The Nasdaq-100® (NDX®) Ecosystem: **The Evolution to Power Investor Choice Worldwide**

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At a Glance:

- Since its launch in 1985, the Nasdaq-100 has evolved to become one of the world's most robust index-based ecosystems with "true" large cap exposure – enabling a wide range of investment strategies with deep liquidity across investment vehicles and instruments that serve the needs of asset owners, advisors, and individual investors globally.

- Today, the Nasdaq-100 Ecosystem represents over $1.4 trillion of exposure to NDX through Exchange Traded Funds (ETFs), Mutual Funds, Insurance Products, Structured Notes, and Exchange-Traded Derivatives (as stated in Figure 4).

- Market participants have engaged with the Nasdaq-100 Ecosystem to create highly liquid derivatives markets alongside long-term investment vehicles.

This white paper, the first of a series, seeks to define the Nasdaq-100 Index Ecosystem across investment approaches and vehicles while discussing the depth of liquidity that enables investors to efficiently and effectively deploy capital to implement their investment views.

The Nasdaq-100® (NDX®) is a globally recognized index of 100 of the most innovative large cap companies listed on the Nasdaq Stock Market®. Originating in 1985 and recently celebrating 40 years as a leading US large cap equity index, NDX has evolved beyond its core identity as a benchmark for many of the world's most innovative companies; it has become the foundation for a complex and robust ecosystem of investment vehicles and instruments. This ecosystem offers broad access, liquidity, and flexibility to a wide range of financial services practitioners serving a variety of market needs. Understanding the breadth and depth of the Ecosystem is crucial for practitioners seeking to optimize investment strategies, manage risk, and capitalize on market opportunities.

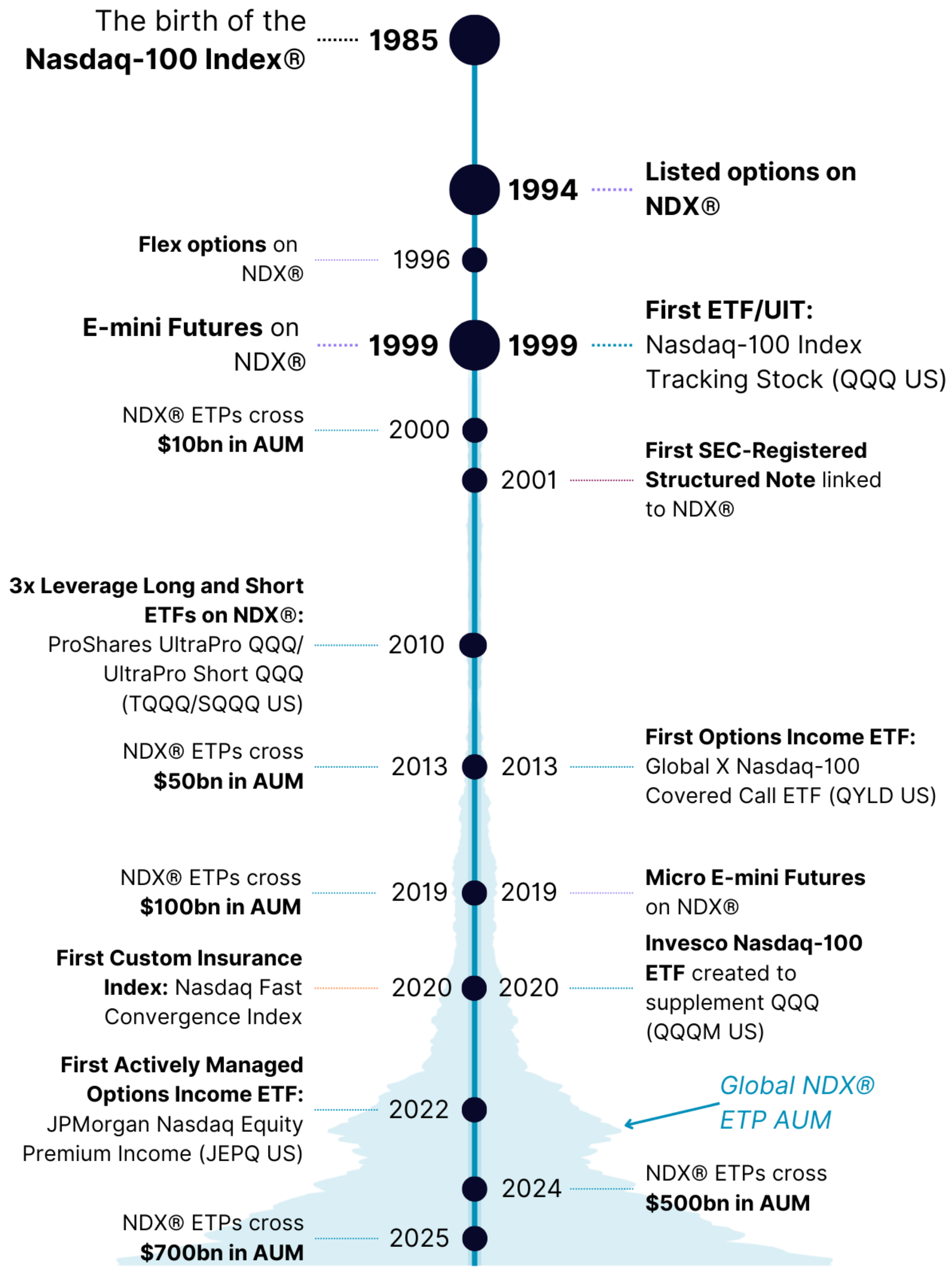
This paper will analyze the development of the Nasdaq-100 Ecosystem, provide an overview of asset exposure and trading volumes across major products, and assess whether these products are being utilized in accordance with their intended purposes.

