GLOBAL INFORMATION SERVICES

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A Second Home for Innovation:

The Launch of the Nasdaq Next Generation 100

Innovation and growth; two words that have come to define the past, present, and future of the Nasdaq-100® (NDX) Index, one of the world's preeminent large-cap growth indexes. While the Nasdaq-100 represents today's large cap, category-defining companies on the forefront of innovation, what companies are the next generation of innovators and game changers? Who will become the next generation of Nasdaq-100 companies?

The Nasdaq Next Generation 100® (NGX) Index is designed to measure the performance of the next generation of Nasdaq-listed non-financial companies; that is, the largest 100 securities outside of the Nasdaq-100 Index. The index deploys the proven methodology behind the time-tested Nasdaq-100 Index, with its emphasis on innovation and growth. The index launched on August 24, 2020.

Methodology

To be eligible for inclusion in the index, a security must meet the existing Nasdaq-100 Index eligibility criteria. The index begins with the universe of all companies, both domestic and foreign, that are listed on the Nasdaq Stock Market (issuer of the security's primary U.S. listing must exclusively be listed on the Nasdaq Global Select Market or Nasdaq Global Market exchanges). The index then removes all companies classified as Financials from eligibility according to the Industry Classification Benchmark (ICB). The Nasdaq Next Generation 100 Index follows the same annual reconstitution and quarterly rebalancing schedule as the Nasdaq-100 Index.

At each Index Reconstitution, all issuers that meet the applicable security eligibility criteria are ranked by market capitalization, with the issuer having the highest market capitalization getting a rank of 1, the issuer having the second highest market capitalization getting a rank of 2, and so on. The next largest 100 issuers by market capitalization that are not in the Nasdaq-100 Index are included in the index.

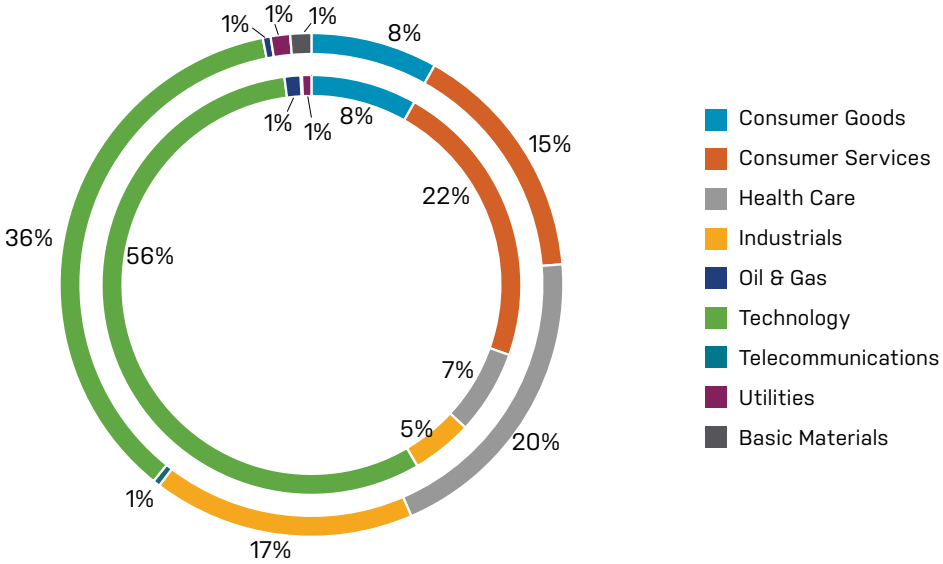
The index is a modified market capitalization-weighted index. Initial weights are determined by dividing each Index Security's market capitalization by the aggregate market capitalization of all Index Securities. The initial index weights are adjusted to meet the following constraint: No Index Security weight may exceed 4%.

Industry and Constituent Allocations

While the Nasdaq Next Generation 100 and the Nasdaq-100 share similar DNA in terms of how they are constructed, they are different with respect to their composition – across industries and of course, constituent cap size. Most notably, the major difference in industry exposure is the allocation to Technology. Yes, both indexes are overweight Technology but the Nasdaq-100 tends to average more than half its weight in Technology, with approximately 56% as of September 30, 2020. On the other hand, the Nasdaq Next Generation 100 allocated roughly 36% to Technology. Another difference is the exposure to Industrials, with the Nasdaq Next Generation 100 at a 17% allocation compared to only 5% in the Nasdaq-100. Health Care is another major differentiator, as the Nasdaq Next Generation 100 recently had nearly triple the exposure to this industry, 20% versus only 7% for the Nasdaq-100.

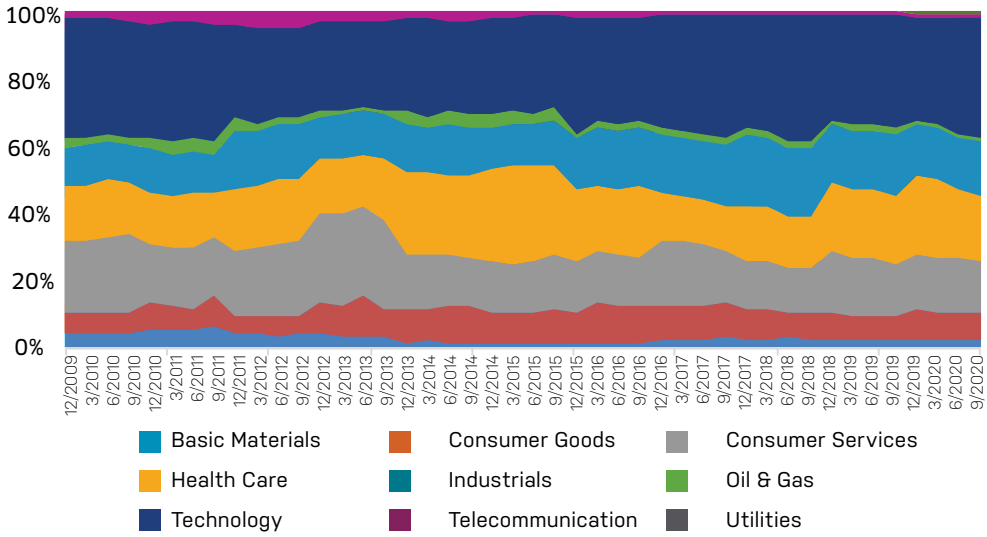
The difference in industry exposure is a prime example of how the Nasdaq-100 and Nasdaq Next Generation 100 complement each other. The Nasdaq-100 has a much more meaningful overweight towards Technology, while the Nasdaq Next Generation 100 has a larger tilt towards Health Care and Industrials. The below chart illustrates these differences, with the Nasdaq-100 represented by the inner circle and the Nasdaq Next Generation 100 by the outer circle.

