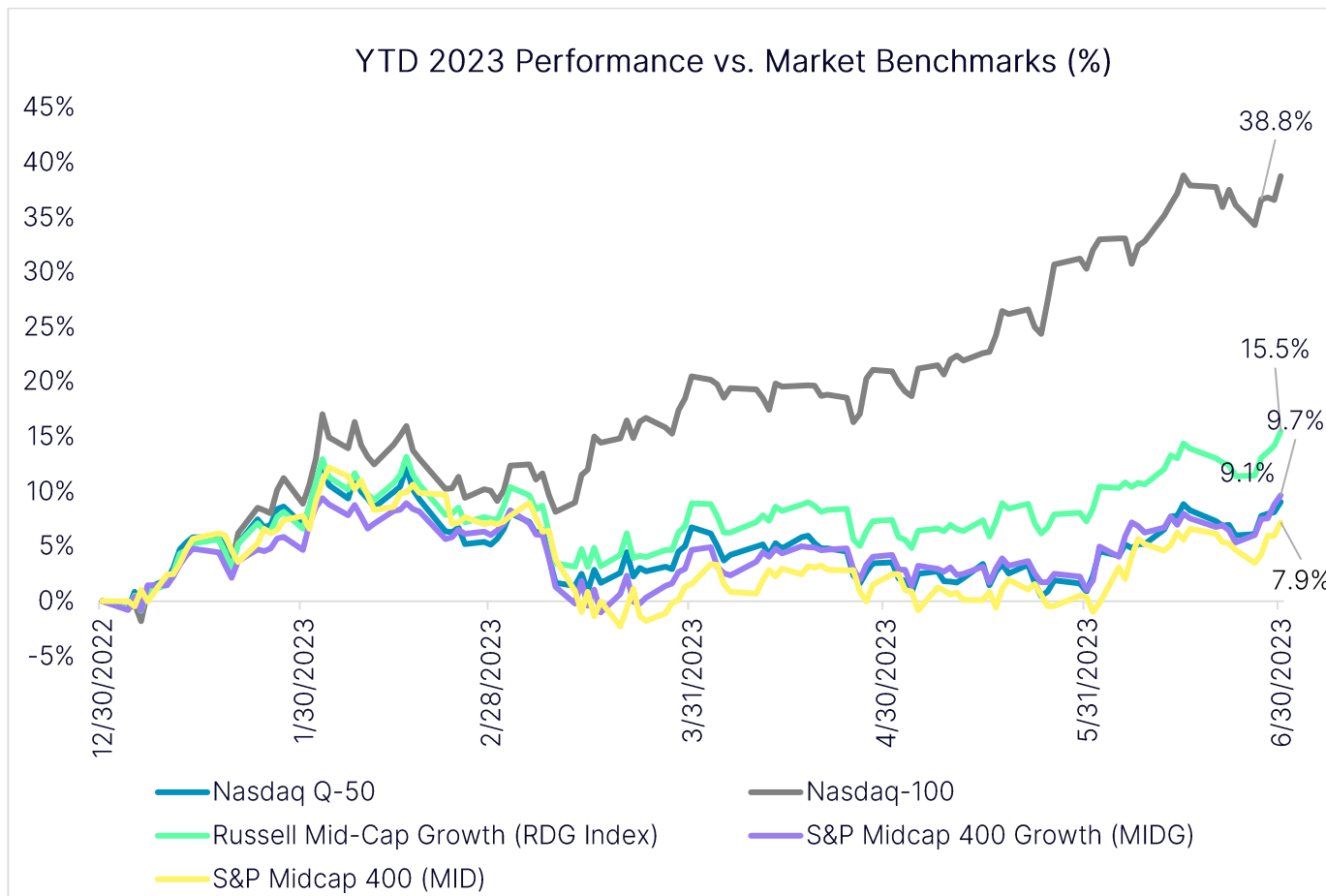
As of June 30, 2023, there were 52 constituents in the index. The top 20 companies represented 51% of the total index weight, while the top 10 companies and top 5 companies represented 29% and 16% of the total index weight. There is representation from multiple industries in the top 20, including Consumer Discretionary, Consumer Staples, Technology, Healthcare, Industrials, Energy and Basic Materials, while the top 10 names are concentrated in fewer industries including Consumer Discretionary, Consumer Staples, Technology and Healthcare.

The top five names include the likes of Trade Desk, MongoDB, and Monolithic Power Systems, each operating in a different industry, which points to the diversification at the top of the index. Trade Desk, with an index weight of 3.8%, is an advertising technology company, which offers an online advertising platform that manages display, social, mobile, and video advertising campaigns. MongoDB, with an index weight of 3.2%, develops database software for automating, monitoring and deployment backups. Monolithic Power Systems designs integrated power semiconductor solutions and power delivery architectures for computing and storage, automotive, industrial, communications, and consumer applications markets. These companies represent the next generation of innovators that specialize in one or two areas of technology, rather than operating as a large, diversified company in the Nasdaq-100 Index.

In terms of market capitalization for the current group of Q-50 companies, the average market capitalization was \$21.3 billion, while the weighted average market capitalization was \$22.4 billion, as of June 30, 2023. The median market capitalization was \$17.4 billion, and the range from the largest to the smallest was \$135.2 billion and \$10.4 billion.