The Evolution of the Ecosystem

In the US financial markets, Nasdaq® holds a distinctive position by serving as both a leading stock exchange as well as the only index provider exclusively tracking securities listed on its exchange. This dual role has enabled NDX to only include securities that have chosen to list on the Nasdaq Stock Exchange. Historically, this has included many of the world's most innovative companies that are at the forefront of the 21st century technological revolution, including eight of the world's largest public companies by market cap as of year-end 2025 – Nvidia, Apple, Microsoft, Alphabet, Amazon, Tesla, Meta Platforms, and Broadcom[i].

Building on the success of NDX over the past four decades, the Ecosystem has progressed from predominantly supporting short-term trading instruments to becoming a more sophisticated platform that addresses a diverse range of investment applications. This development reflects the transformation of the index from its initial support of emerging technology companies into a diversified benchmark representative of the 21st century global economy. The following timeline shows the progression of this evolution:

Figure 1: Timeline of Key Nasdaq-100 Product Launches and ETP AUM Growth



Source: Nasdaq. Milestones listed for currently utilized products linked or benchmarked to NDX. Global NDX ETP AUM data between 4/1/1999 and 12/31/2025.

With index-based investing still in its infancy in the 1980s and 1990s, the Nasdaq-100 began its trajectory as a licensed product with listed options and a passively managed Rydex Mutual Fund in 1994. These sparked initial liquidity within the Nasdaq-100 Ecosystem and led to a more sophisticated derivatives ecosystem in the late 1990s as the technology sector expanded. 1999 marked one of the most important years for the Ecosystem with the launch of the "Nasdaq-100 Index Tracking Stock" (QQQ®), providing the first exchange-traded fund to track NDX. Nasdaq initially served as the sponsor of QQQ until 2007, after which sponsorship transferred to Invesco under their "PowerShares" brand. Following Invesco's brand consolidation in 2018, the QQQ ETF officially became known as the "Invesco QQQ Trust, Series 1."