Industry (ICB) Breakdown: Nasdaq Next Generation vs. Nasdaq-100



The industry allocations of the Nasdaq Next Generation 100 have remained fairly stable over the course of the simulated index history (which dates back to December 18, 2009) in large part due to the predominantly innovative and growth-oriented nature of companies listed on the Nasdaq Stock Market. The overweight towards Technology persisted throughout the backtest and is also consistent with what we find across the Nasdaq-100 and the Nasdaq Composite. The allocation to Consumer Services peaked at nearly 27% in 2012, briefly overtaking Technology as the largest sector allocation, but has since dropped down to less than 16% as of September 30, 2020. Meanwhile, the weighting towards Industrials has increased the most, rising from just under 12% in 2009 to 17%, while Heath Care grew from approximately 16% to just under 20%, with a peak of 27% in 2014. Not surprisingly, Technology's lowest weights were registered during the years when Consumer Services and Health Care peaked.

Index Weight by ICB Industry (%)



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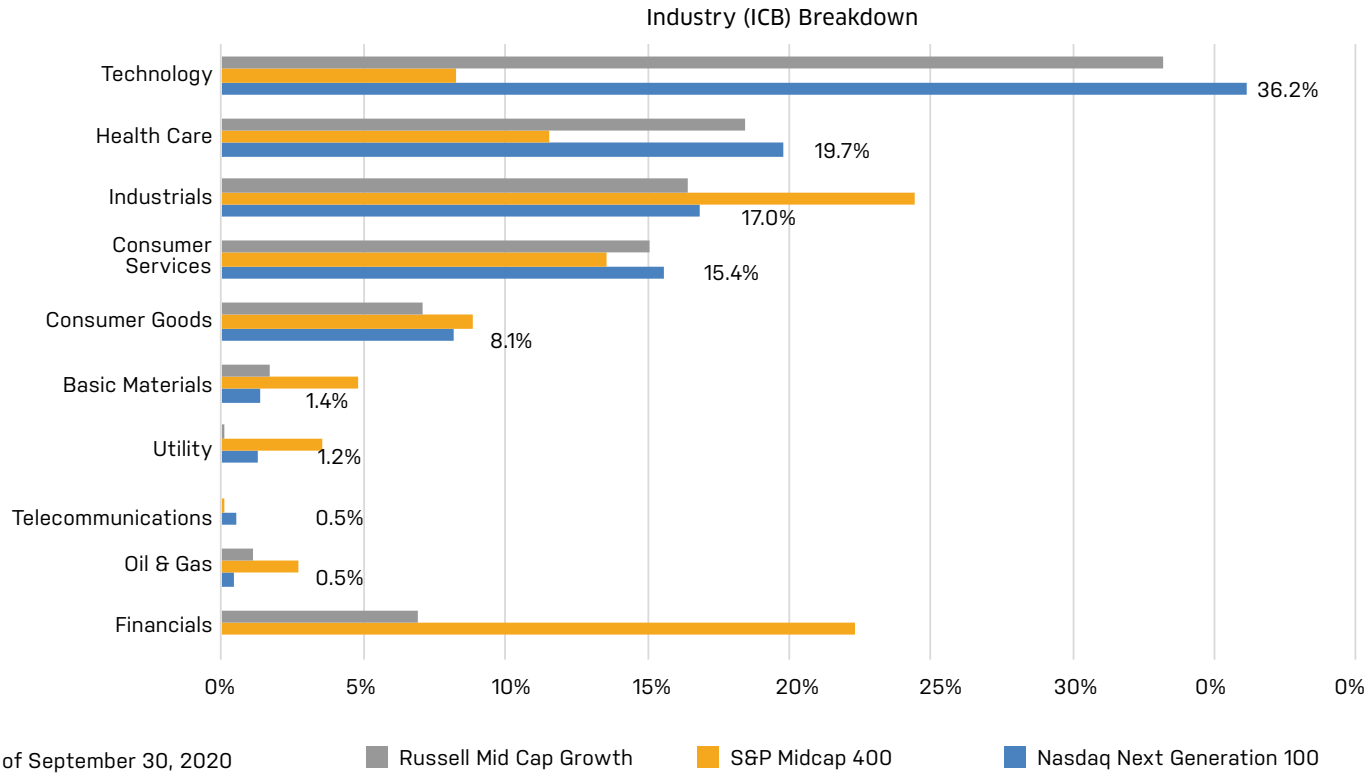
Year End	Basic Materials	Consumer Goods	Consumer Services	Health Care	Industrials	Oil & Gas	Technology	Telecom	Utilities
2009	4.18%	5.96%	20.93%	16.26%	11.65%	2.76%	36.70%	1.56%	
2010	5.21%	7.24%	17.99%	15.39%	12.75%	4.07%	33.67%	3.68%	
2011	3.21%	5.92%	18.80%	19.05%	17.53%	3.59%	27.44%	4.46%	
2012	3.36%	9.44%	26.74%	16.11%	13.12%	1.38%	26.52%	3.33%	
2013	1.06%	10.23%	16.46%	24.39%	14.50%	3.78%	27.15%	2.44%	
2014	0.75%	9.23%	15.46%	27.03%	12.86%	3.73%	28.79%	2.05%	
2015	0.61%	9.04%	15.65%	21.15%	15.49%	1.75%	34.72%	1.75%	
2016	2.03%	9.85%	19.15%	14.24%	18.13%	1.78%	33.46%	1.35%	
2017	1.86%	8.69%	14.20%	16.76%	21.48%	2.20%	34.04%	0.77%	
2018	2.09%	5.52%	18.29%	21.01%	17.69%	1.36%	32.38%	1.24%	
2019	1.50%	9.37%	16.74%	23.20%	15.48%	1.25%	30.33%	0.82%	1.30%
2020 (Sept)	1.35%	8.11%	15.42%	19.70%	16.96%	0.48%	36.24%	0.5%	1.24%