Recent Performance





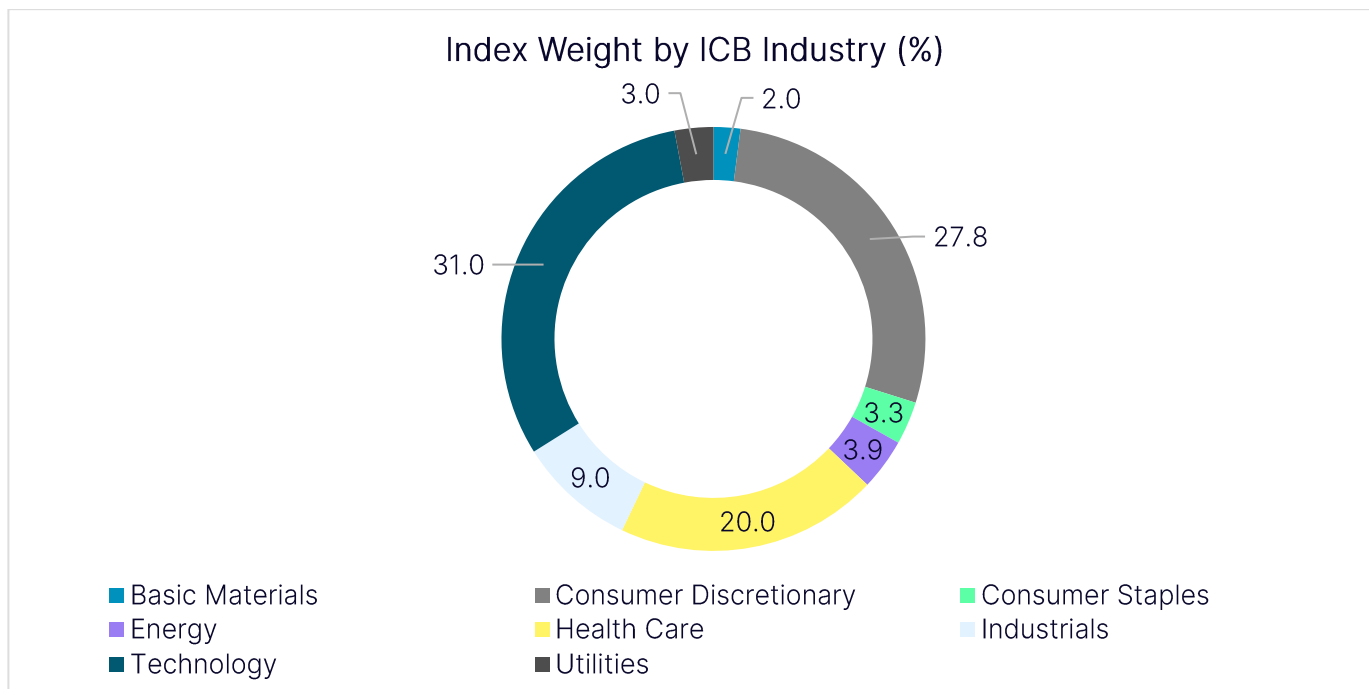
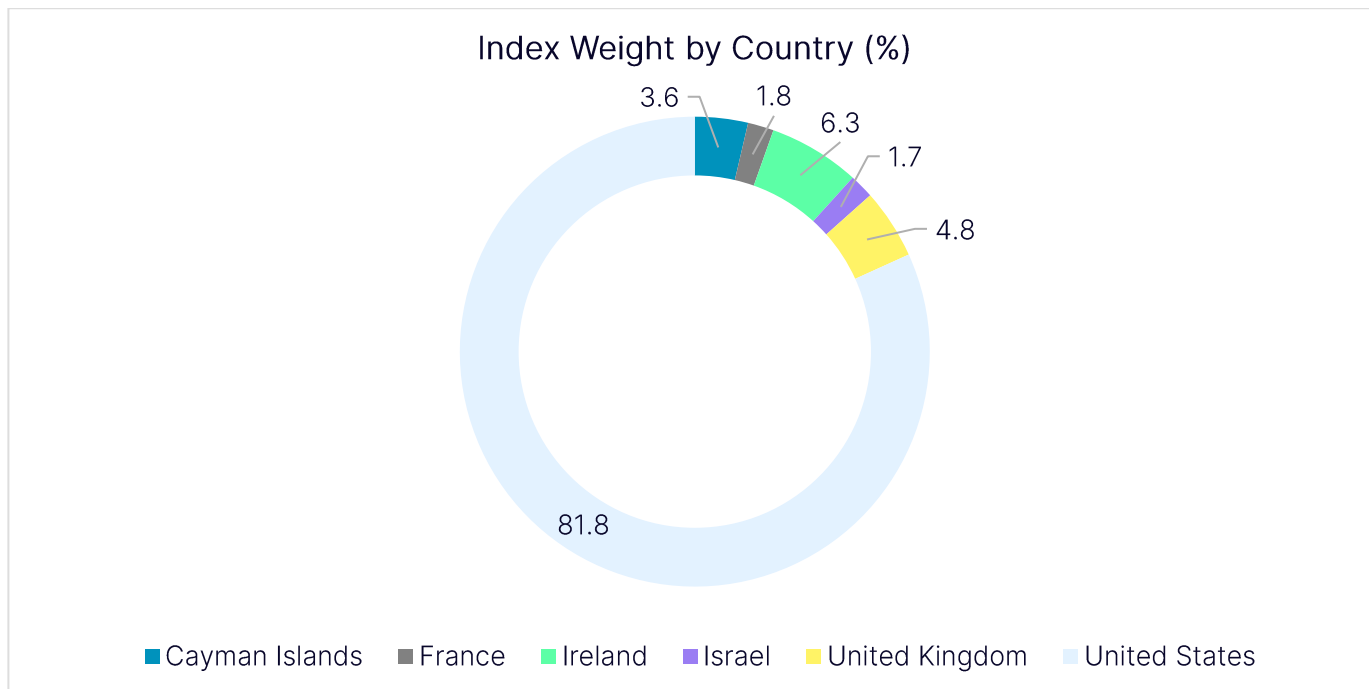
The Nasdaq Q-50 has registered strong triple-digit gains over a ten and half year-period, from 12/31/2012-06/30/2023. It registered cumulative returns of 224.3% on a price-return basis, outperforming other mid-cap benchmarks including the Russell Mid-Cap, the S&P Midcap 400 Growth Index and S&P Midcap 400 Index, which registered gains of 210.1%, 162.6% and 157.0% respectively. It underperformed the Nasdaq-100, which registered massive gains of 470.4%, driven to a large extent by outperformance in the first half of 2023.