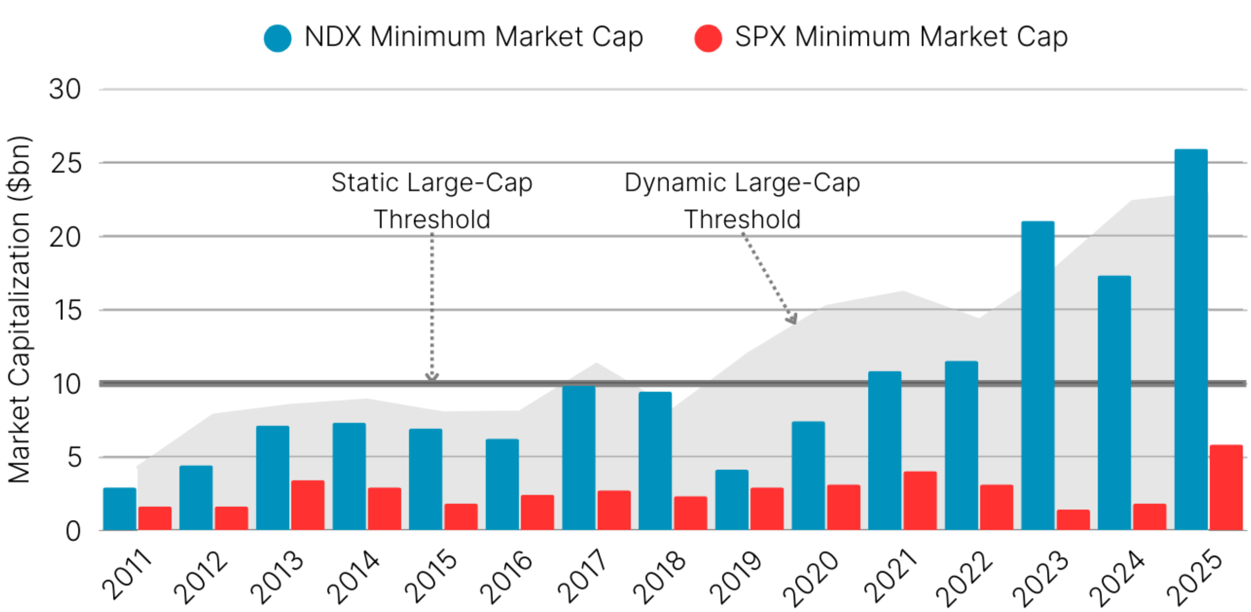
Post the launch of QQQ, there have been two major drivers of Ecosystem expansion:

1. More Diverse Exposure Styles: The maturing of the NDX market structure led to a critical mass of investors seeking leveraged, inverse, and options exposure through ETFs, while additionally seeking customized exposure through structured notes and insurance products.

2. More Accessible Investment Vehicles: With significantly increased retail demand due to commission-free trading, smartphone-app based platforms and easier-to-access financial education, products requiring lower upfront capital such as the Micro E-mini Futures were created.

Zooming in on the growth of NDX in the past 15 years, it is also important to understand how the US large cap equity markets have evolved during this period. The equities contributing most to market growth have mainly been NDX constituents; all seven of the "Magnificent 7" companies[ii] are Nasdaq-listed and included in NDX. Although large cap stocks are typically characterized as companies with a market capitalization greater than $10 billion as of 2025, this static metric does not take into account the growth the US equity markets have seen during this period. A more dynamic method of defining large cap stocks is by measuring the average market cap of the bottom 5th percentile of stocks in the Nasdaq US Large Cap™ Index (NQUSL™) at the end of each year. NQUSL represents the large cap portion of the Nasdaq US Benchmark™ Index (NQUSB™) and includes equities ranked within the top 75% of market capitalization for that index. Using this method, the large cap threshold has grown from $4.2bn in 2011 to $22.9bn in 2025 — an increase of over five times. The chart below shows how the smallest companies present in NDX and the S&P 500 (SPX) measure up against a dynamic threshold for large cap:

Figure 2: NDX and SPX Minimum Market Cap against Dynamic Large Cap Threshold



Source: Nasdaq, Factset, Bloomberg. All data is as of the end of each year and between 12/31/2011 and 12/31/2025.

While nearly all of NDX has kept up with this increase, SPX includes a significant number of constituents with market capitalizations below the threshold, resulting in notable mid cap exposure within the index. Given that NDX constituents have more consistently tracked the threshold for large cap inclusion, the 100-constituent makeup of the index across nearly all sectors serves as a balance between diversification and undiluted large cap exposure. This supports the emerging view of the Nasdaq-100 Index® as a truer large cap index and reinforces its status as the "Benchmark of the 21st Century".