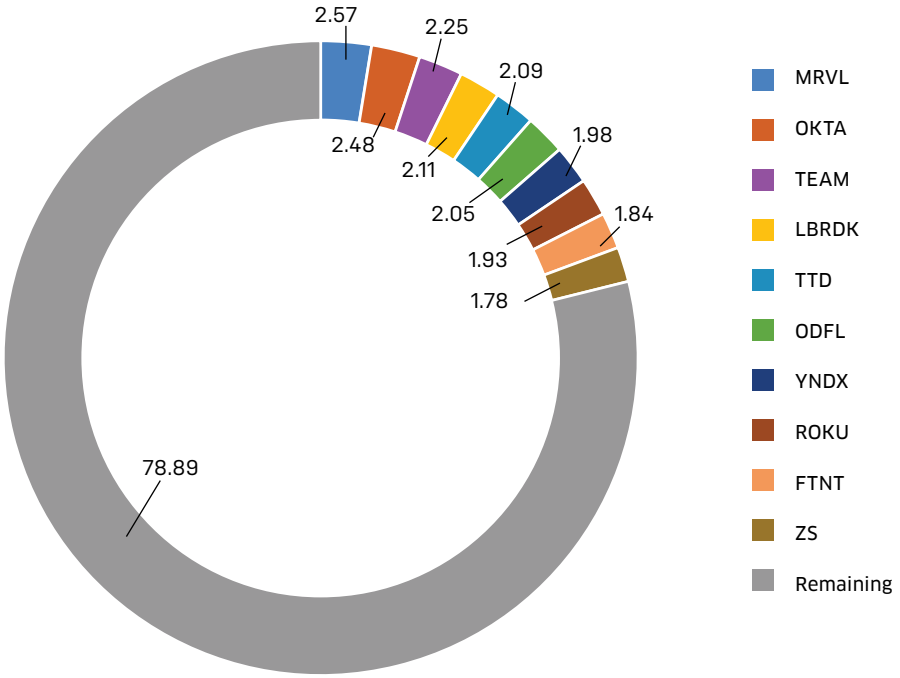
When compared to its midcap benchmarks, we find that the industry exposure of the Nasdaq Next Generation 100 Index is more focused than that of the S&P Midcap 400 but shares some similarities to the Russell Mid Cap Growth Index, particularly with the emphasis toward Technology and Healthcare. The Nasdaq Next Generation 100 Index is heaviest in Technology, Healthcare, Industrials, and Consumer Services. The S&P Midcap 400 has its highest weights in Industrials and Financials. It's important to note that the Nasdaq Next Generation 100 has no allocation toward Financials: this industry accounts for over 20% of the S&P Midcap 400.



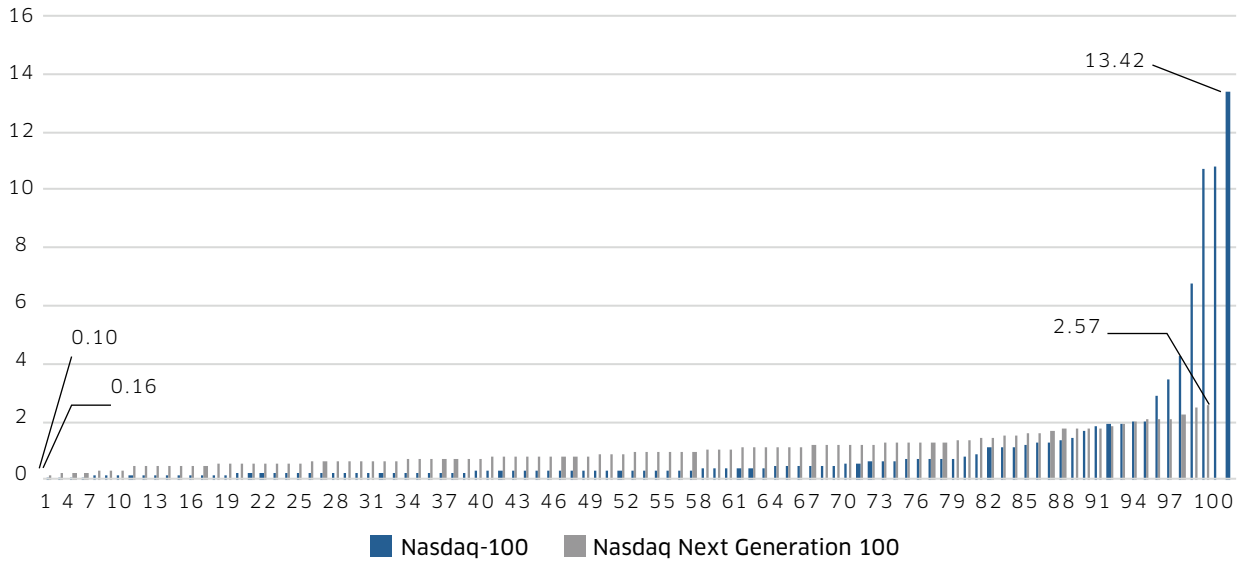
As of September 30, 2020

The Nasdaq Next Generation 100 utilizes a modified market capitalization weighting scheme with a constraint that no index security weight may exceed 4%. It should come as no surprise that the top ten constituents only account for 21.11% of the index (through September 30, 2020). By comparison, the top five holdings in the Nasdaq-100 account for 45.90% of the index while the top ten amount to 58.18%. In addition, notice how the position sizing is drastically different between the two indexes with the top position in the Nasdaq-100 accounting for 13.42% of the index, while the largest position in the Nasdaq Next Generation 100 is at 2.57%.

Top 10 Constituent Weights vs. Rest of Index



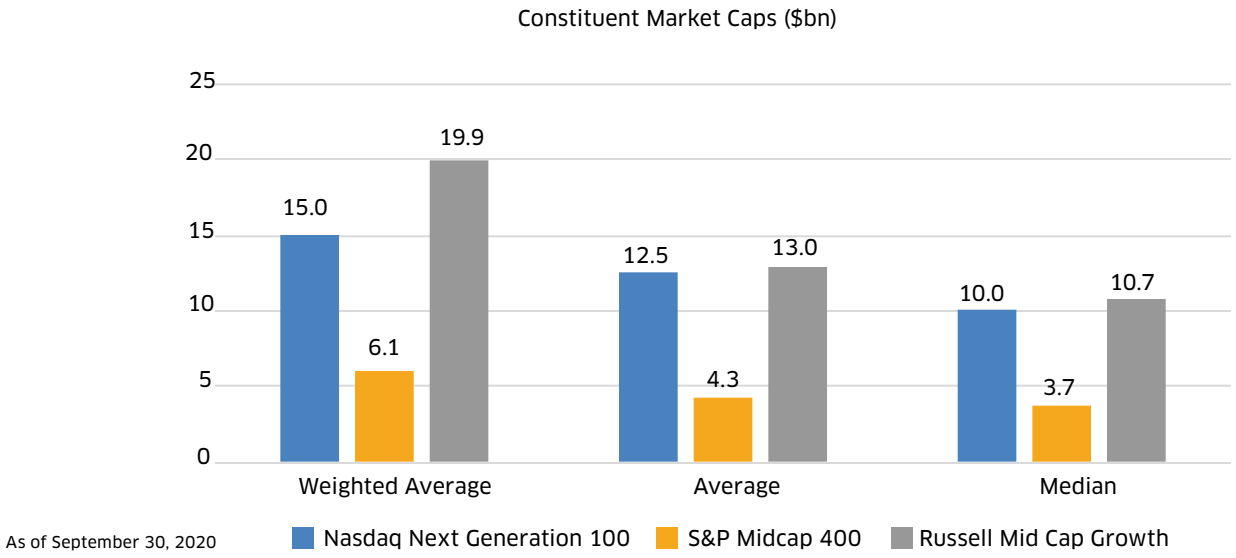
Constituents Weights Sorted Smallest to Largest (%)