The outperformance of the Nasdaq-100 is largely explained by the index’s heavy allocation towards top performing industries such as Technology, Consumer Discretionary and Healthcare. Additionally, the Nasdaq-100 has seen a dramatic improvement in the fundamentals underlying the index, with the index now tracking more mature companies that comprise a substantial portion of the overall U.S. equity market.

The pandemic marked a particularly significant turning point, with sudden drops in performance for all indexes. Post the lows of the pandemic, the pace of recovery differed, with the Nasdaq-100 and the Nasdaq Q-50 recovering from the lows seen in the pandemic sooner than other benchmarks. This reflects the central role played by companies of both indexes in the economic recovery.

All four indexes registered declines in 2022, a year which was particularly challenging for the markets with the outbreak of the Russian Ukraine war and Federal Reserve rate hikes. The Nasdaq-100 was down the most, followed by the Nasdaq Q-50 as the technology sector was hit particularly hard. 2023 has seen the Nasdaq-100 register a strong reversal, outperforming other indexes largely due to better-than-expected technology earnings, the rise of AI as a new secular growth driver, and the return of the “big Tech” safety trade due to the emergence of a regional banking crisis in March. The mid-cap benchmarks have closely tracked each other this year, with the Nasdaq Q-50 generating returns of 9.1%, closely tracking both the S&P Midcap 400 and Midcap 400 Growth, while underperforming the Russell Mid-Cap Growth by about six percentage points.

Sector and Country Exposure

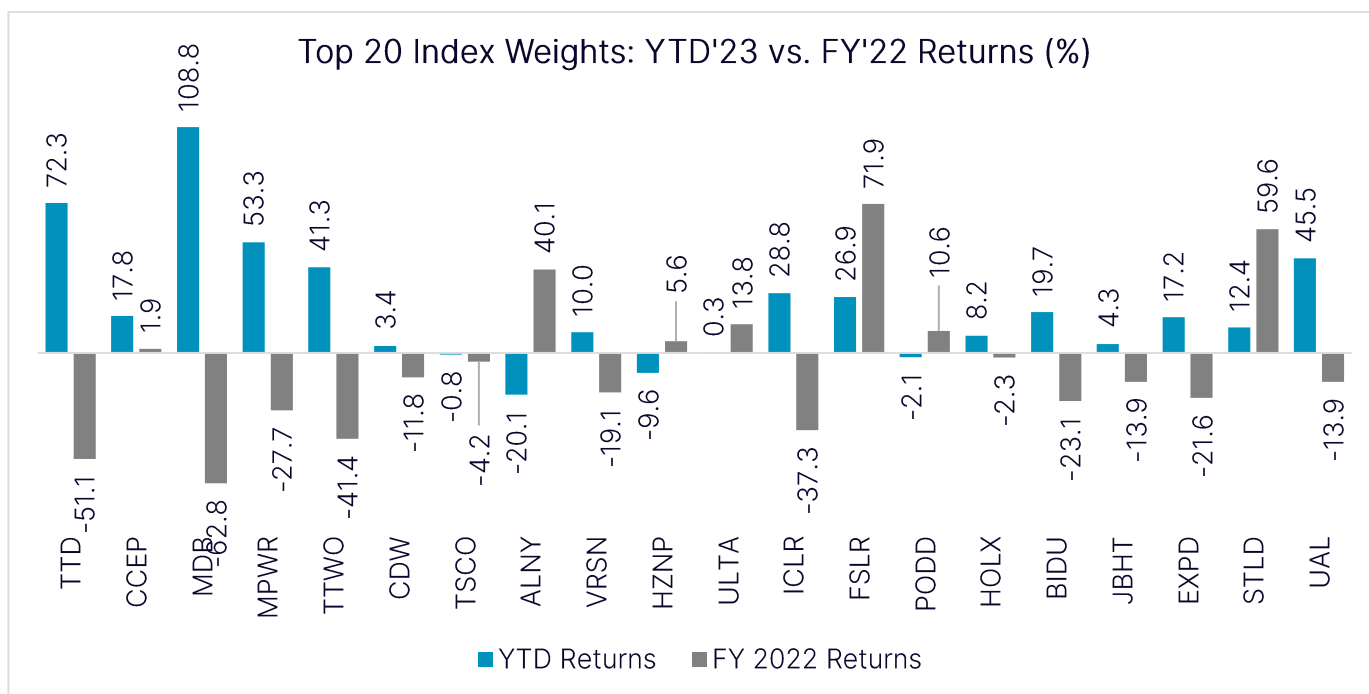


The sector with the largest allocation is Technology, with an index weight of 31%, followed by Consumer Discretionary, with an index weight of 28% and Health Care, with an index weight of 20%. The Q-50 is not as heavily concentrated in Technology as the Nasdaq-100, which has about 62% of the index weight tied to Technology as of June 30, 2023. Other differences in sector allocation that are more pronounced include Health Care. Health Care accounts for 20% of the total index weight for Nasdaq Q-50 and 6% of the total index weight for the Nasdaq-100. Basic Materials, Consumer Discretionary, Energy, Industrials and Utilities have a higher allocation in the Nasdaq Q-50 when compared to the Nasdaq-100, although the difference is less pronounced when compared to that of Health Care. This difference in sector allocation is critical for

investors looking to gain exposure to innovative companies without being overweight Technology, which has already run up considerably this year.