Today – after several decades of product innovation and index constituent growth to support AUM – the Ecosystem is primarily driven by the following six product types:

Figure 3: Table of Key Financial Products Used by Market Participants to Access NDX

Product Category	Product Types	Product Objective	Product Use Cases
Index Based	• SMAs and Direct Indexing • Benchmarking Solutions	Direct use of index as rulebook to follow for investment objectives.	• Performance Benchmarking • Replication Strategies • Custom exposure to underliers
Exchange Traded	• Traditional ETFs • Leveraged & Inverse ETFs • Options Overlay ETFs	Provide liquid, low-cost access to widely used investment strategies benchmarked to NDX.	• Operational/Tax Efficiency • Portfolio Transition • Low-Cost and Liquid Exposure
Mutual Funds	• Open-End Funds • Closed-End Funds	Offer wide ranges of professionally managed passive investment strategies benchmarked to NDX.	• Enhanced pricing for institutional share classes • Trading at NAV: no bid/ask spread
Derivatives	• Listed/Flex Options • E-mini/Micro E-mini Futures	Capital efficient vehicles to hedge and lever NDX exposure. Essential building blocks for developers of structured notes & insurance solutions.	• Tactical Asset Allocation • Cash Equitization • Risk Management • Leverage
Insurance	• Fixed Indexed Annuities • Registered Index-Linked Annuities • Variable Annuities • Indexed Universal Life	Tax-deferred, liability-driven, and retirement-oriented exposure to NDX.	• Tax-Deferred Capital Accumulation • Objective-oriented capital allocation (lifetime income, etc.)
Structured Notes	• Income Enhancement Notes • Downside Protection Notes • Participation Notes	Fully customized and defined exposure to NDX using OTC derivatives securitized by a bond.	• Securitized OTC Derivatives exposure replication • Customized income, growth, and downside protection