Market Capitalization

Consistent with the aforementioned, the Nasdaq Next Generation 100 Index tilts much smaller than the Nasdaq-100. However, it is still meaningfully above the S&P Midcap 400 and has similar market capitalization characteristics to the Russell Mid Cap Growth. In terms of market capitalization for the Nasdaq Next Generation 100 Index, the median was $10.0bn and the average was $12.5bn, while the weighted average was $15.0bn. The Nasdaq Next Generation 100 and the Russell Mid Cap Growth have similar average (12.5 vs. 13.0) and median market caps (10.0 vs. 10.7), except the Russell Mid Cap Growth tilts toward larger names on a weighted average basis (15.0 vs. 19.9). The unique tilt of the Nasdaq Next

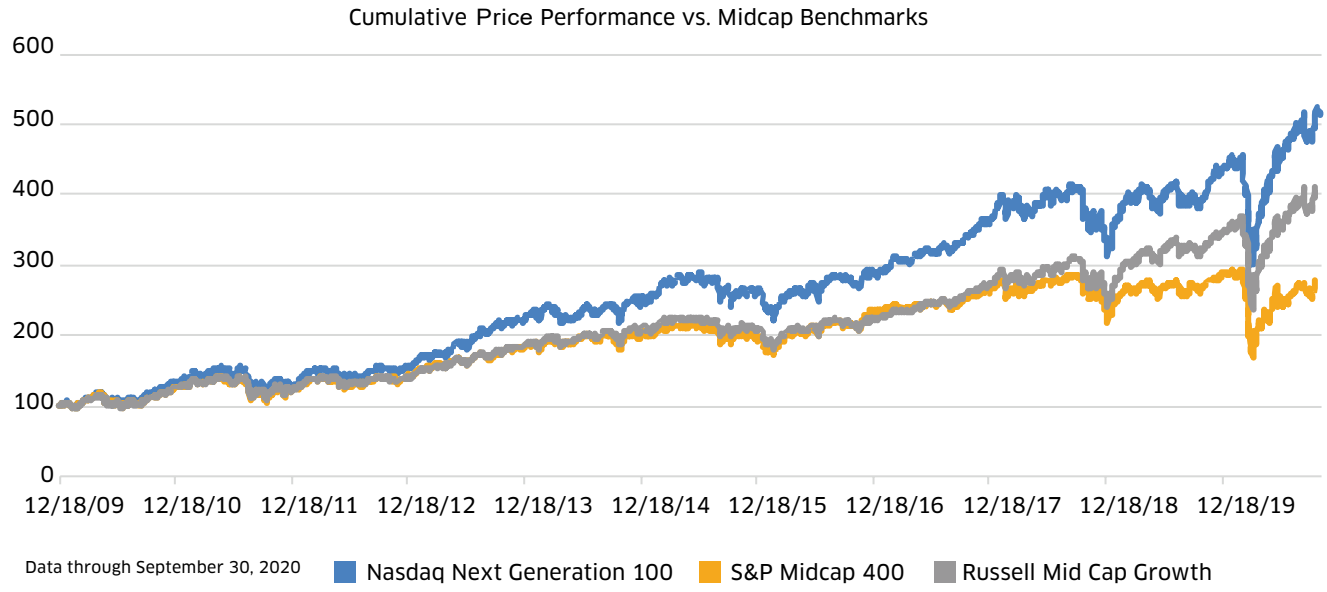
Generation 100 toward not only smaller, up-and-coming midcap companies but also, some that have broken into the ranks of large caps, is a key driver of the index's exposure to the next generation of innovators and, in many cases, future Nasdaq-100 components.



As of September 30, 2020

Performance

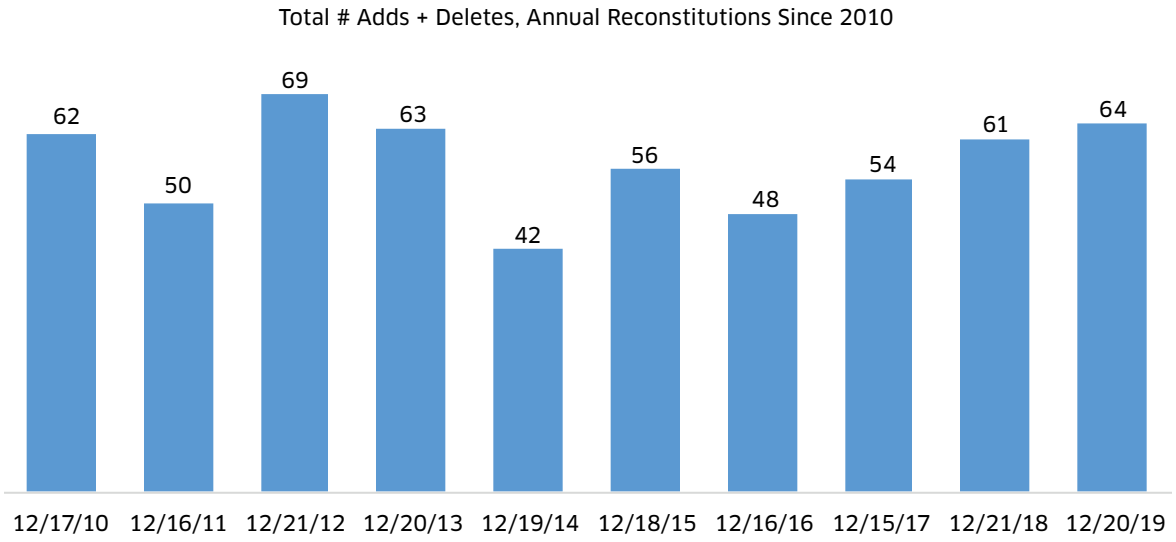
Based on price performance from December 18, 2009 through September 30, 2020, the Nasdaq Next Generation 100 Index increased by 15.9% annualized, easily outperforming its benchmarks – the S&P Midcap 400 and Russell Mid Cap Growth – at 9.3% and 13.5%, respectively. On a cumulative basis, the Nasdaq Next Generation 100 Index gained 391% over this time period, compared to 160% and 293% for the S&P Midcap 400 and Russell Mid Cap Growth. The gap in performance narrows somewhat when taking into account dividends; on a total return basis, the Nasdaq Next Generation 100 returned 16.8% annualized, vs. 11.0% and 14.7% for the S&P Midcap 400 and Russell Mid Cap Growth.