In terms of geographic exposure, the Nasdaq Q-50 offers exposure to international equities with about 18% of total index weight allocated to companies domiciled outside the United States. The United States comprises 82% of the total index weight while the top two international markets, Ireland and United Kingdom comprise 6% and 5% of the total index weight. While the last decade was characterized by U.S. equity market dominance, there is a possibility for international markets to outperform over the next decade, as history suggests that domestic and international markets move in cycles. The Q-50 enables midcap growth investors to easily gain some diversified exposure to international markets.

Individual Drivers of Performance



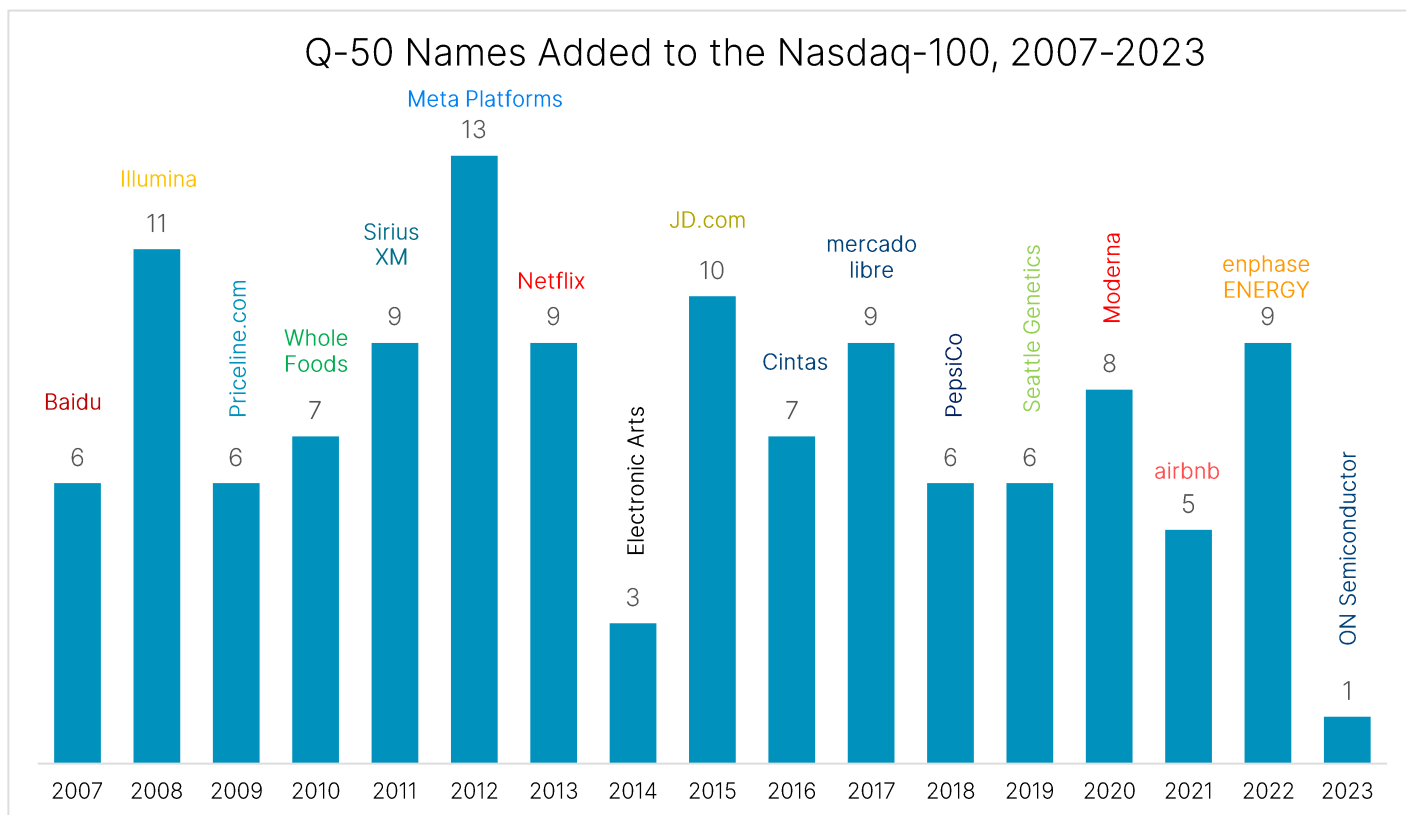
The top 20 names by index weight averaged a loss of 6.3% in FY 2022, reversing to a gain of 22% on a YTD basis in the first of half of 2023.

13 out of 20 companies registered losses in 2022, with gains accruing to sectors that were relatively insulated from the challenging macroeconomic environment including Energy, Health Care, Basic Materials and Consumer Staples. On the other hand, 17 out of the top 20 companies have registered gains this year, as the outlook for many of the index’s growth-oriented constituents has improved. 2022 saw headwinds by way of historically high inflation, rapidly rising interest rates, fluctuations in FX rates, slowdown in certain areas of tech such as cloud, software and gaming, and a general pivot by investors away from unprofitable high-growth companies. These headwinds appear to have largely receded, replaced by encouraging outlooks for many of the companies this fiscal year. For example, United Airlines (UAL) is forecasting strong profits due to surging international travel while First Solar’s (FSLR) earnings are getting a lift from the Inflation Reduction Act, boosting overall performance.

In 2022, three companies including First Solar, Steel Dynamics, and Alnylam Pharmaceuticals registered gains of 72%, 60% and 40% respectively, bucking the overall trend while MongoDB, Trade Desk and Take-Two Interactive were the relative underperformers, registering significant declines of 63%, 52% and 42% respectively. All but one company that posted losses in 2022 saw their losses reverse to gains this year.

Mongo DB, Trade Desk and Monolithic Power Systems have been the relative outperformers, registering returns of 109%, 72% and 53% respectively in the first half of 2023.