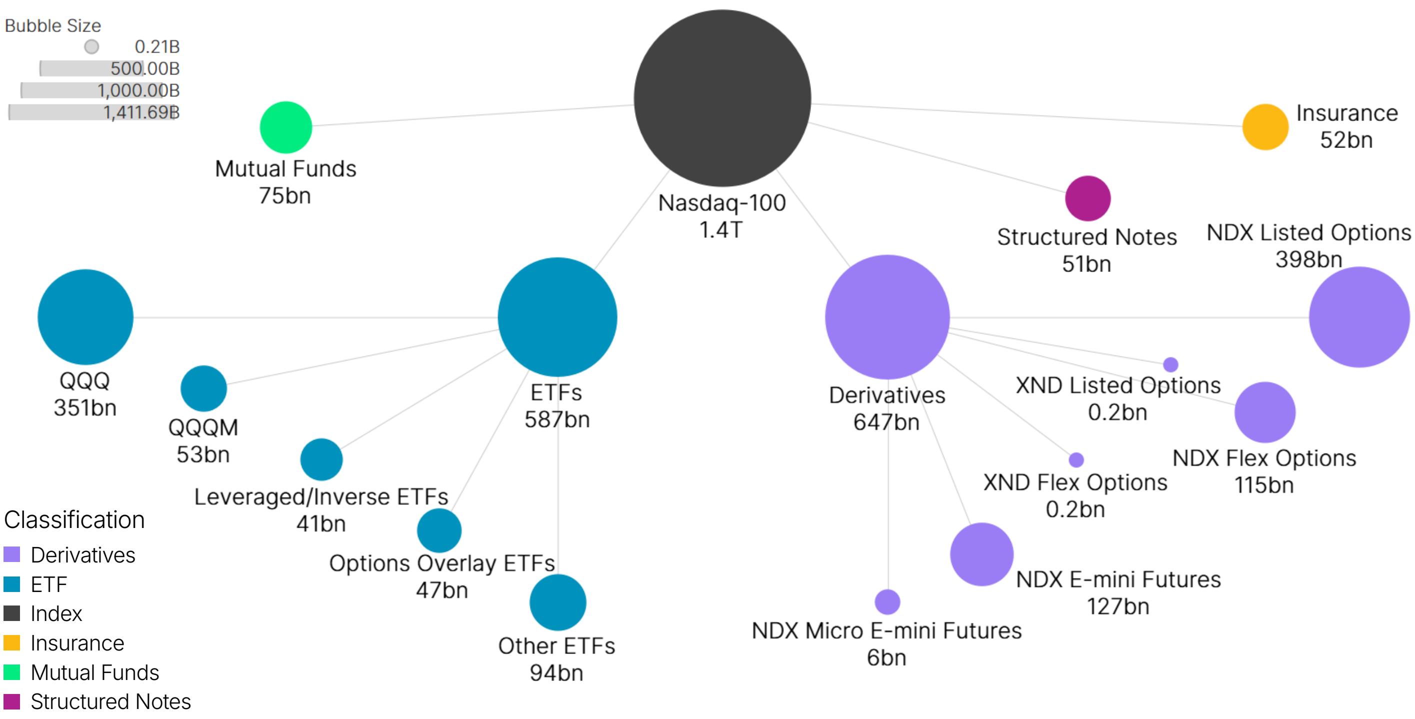
Source: Nasdaq

Broadly speaking, the Ecosystem has reached a level of maturity characterized by broad diversity of short- and long-term investment strategies, reinforced by its role as a primary driver of market cap growth in the US Large Cap equity space. There is a mix of products constructed to benefit both product developers (e.g., a wide array of derivative offerings to utilize in designing both Structured Products & Insurance Solutions) and product owners. While some products are and will remain predominantly utilized by more sophisticated investors like asset owners (e.g. Derivatives), others have found varied use cases across multiple investor types, with ETFs the most successful in seeing rapidly accelerating adoption rates across retail, advisor and institutional players alike given their accessibility, high liquidity, low costs, and often superior tax efficiency.

Determining Market Size

Having established the key financial products through which the markets interact with the Nasdaq-100, we examine the relative sizes of each of the products. Although size is expressed through different nomenclatures across each product (example: ***Contract Open Interest*** for Derivatives, ***Assets Under Management*** for ETFs, etc.), these metrics were normalized by examining notional value of each product throughout 2025. Notional value reflects the leverage of derivatives by considering the underlying assets that determine their payments. For the cash-secured products, AUM was determined to be an accurate measure of notional value.

Figure 4: Total Market Size (Notional Value) Across Global NDX Products ($s)



Source: Nasdaq, CME, OCC, Factset, Bloomberg, Morningstar, Structured Retail Products. ETF and Mutual Fund sizes are reflective of the Assets Under Management linked or benchmarked to NDX. ETF and Mutual Fund sizes reflective of average AUM across 2025. Structured Note and Insurance sizes reflective of total capital invested in live transactions as of 12/31/2025. Derivatives sizes reflective of average total notional open interest across 2025. Total NDX size data stated in trillions ("T") rounded to one decimal point, XND Flex Option Size stated in billions ("bn" or "B") rounded to two decimal points, XND Listed Option Size stated in billions rounded to one decimal point, and all others stated in billions rounded to the nearest whole number.

At a high level, 46% of the $1.41 trillion in total Nasdaq-100 notional value identified in 2025 was held in derivatives, while 42% was in ETFs. Between 2024 and 2025, over $350 billion of Nasdaq-100 notional value was added across the measured ecosystem. Compared to the broader US markets, there are two forms of investor preference that continue to be expressed in the ecosystem:

1. Focus on passive long-only exposure tracking the performance of NDX.

   With its above-average annualized returns and focus on Nasdaq-listed companies, market participants typically view NDX as a differentiator rather than as a barometer for the US Equity Markets (as the S&P 500 is more commonly viewed). As a result, fund managers have rarely (if ever) benchmarked themselves against NDX, and long-only investors have mainly chosen direct passive exposure to NDX. This is reflected through the prominence of QQQ and QQQM, which combined make up nearly 70% of total NDX-benchmarked ETF market capitalization; only a small fraction can be considered actively-managed, in the case of certain NDX Options Overlay ETFs.

   In contrast, S&P Dow Jones Indices estimates $7.2tn of actively-managed asset value is benchmarked to the S&P 500 vs. $2.3tn of indexed asset value across ETPs[iii]. In other words, given the broader nature of the S&P 500's (as well as Russell 1000, MSCI USA, and similar comprehensive US equity benchmarks) exposure vs. the Nasdaq-100, investors participating in that ecosystem tend to be much more concentrated in actively-managed products given the relatively greater potential to generate outperformance via active management – both as a function of the larger opportunity set available to implement overweights/underweights (500 constituents vs. 100), as well as the lower performance hurdle (~5% annualized performance gap in SPX vs. NDX returns over past 20 years).