Data through September 30, 2020

Index Turnover & Liquidity

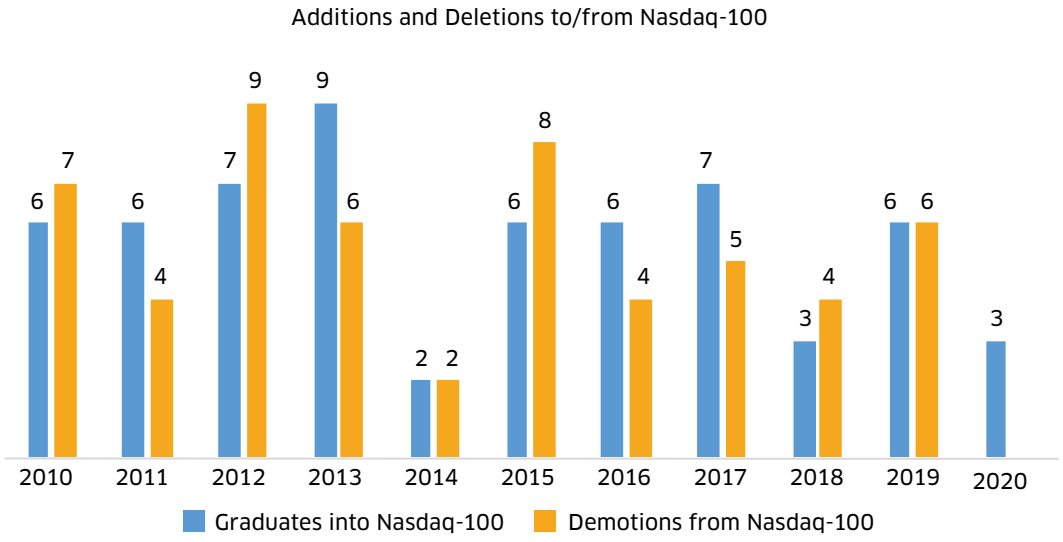
The turnover of the Nasdaq Next Generation 100 varies widely, depending on whether it is measured on an annual reconstitution-only basis, or inclusive of its quarterly rebalances as well. On average, 5.0% of the index weights turned over at each quarterly rebalance (excluding the December rebalance as that is when the reconstitution occurs) going back to March 2010 – encompassing security upweights, downweights, and deletions (additions not applicable because companies are not replaced into the Nasdaq Next Generation 100 Index other than at the annual reconstitution in December). Across the 10 annual reconstitutions since 2010, the turnover averaged 58.0%, including anywhere from 42 to 69 constituents turned over during any one period (i.e., additions plus deletions only).



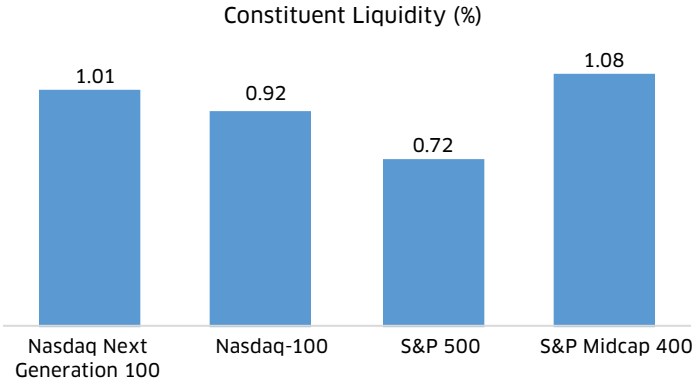
Given its proximity to the Nasdaq-100, a substantial portion of this turnover involves both graduates into, as well as demotions out of, the Nasdaq-100. Since 2011, a total of 54 constituents graduated into the Nasdaq-100, among them Regeneron in 2012, Tesla and Netflix in 2013, Lululemon in 2018, and DocuSign in 2020. Over the same timeframe, a total of 63 constituents were demoted from the Nasdaq-100 into the Nasdaq Next Generation 100.

As of September 30, 2020, 35 constituents of the Nasdaq-100 were onetime members of the Nasdaq Next Generation 100 Index (based on the backtest period extending to December 2009). Thus, not only is the Nasdaq Next Generation 100 Index a natural extension and complement to the Nasdaq-100, it is also a deep source of likely future industry leaders on their way from midcap to large (and sometimes mega) cap status. One might ask: what is the benefit of owning a constituent while it is still small enough to qualify for Nasdaq Next Generation 100 membership? Why not just wait for it to grow large enough to enter into the Nasdaq-100, and own it going forward? The simple answer is found in the vastly different market cap spectrum and resulting range of index weights.

Let's take DocuSign as an illustrative example. It would have entered the Nasdaq Next Generation 100 during the December 2018 reconstitution, at a healthy weight of 0.80%. By the end of February 2020, its weight had already more than doubled to 1.70%, reflecting its stellar price performance, up 127%. It proceeded to soar an additional 87% until it graduated into the Nasdaq-100 at a much lower weight of 0.29% on June 22, 2020. Thus an investor who chose to wait to own DocuSign until it entered the Nasdaq-100 would have not only missed out on exceptional performance for 18 months, irrespective of the ultimate number of shares owned; she would have also initially owned it at a much smaller weighting in the Nasdaq-100, missing out on an exquisite compounding opportunity. The upshot of the turnover analysis for the Nasdaq Next Generation 100 Index is therefore: knowing that its constituents stand a good chance of graduating into the ranks of the Nasdaq-100, it presents a straightforward solution for investors to own those names earlier, and at a higher allocation.



In terms of liquidity, it may surprise some to learn that on average, Nasdaq Next Generation 100 constituents tend to turn over in the market at a higher rate than both the Nasdaq-100 and the S&P 500. By taking trailing 6-month daily dollar trading volume and dividing by average market capitalization, we find that Nasdaq Next Generation 100 constituents turn over at a rate of slightly more than 1% per day, versus 0.92% for the Nasdaq-100 and 0.72% for the S&P 500. Thus, even though market capitalization is notably smaller for the typical Nasdaq Next Generation 100 constituent, its shares tend to trade at a rate high enough to offset any concerns about not being as liquid as the biggest and best-known Nasdaq listings.