Q-50 Companies as Future Nasdaq-100 Graduates



Since the launch of the index in 2007, 125 companies have graduated from the Nasdaq Q-50 to the Nasdaq-100, at an average rate of nearly 8 companies per year¹. The consistency with which companies have graduated from the Q-50 to the Nasdaq-100 provides an indication of the strength of the Q-50 in attracting the next generation of leaders in innovation. Today, list of Q-50 constituents graduating into the Nasdaq-100 includes the likes of cybersecurity players such as CrowdStrike Holdings (2021) and Fortinet (2021), specialized software companies such as Atlassian (2020) and Datadog (2021), retailers such as JD.com (2015), a few of today’s mega-cap technology companies such as Facebook (2012) and Netflix (2013), and biotech giants Illumina (2008) and Moderna (2020).

2012 saw the highest number of companies graduate from the Nasdaq Q-50 to the Nasdaq-100 followed by the year 2008. The rest of the previous decade also showed a steady rate of companies graduate from the Nasdaq Q-50 to the Nasdaq-100.

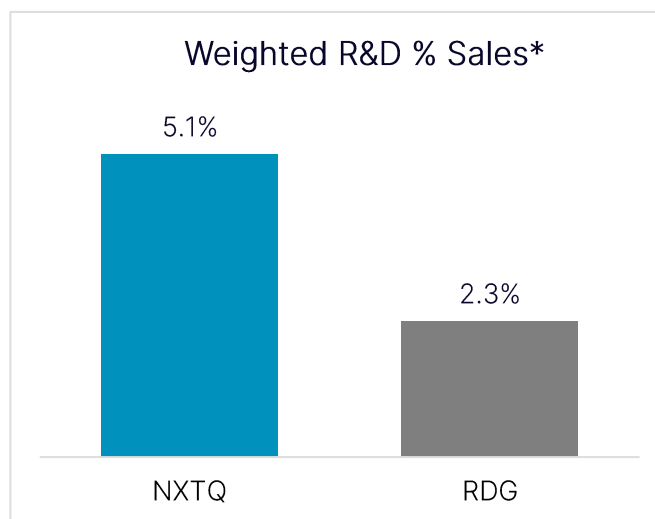
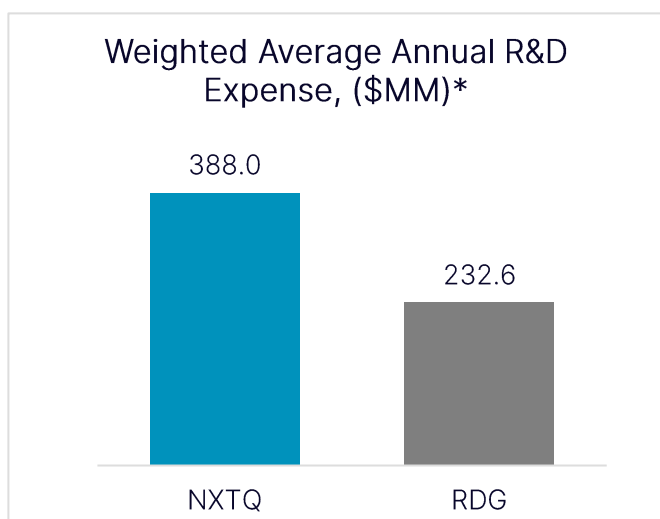
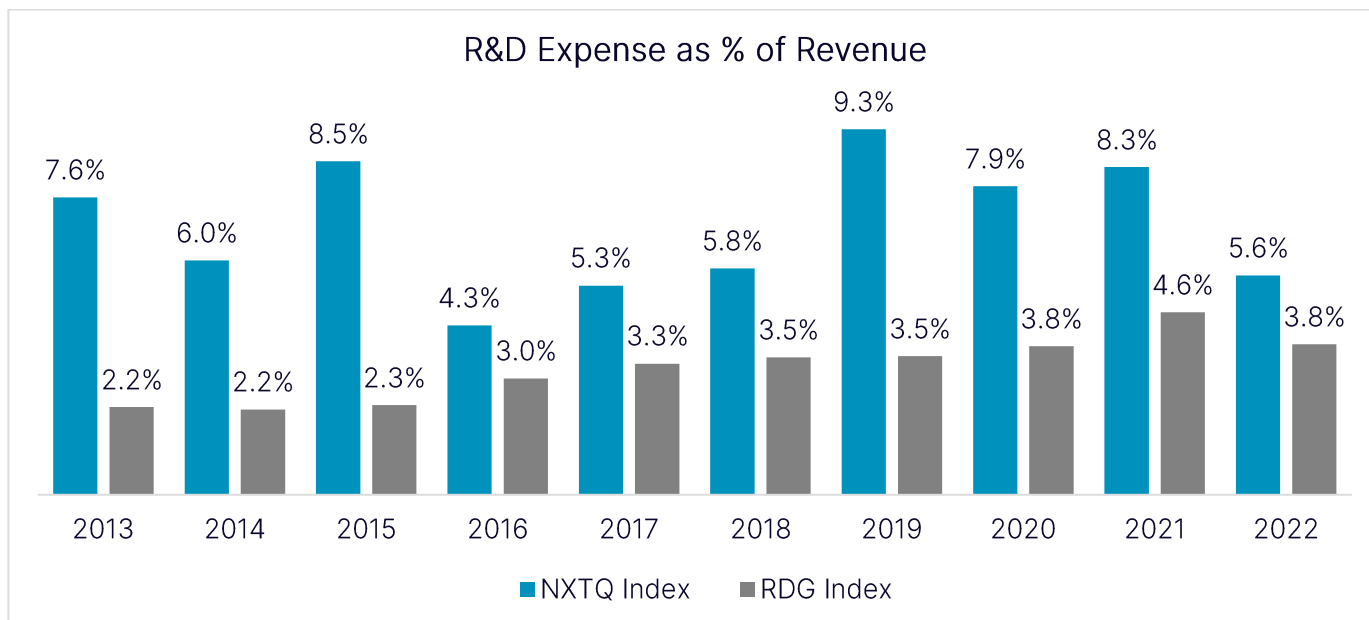
The companies that graduated from the Q-50 to the Nasdaq-100 generated average returns of 73.7% and median returns of 59.2%, during the 12 months prior to addition to the Nasdaq-100. During the 12 months post addition to the Nasdaq-100, the same companies generated much lower average returns of 16.2% and median returns of 14.3%. During the 36 months post graduation, the additions to the Nasdaq-100 generated average returns of 50.8% and median returns of 30.5%. The data continues to support the theory that the constituents of Q-50 generate higher average returns as mid-cap companies, before graduating to the