2. Tailored exposure focused on beta over alpha.

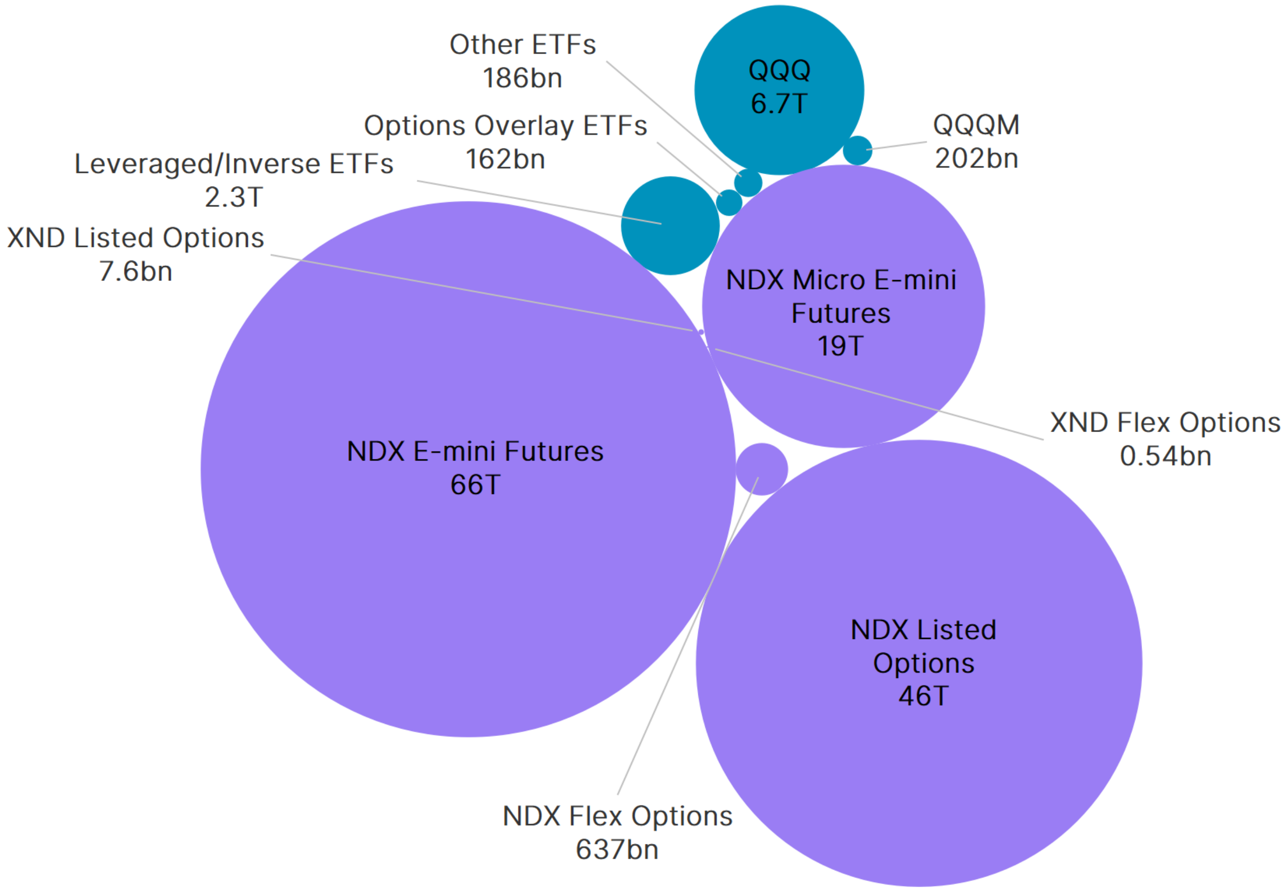
   Investors seeking tailored exposure to NDX due to its perception as a "differentiated" product typically focus on risk management and transformation according to specific portfolio goals, as opposed to alpha generation via active risk-taking vs. a benchmark. These needs are met across a wide range of products, from the ~$650bn listed and flex derivatives market, to the "secured" variety brought through the ~$200bn market for structured notes, insurance, and leveraged/inverse/options ETFs. Combined, these risk-oriented solutions make up approximately 59% of the assets tracking NDX.