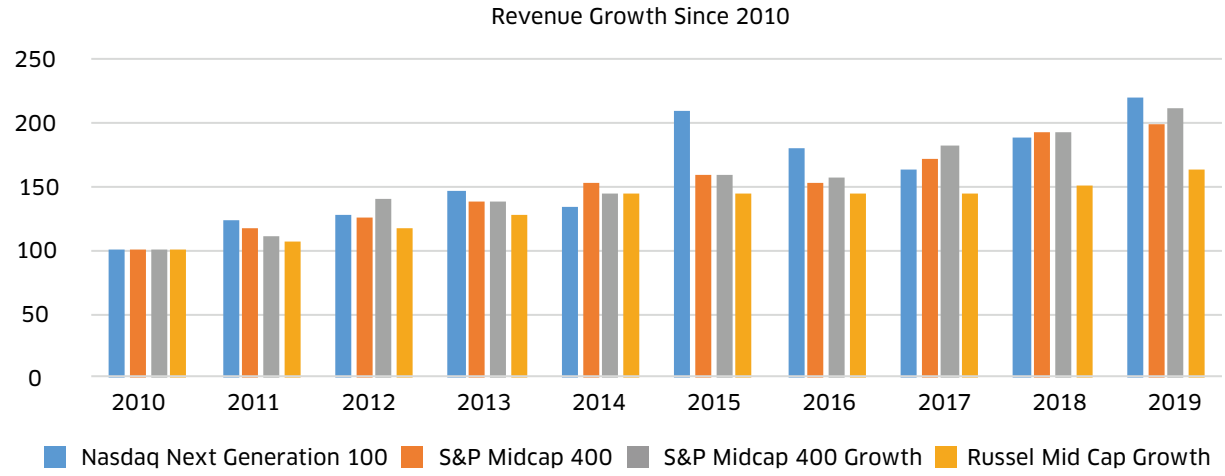


As of September 30, 2020

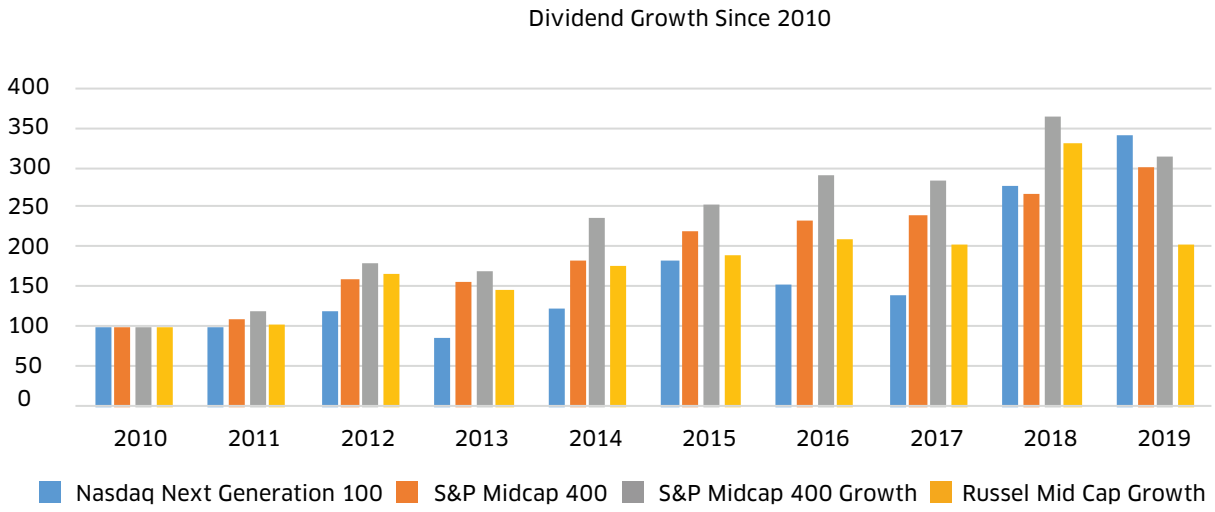
Index Constituent Fundamentals

An overview of the Nasdaq Next Generation 100 underlying fundamentals reveals a continuation of a multiyear trend with the Nasdaq-100: company fundamentals are generally stronger, and improving more rapidly, compared to competitor indexes from S&P and Russell.

In terms of revenue growth over the past decade, the Nasdaq Next Generation 100 notched a CAGR of 9.1%. Said another way, index-level revenues grew by 119% from full-year 2010 through full-year 2019. The S&P Midcap 400 Growth index achieved a comparable (but lower) rate of revenue growth, while both the S&P Midcap 400 and the Russell Mid Cap Growth Index performed materially worse.



In terms of dividend growth, the story remains largely the same. The Nasdaq Next Generation 100 has outperformed with a CAGR of 14.5% since 2010, or cumulative growth of 239%. The S&P Midcap 400 Growth index registered a CAGR of 13.6%, while the S&P Midcap 400 index was slightly worse at 12.9%. The Russell Mid Cap Growth index came in far below at only 8.3%.

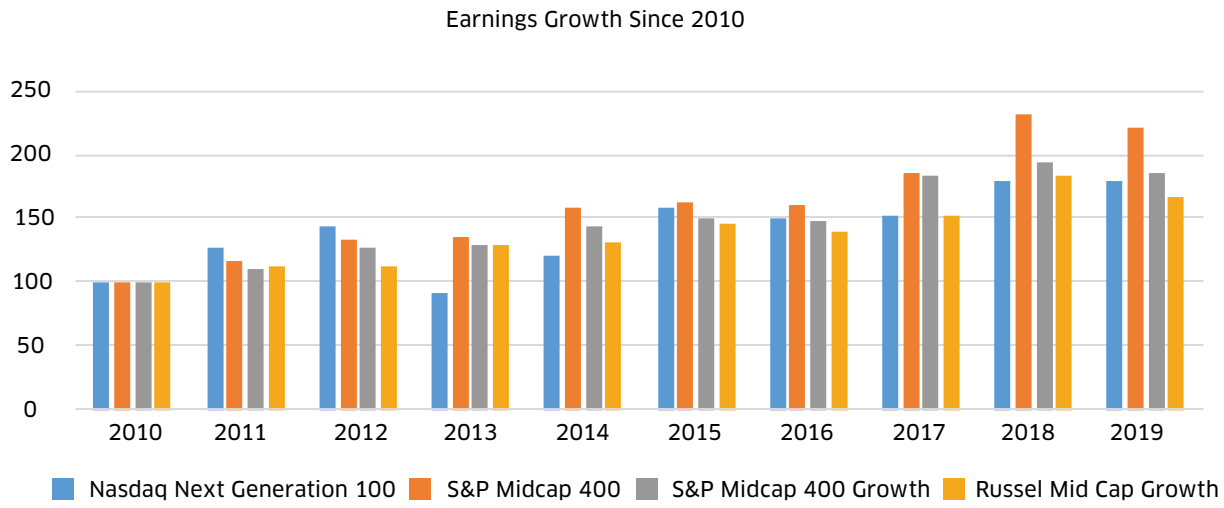


In terms of earnings, the story is a bit more nuanced. The S&P Midcap 400 outperformed with a CAGR of 9.2%, while the S&P Midcap 400 Growth came in at only 7.1%. The Nasdaq Next Generation 100 registered a CAGR of 6.7%, while the Russell Mid Cap Growth was once again the laggard at only 5.8%.

GAAP earnings are notoriously more volatile than either revenues or dividends, with any number of possible contributing factors accounting for outsized year-over-year swings. Given the Nasdaq Next Generation 100's considerably smaller constituent base (one hundred vs. several hundred), it is likelier that any one company's earnings have an outsized impact on the index's aggregate metrics. Earnings data was excluded for two securities from the Nasdaq Next Generation 100 data shown [1].