¹ Constituent counts by year include double-counting. For example, NXP Semiconductors which originally graduated from the Nasdaq Q-50 to the Nasdaq-100 in 2013 was subsequently kicked back to the Nasdaq Q-50 and moved back to the Nasdaq-100 in 2018. Of the 125 companies that graduated from the Nasdaq Q-50 to the Nasdaq-100, there were 116 unique companies. Baidu, which graduated in 2007, was part of the Nasdaq-100 until it was demoted in December 2022.

Nasdaq-100. Investors are, therefore, likely to benefit from seeking exposure to them before they attain large-cap status.

An Outperformer in Terms of Innovation and R&D

Spending on R&D has traditionally been considered vital for economic growth and technological innovation. As per a study by Bain & Company in 2020, capex and R&D grew faster than revenues over the past decade, across multiple sectors including automotive, aerospace and defense, construction, and other industrial sectors². While the pandemic led to cuts in R&D and capex, there has been an increased focus by leading executives to ensure that capex and R&D continue to feed the strategic priorities of their businesses. To this end, constituents of the Nasdaq Q-50 are well-positioned to capitalize on new growth opportunities as they often spend more than twice as much on research and development as a percentage of revenues when compared to a leading mid-cap growth benchmark, the Russell Midcap Growth Index (RDG), if we look at data over the last decade.



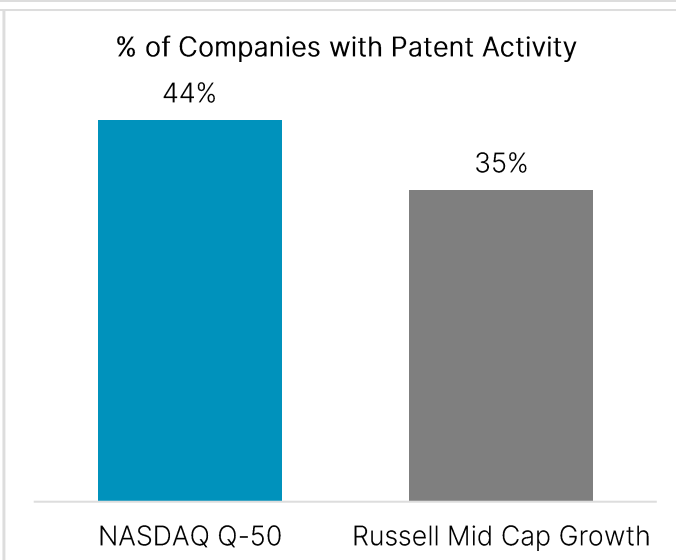
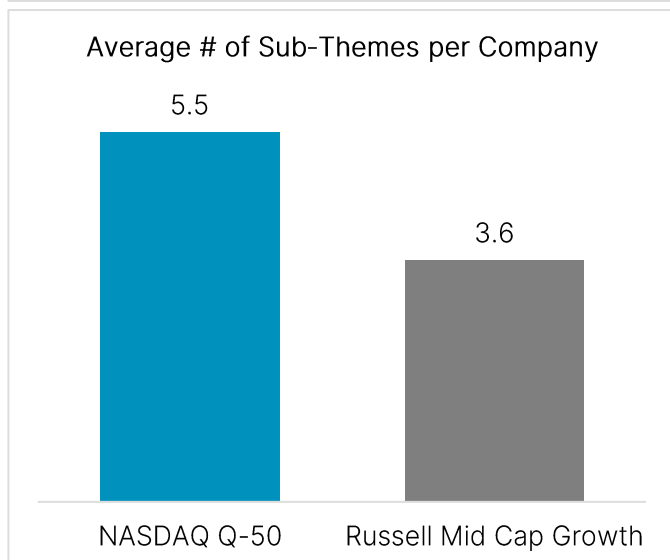
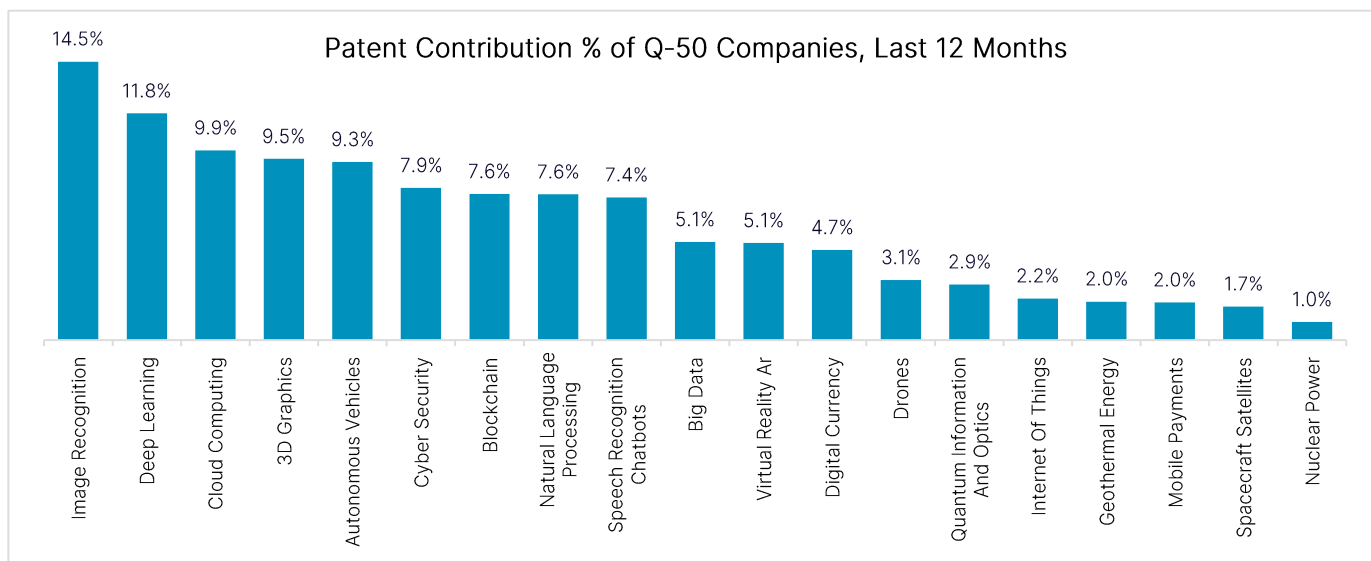
*R&D Expense and Sales data for the most recent 12-month period, per Bloomberg as of June 30, 2023

