



February 22, 2023

Nasdaq

ETFs With Embedded Optionality: The Best of Both Worlds?

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ETFs w/Embedded Optionality

The Best of Both Worlds?

- A Philosophical Argument for Optionality

February 22, 2023

Kevin Davitt

Head of Index Options Content

DISCLAIMER

Index

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Options

For the sake of simplicity, the examples included do not take into consideration commissions and other transaction fees, tax considerations, or margin requirements, which are factors that may significantly affect the economic consequences of a given strategy. An investor should review transaction costs, margin requirements and tax considerations with a broker and tax advisor before entering into any options strategy.

Options involve risk and are not suitable for everyone. Prior to buying or selling an option, a person must receive a copy of *Characteristics and Risks of Standardized Options*. Copies may be obtained from your broker, one of the exchanges or The Options Clearing Corporation, One North Wacker Drive, Suite 500, Chicago, IL 60606 or call 1-888-OPTIONS or visit www.888options.com.

Any strategies discussed, including examples using actual securities and price data, are strictly for illustrative and education purposes and are not to be construed as an endorsement, recommendation or solicitation to buy or sell securities.

Nasdaq-100® Volatility Index

The Nasdaq-100® Volatility Index (Ticker Symbol: VOLQ) is calculated and administered by The Nasdaq Stock Market LLC. The Nasdaq-100 Volatility Index is a financial benchmark designed to measure changes in 30-day implied volatility of the Nasdaq-100 Index as further described in the methodology, rules and other information. VOLQ options, which are traded on Nasdaq Phlx LLC, are complicated financial products only suitable for sophisticated market participants. Market participants should put at risk only funds that they can afford to lose without affecting their lifestyles. Transacting in VOLQ options involves the risk of loss, which can be substantial and can exceed the amount of money deposited for a Nasdaq-100 Volatility Index position (except when buying options on VOLQ, in which case the potential loss is limited to the purchase price of the options).

Before transacting in VOLQ options, market participants should fully inform themselves about the Nasdaq-100 Volatility Index and the characteristics and risks of VOLQ Options. Market participants also should make sure they understand the product specifications for VOLQ Options and the methodologies for calculating and settling the Nasdaq-100 Volatility Index.

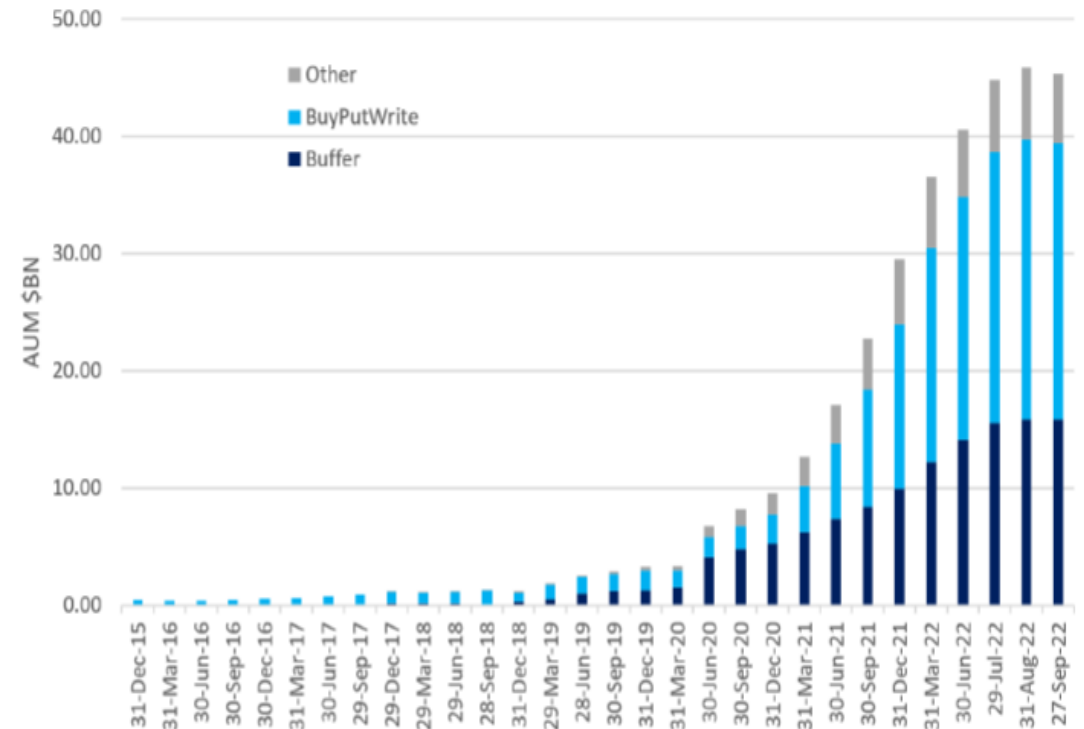


ETFs w/Embedded Optionality

History – (Launched in 2016)

- Options-based ETFs = Fastest growing
- segment of US ETF market.
 - AUM allocated ~\$45 billion.
 - 200% YoY growth in 2021.
- Why?
 - Convenient “wrapper” (ETF – equity product, transparent, liquid).
 - Benefits of Structured Products w/o OTC risks/issues.
 - Macro vol pickup & Equity market drawdowns.
- Emphasis?
 - Buy Writes & Buffered products constitute ~2/3rds of the overall market.