1 Two examples in particular stuck out in 2019: Vodafone Group – a UK Telecom giant which nonetheless qualifies for inclusion because it maintains an ADR listing on Nasdaq's exchange – swung from a reported gain of $2.74Bn in 2018 to a loss of $5.16Bn in 2019, driven by non-operating expenses and other extraordinary items. Complicating matters, since it is a UK-domiciled company, Vodafone reports earnings semiannually in March and September, thus making a calendarized apportionment of its earnings – especially anything of a non-operating nature – much more challenging. Finally, accounting standards are somewhat different in the UK vs. the method of US GAAP that the vast majority of NGX constituents follow. For these reasons, we do not consider Vodafone's impact to NGX-level earnings in either 2018 or 2019. The one other example that we excluded from our analysis is LYFT – which conducted its initial public offering midway through 2019 – and which, on its own, would have registered the second biggest calendar-year loss among Nasdaq Next Generation 100 constituents at $3.36Bn.

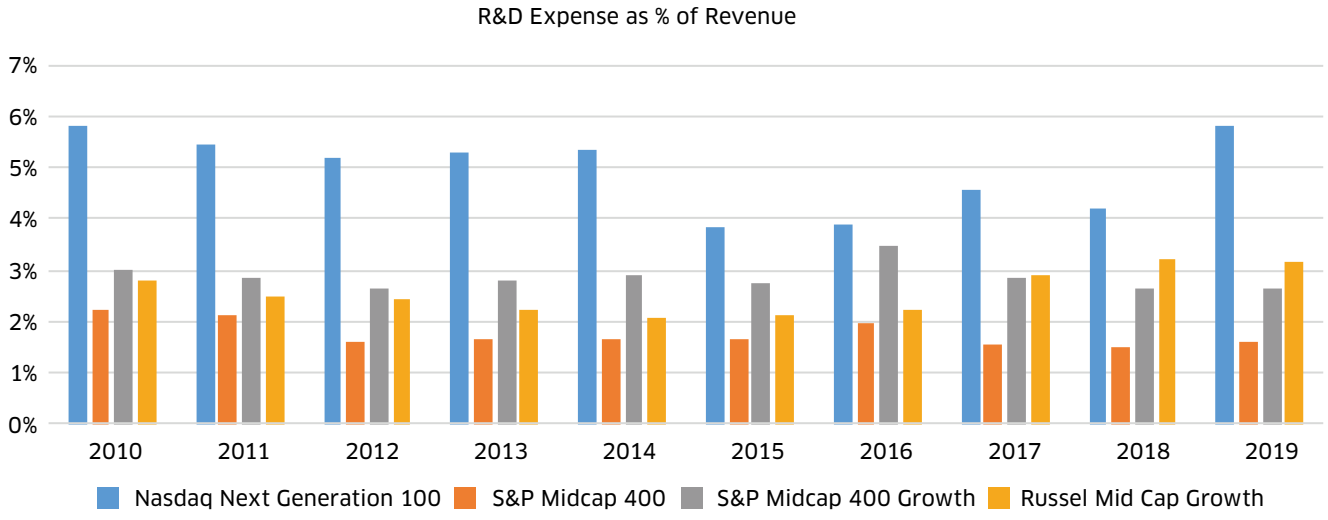
While the outliers removed were just the two most egregious examples, we observed 12 constituents in total which, per our backtest, would have entered the Nasdaq Next Generation 100 in 2019 and collectively recorded negative earnings totaling $2.53Bn – among them BGNE with a loss of $966MM, and PDD with a loss of $561MM. Excluding just these 2 additional firms (BGNE and PDD) would boost the cumulative 10-year earnings growth for NGX from approximately 80% (as shown) to just north of 92%.