² <https://www.bain.com/insights/focusing-randd-and-capex-to-win/>

Disruptive Technology and R&D: Nasdaq Q-50

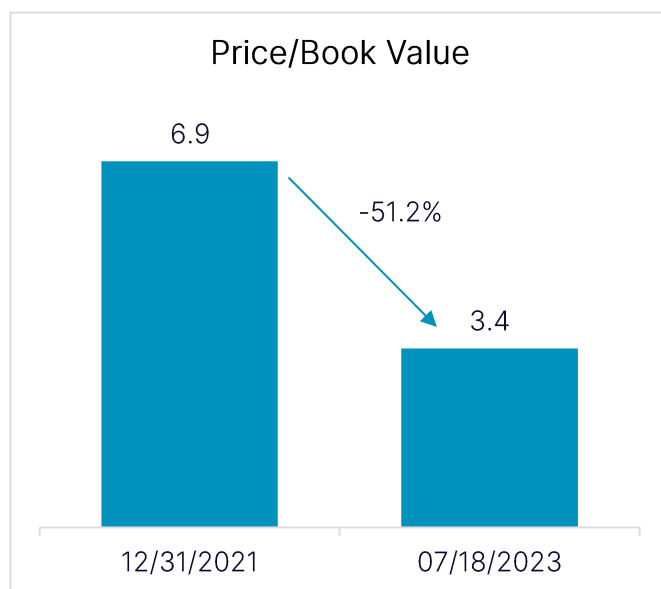
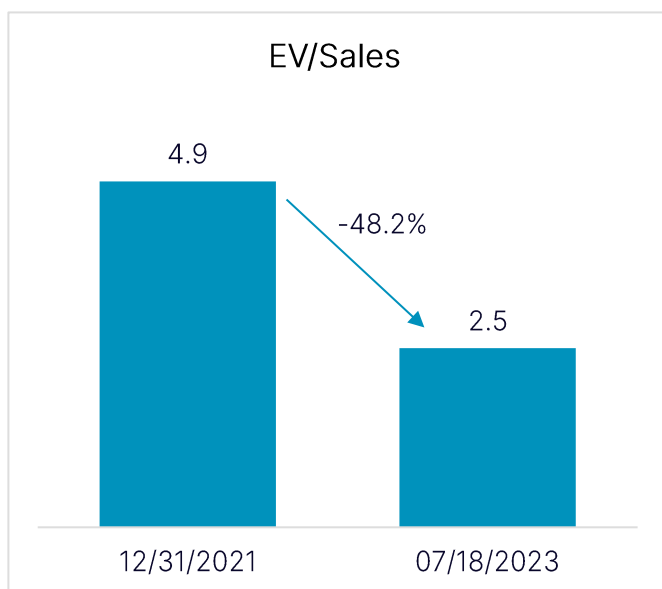
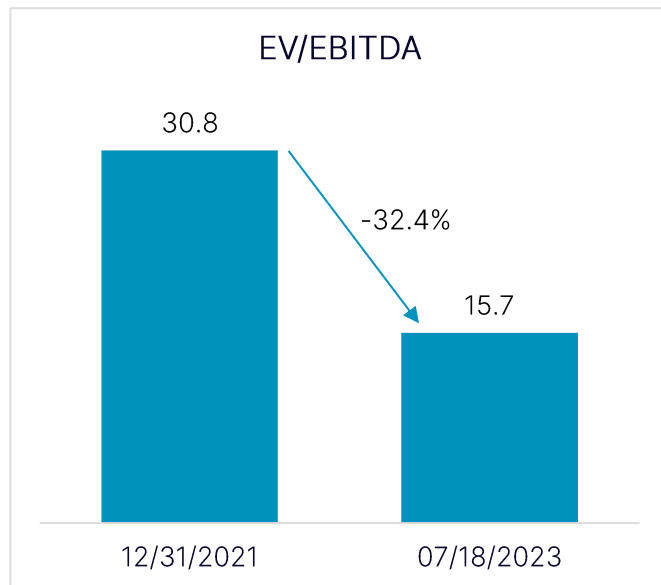
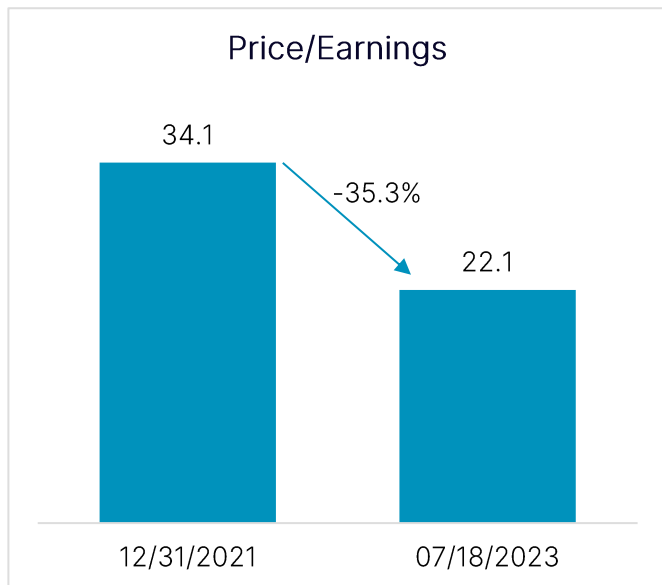
An alternative way of measuring R&D activity is by looking at patent filings. As seen in the table below, constituents of the Nasdaq Q-50 have been actively filing patents in disruptive technologies that have changed the way we live, work and learn. We have tracked trailing 12-month patent filings across 35 sub-themes that are considered relevant for investors. 22 companies in the Nasdaq Q-50 filed at least one patent related to the 29 sub-themes identified as disruptive technologies. Image Recognition saw the highest patent activity for the trailing 12-month period, with 14.5% of total patent activity tied to 8 Q-50 companies, followed by Deep Learning and Cloud Computing with 11.8% and 9.9% of total patent activity tied the index.