Additional products not mentioned that contribute to the vastness of the Ecosystem include options on futures, other types of futures that use the Nasdaq-100 as an underlying benchmark, QQQ options, and the broader NDX and QQQ OTC derivatives market. Additionally, index replication and benchmarking strategies such as direct indexing further expand the ecosystem at the individual security level. Altogether, the combination of passive and active strategies has created a dynamic and resilient NDX investment landscape, enabling investors to pursue a broad range of investment objectives with flexibility.

How the Ecosystem is Traded

Given the breadth of the Nasdaq-100 Ecosystem, it is also critical to analyze its depth by evaluating trading volumes across liquid, exchange-traded products. As when measuring the total size of investment allocations, trading volumes are measured differently by product: derivatives by contracts and ETFs by shares. To normalize the value traded across products, dollar (notional) volume metrics were calculated to assess the true asset exposure of transactions. Across all NDX products, total notional traded exceeded $140 trillion.

Figure 5: 2025 Dollar Volume Across Exchange-Traded NDX Products ($s)



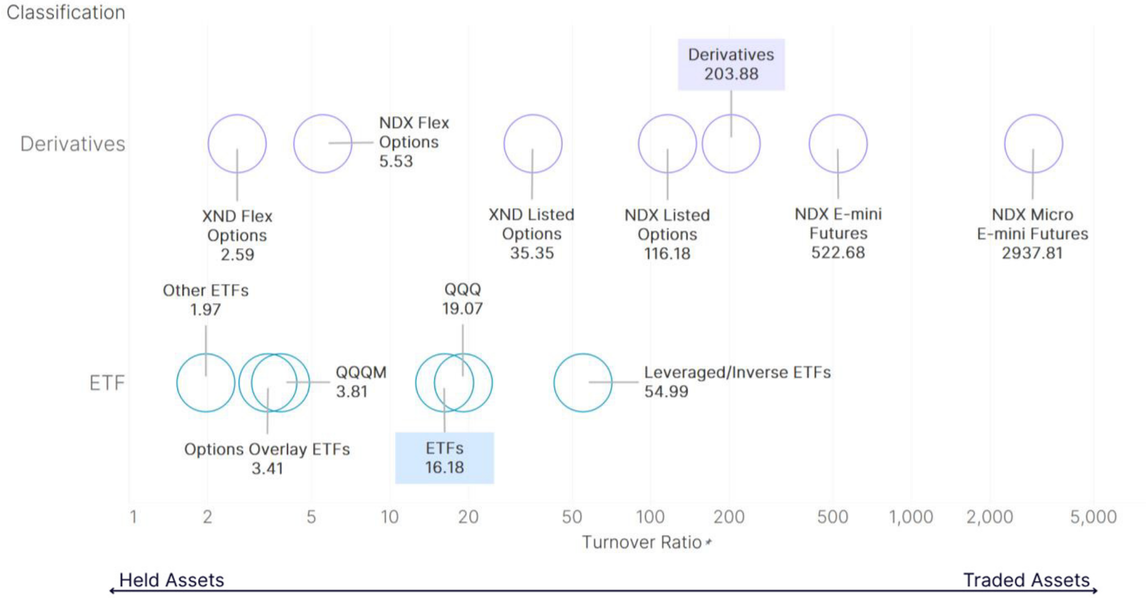
Source: Nasdaq, CME, OCC, Factset, Bloomberg, Morningstar. All volume data dollar denominated and cumulative between 1/1/2025 and 12/31/2025. All values rounded to a minimum of 2 significant figures, with 3 digit values being rounded to the nearest whole number. "bn" refers to billions, while "T" denotes trillions.

2025 flows by exchange traded products, as anticipated, are broadly driven by E-mini Futures, Micro E-Mini Futures, NDX Listed Options and the QQQ ETF, commanding nearly 98% of dollar volume between them (from all products shown in Figure 5). While there is growing retail presence – and growth in the products developed for that audience – a majority of liquidity continues to be generated by algorithmic trading and market making executed by buy- and sell-side institutions.

An area to highlight for increased contribution to future flows is the NDX Flex Options market. With the Nasdaq Philadelphia Stock Exchange (PHLX) enhancing Flex Index Options trading throughout 2025 and 2026, Nasdaq now provides significant opportunities for OTC Derivatives migration onto the platform and consolidaton of liquidity. Flows in this space may correlate with the continued growth of Defined Outcome Products, such as Index-Linked Insurance, Structured Notes, and Option Overlay ETFs.