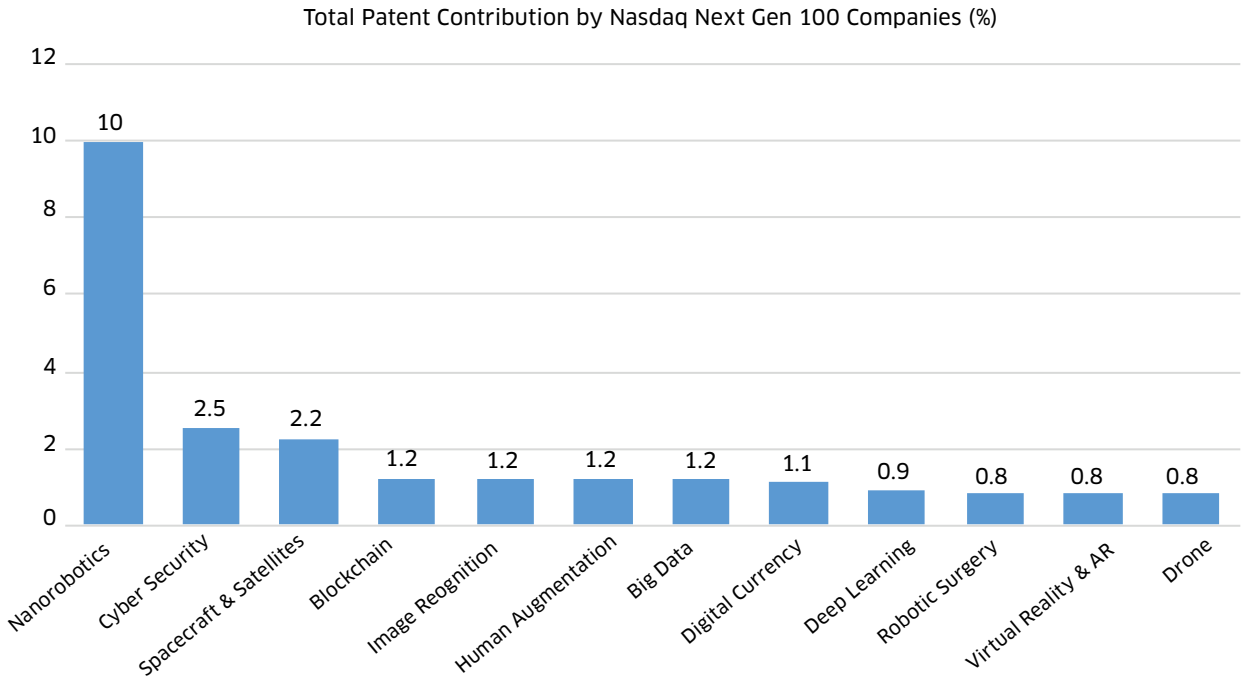
R&D Intensity

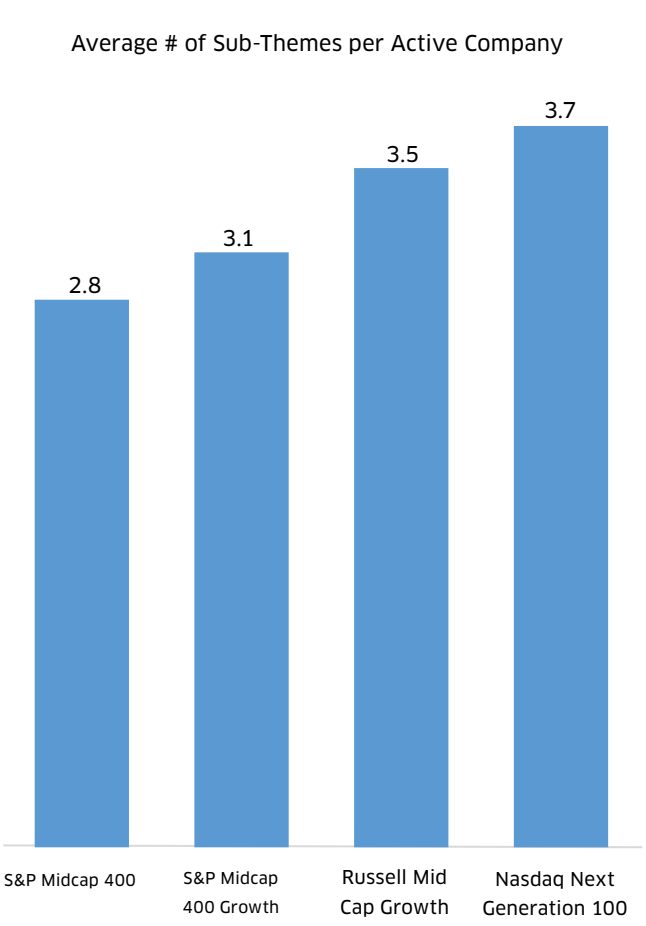
One of the hallmarks of the Nasdaq-100 Index is its focus on innovation. Much more than a buzzword, innovation results from sustained reinvestment of a company's earnings into its business, most crucially through research and development efforts. Given the increasing proportion of company value derived from intangible assets such as patents, proprietary software, employee training, and overall knowledge accumulation, it is no surprise that the Nasdaq-100 consistently outperforms other large-cap benchmarks such as the S&P 500 across multiple measures of R&D intensity. The trend extends favorably to the Nasdaq Next Generation 100, with its similar composition across "new economy" sectors.

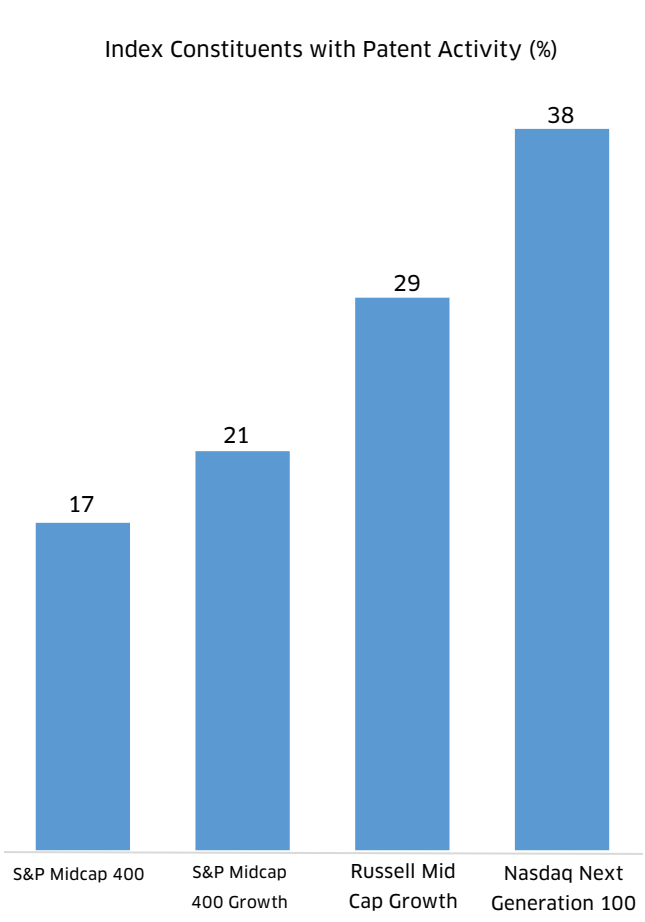
Comparing R&D expense as a percentage of total revenues, the Nasdaq Next Generation 100 dominates its midcap competitors by allocating approximately double the amount or more, as of full-year 2019. Looking back historically, the trend holds throughout most years.



R&D can also be quantified another way, by studying alternative data around patent filings. Here too, Nasdaq Next Generation 100 performance is impressive compared to its competitor benchmarks in the midcap space. We start by analyzing trailing 12-month patent filings across 35 sub-themes that, together with our partner Yewno, we have identified as the most relevant disruptive technologies to today's thematic investors. 38 of the Nasdaq Next Generation 100 companies were active across 26 of these themes, filing at least 1 patent. Their collective patent contribution scores (i.e., the proportion of total patents filed relating to each sub-theme among the approximately 9,000 companies tracked in the Nasdaq Global Equity universe) ranged from the truly miniscule, to as high as 10% for nanorobotics. More importantly, however, was the breadth of patent activity: of the 38 companies with mapped patent data, the average company filed patents across 3.7 sub-themes. This measure, along with the overall percentage of index constituents with some patent activity (38/100 or 38%) also outperformed all 3 competitor benchmarks. In terms of innovation in the midcap space, the Nasdaq Next Generation 100 clearly offers a through line to the undisputed leader, the Nasdaq-100.







Summary

With its similar, derived methodology, the Nasdaq Next Generation 100 Index offers a straightforward, logical complement to the Nasdaq-100, one of the most tracked indexes in existence and a perpetual leader in growth and innovation. With its natural exposure to predominantly midcap companies, and less dramatic weightings toward Technology as a sector, it also provides instant diversification to existing investors in Nasdaq-100 tracking products. Its tighter range of constituent market caps ensures both less concentration at the top end of the spectrum, as well as more meaningful allocations to fast-growing, newer additions to the index at the bottom end. With a similarly high level of R&D intensity, Nasdaq Next Generation 100 companies are often in a position to graduate into the ranks of the Nasdaq-100.

The Nasdaq Next Generation 100's generally favorable fundamentals – driven by robust topline growth – make it a serious competitor to similar midcap indexes, whether or not they are regularly screened to include only the faster growing companies in the midcap universe. It should thus not surprise anyone that the index's historical simulated performance tracks so closely with that of the Nasdaq-100. Time will tell how competitive the live index returns will be, but there are many reasons to expect that close relationship to bear fruit in future performance.

ETFs currently tracking the Nasdaq Next Generation 100 Index include the Invesco Nasdaq Next Generation 100 ETF (Nasdaq: QQQJ).

Sources: Nasdaq Global Indexes, FactSet, Bloomberg.