The Q-50 also compares favorably with the leading mid-cap growth benchmark on two broader measures: the breadth of patent activity and the degree of patent activity. Constituents of the Q-50 have been actively filing patents across 5.5 sub-themes, on average, which is almost 50% above the Russell Mid-Cap Growth Index (RDG) with its constituents filing patents across only 3.6 sub-themes. 44% of Nasdaq Q-50 companies have filed patents, which once again compares favorably with the Russell Mid Cap Growth, which has patent activity across only 35% of constituents.



Source: Nasdaq as of 5/31/2023.

Current Valuations are Attractive vs. Recent History



Source: Bloomberg as of 7/18/2023.

Over the course of 2022, the Nasdaq Q-50 became significantly cheaper on a wide variety of index-weighted valuation metrics, including price-to-earnings (P/E), enterprise value-to-EBITDA (EV/EBITDA), EV/Sales and Price/Book, and it has remained at similar levels throughout the first half of 2023 despite a recovery in the broader market. The Q-50 has a high degree of exposure to fast-growing companies that fell out of favor with investors in 2022 due to their sensitivity to the high interest rate environment. As indicated earlier, several companies that make up the Q-50 faced a challenging demand and operating environment in 2022 along with weaker near-term outlooks, but have witnessed substantial improvements in 2023.

Unlike the Nasdaq-100, which is trading near multiples seen at the end of 2021, the Q-50 is trading at multiples well below levels seen at that time, as well as much of the past decade. The events that have characterized 2023 have led to a broad-based recovery of the Nasdaq-100 from the lows seen in 2022. 2023 has been characterized by improving investor confidence, particularly towards the mega-cap technology names given the surge of interest surrounding AI. While Q-50 constituents do not have the same

degree of exposure to AI, many of them are nonetheless operating in similar industries, and innovating in similar areas, as the Nasdaq-100. The current substantial discount in Q-50 valuations – relative to both its own history and the Nasdaq-100 – may present investors a compelling opportunity to consider allocating more towards midcap growth and away from overextended large caps.

Summary

Innovation has returned front and center in investors' minds as the focus in many parts of the world shifts towards boosting productivity in the aftermath of widespread disruptions to labor markets and supply chains during the Covid-19 pandemic. The Nasdaq Q-50 provides exposure to the next generation of high-growth companies that are at the forefront of innovation, with a more frequent reconstitution schedule that provides investors the chance to capitalize earlier on fast-growing Nasdaq companies, rather than simply waiting for them to get added to the Nasdaq-100.

The Q-50's constituents invest a higher percentage of revenues back into R&D vs. leading midcap benchmarks, which is likely to augur well for the future given that the pace of technological innovation has been accelerating in recent years. Its constituents align closely with the theme of innovation-driven growth that resonates so powerfully with much of the Nasdaq-100. Investors have amply rewarded companies with an ethos of innovation over the last decade and a half; while large-cap tech has recently led the way in terms of performance, innovation ultimately occurs across many different segments of the market cap spectrum. Moreover, the midcap names of the Q-50 have repeatedly demonstrated their ability to grow, and ultimately graduate into, the ranks of the Nasdaq-100.

The Q-50's exposure to Technology is much less concentrated than the Nasdaq-100, which should be considered an advantage in light of the sector's painful drawdowns in 2022. It also provides meaningful exposure to international equities, which might be an added benefit as we potentially enter a period of stronger international performance.

The Nasdaq Q-50's performance over the past decade and a half has been particularly impressive. Since its launch in 2007, it has generated cumulative price returns of 346.7% and total returns of 390.6%, trailing the Nasdaq-100, but significantly outperforming other mid-cap benchmarks.

Investors seeking exposure to the next generation of leaders at the forefront of innovation are likely to benefit from tracking the Nasdaq Q-50.

Index Name/Ticker	Price Return 10/10/07-6/30/2023	Total Return 10/10/07-6/30/2023
Nasdaq Q-50 (NXTQ)	346.7%	390.6%
Nasdaq-100 (NDX)	597.3%	713.6%
Russell Mid-Cap Growth (RDG)	186.1%	264.5%
S&P Midcap 400 Growth (MDG)	220.6%	277.2%
S&P Midcap 400 (MID)	226.7%	279.9%
S&P 500 (SPX)	184.8%	290.9%

Products tracking the Nasdaq Q-50 include the VictoryShares Nasdaq Next 50 ETF (Nasdaq: QQQN) and the Motilal Oswal Nasdaq 150 ETF (India: MNSDQ50).

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