In order to best assess the behavior of market participants for each exchange-traded product, a "Turnover Ratio" was calculated by dividing the average dollar volume by the average market size for 2025.

Figure 6: 2025 Asset Turnover Relative to Size



Source: Nasdaq, CME, OCC, Factset, Bloomberg, Morningstar. Turnover Ratio is defined as Annual Dollar Volume divided by Market Size. X-Axis (Turnover Ratio) uses a Logarithmic (Log-10) Scale. All values rounded to two decimal places. Data between 1/1/2025 and 12/31/2025.

The turnover ratio indicates whether a product is either being held or actively traded by market participants and provides patterns of product usage compared to market perceptions. For example, a turnover ratio larger than 252 indicates that the daily trading volume exceeds the notional value of the market itself (since there are 252 trading days in a year).

Within NDX derivatives, this stated high level of trading volume is exceeded by the E-mini and Micro E-mini futures, indicating that flows in those products are largely driven by short term market activity. On the other end of the spectrum stands the NDX/XND flex options markets, whose flows are indicatively driven by a mix of hedging and product development efforts. The NDX/XND listed options markets stand in the middle, likely experiencing the largest diversity of use cases.

Given the full upfront capital required for ETFs, average turnover is much lower with market participants turning over approximately 6.4% of their market capitalization daily in 2025. Leveraged/Inverse ETFs, which generally have daily investment objectives to reach a stated multiple of performance above or below that of NDX, experience the greatest turnover while retail-focused “buy-and-hold” strategies, such as QQQM and Options Overlay ETFs, experience less turnover. The least amount of turnover is exhibited by “Other ETFs”, which largely consists of global ETFs tracking the Nasdaq-100. Notably, the turnover of QQQM (3.81) is less than one-fifth of QQQ (19.07), which directly calls out the difference in the practitioners that use each product: QQQ users are more likely to regularly trade and rebalance their NDX exposure while QQQM users more often buy and hold for the long term.

Largely – as indicated by Figure 6 – markets have been utilizing the Ecosystem as expected with few outliers. All products display a turnover ratio greater than 1, indicating healthy liquidity and a full turnover of assets over a one-year period. Given the robust condition of the Ecosystem, product owners and developers are presented with a wide array of opportunities to utilize its features – from accessing deep liquidity in E-mini futures to employing cost-efficient defined outcome strategies via Options Overlay ETFs. These use cases, among many others, will be examined in subsequent publications that address the needs of various market participants.

Conclusion

Having celebrated its 40th anniversary in 2025, the Nasdaq-100 Ecosystem has clearly demonstrated a significant degree of evolution into a highly mature, dynamic state. With an ongoing focus on providing a breadth of offerings to accommodate a diversity of investment use cases and a depth of liquidity to facilitate resilient market activity, one can now easily substantiate the view that the Ecosystem is among the most important in the world. As the Ecosystem further expands, market participants should continue to monitor trends to capitalize on emerging opportunities and ensure that the market infrastructure effectively supports diverse investment strategies. By simultaneously maintaining a key equity benchmark in the Nasdaq-100 for innovative product development, a leading equity exchange that attracts many of the world's largest, most liquid and most innovative companies, and a network of equity and options exchanges to facilitate the trading of those very products, Nasdaq holds a unique position in the US equity markets to drive forward the benchmark of the 21st century.

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[i] https://indexes.nasdaq.com/Index/Weighting/NDX

[ii] Magnificent 7 stocks include Alphabet (parent of Google), Amazon, Apple, Meta Platforms (parent of Facebook), Microsoft, Nvidia, and Tesla. While not usually included in the Magnificent 7, Broadcom's market cap has frequently been on par with (if not exceeding) Tesla's in recent years.

[iii] https://www.spglobal.com/spdji/en/documents/index-news-and-announcements/spdji-indexed-asset-survey-2024.pdf

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To learn more about NDX, check out the following resources:

Landing Page | One Pager | Product Guide | Benchmark of the 21st century | Day in the Life of the Nasdaq-100 | Index Methodology | Index Data

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