Option-Based ETF AUM Growth



Source: Volos



ETFs w/Embedded Optionality

Future – (2023 & Beyond)

- Impact?
 - All Investors have access to potential benefits of options in core portfolio construction.
 - Sub-Advisors (specialists) allow Advisors to focus on primary business.
 - Goals aligned (client, advisor, sub-advisor)
- Why?
 - Primarily because of ETF wrapper.
 - Reduced friction = Increased use.
 - Investors/Advisors increasingly understand the utility/use cases for options.
- Index Focused!
 - Inherent diversification, liquidity, & transparency.
 - R&D & Increased Benchmarking.



Source: SoundCloud

GLOBAL X
by Mirae Asset



Global X Options Strategies

For more than a decade, our mission has been empowering investors with unexplored and intelligent solutions.



Headquartered in New York, with Global X ETFs listed throughout Europe, Asia, Latin America, and Australia.



Global X ETFs is a fully-owned subsidiary of Mirae Asset Financial Group, a global industry leader with 50 offices and over 12,000 employees worldwide. Founded in 1997 as one of Asia's pioneering fund management companies, the Group now oversees **\$482bn in client assets** across a portfolio that includes real estate, insurance, private equity, and venture capital.²

\$42bn in AUM across more than 150 ETF strategies¹

Primary Listings by Office



United States

100 ETF Listings



Europe

33 UCITS ETF & Crypto ETP Listings



Australia

27 ETF Listings



Latin America

31 ETF Listings in Brazil & Colombia



Hong Kong

32 ETF Listings



Japan

26 ETF Listings

¹As of December 31, 2022 ²As of September 30, 2022
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Our senior investment team brings decades of pioneering experience developing client solutions.

Product Development



Alex Ashby
Head of Product Development



Joined 2010
10+ years exp.

ETF Model Portfolios



Jon Maier
Chief Investment Officer



Joined 2017
25+ years exp.

Investment Strategy

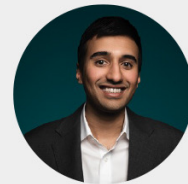


Morgane Delle Donne
Head of Investment Strategy, Europe



Joined 2020
10+ years exp.

Research

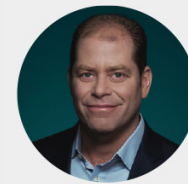


Rohan Reddy, CFA
Director of Research



Joined 2015
7+ years exp.

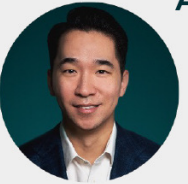
Institutional Solutions



Scott Helfstein, PhD
Head of Thematic Solutions



Joined 2022
20+ years exp.



Adam Sze, CFA
Head of Digital Asset Product



Joined 2022
15+ years exp.



Michelle Cluver, CFA
Portfolio Strategist



Joined 2018
10+ years exp.



Blair Hannon
Head of Investment Strategy, Australia



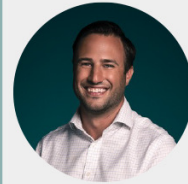
Joined 2022
15+ years exp.



Pedro Palandrani
Director of Research



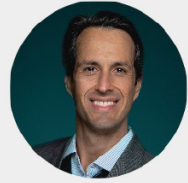
Joined 2019
7+ years exp.



James Glownia, CFA
Director of Institutional Sales



Joined 2013
12+ years exp.



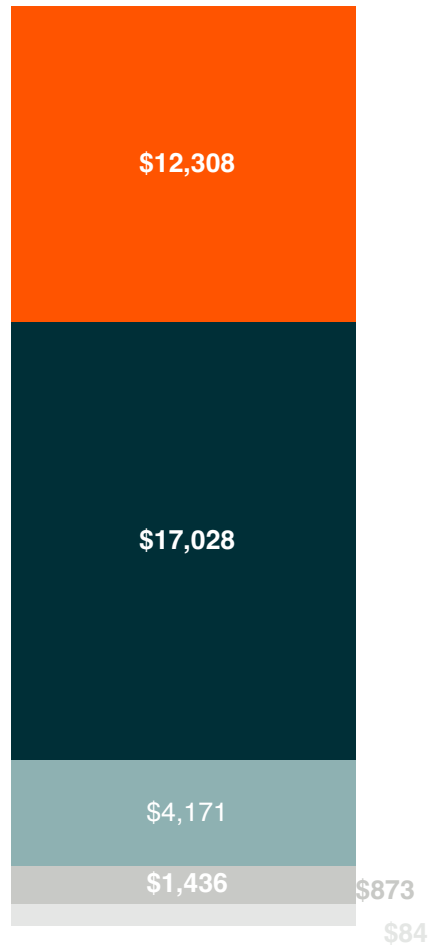
Rodrigo Araujo
Head of Investment Strategy, Latam



Joined 2022
20+ years exp.

Global X Overview: ~\$35.90bn in AUM across 100 ETFs

AUM (\$mil) by Fund Family as of 12/31/2022



Thematic Growth
36 ETFs

Targeting companies that may be poised to benefit from structural shifts in technology, people and demographics, and infrastructure development.



Income
25 ETFs

Offering solutions for investors seeking to increase or diversify the yield potential of their portfolio.



Commodities
4 ETFs

Seeking to align opportunities for exposure to natural resources across a variety of areas, but chiefly in metals, mining, and agriculture.



Other Strategies
6 ETFs

Includes strategies that have a goal of delivering market-beating total returns, strategies that seek to invest in well-managed companies, and strategies that seek to invest in companies aligned with faith-based values.



International Access
22 ETFs

Including targeted sector exposure to China, along with single-country and regional strategies.



Risk Management
7 ETFs

Aiming to lessen volatility or mitigate the extent of market drawdowns.

Index Options vs. Single Security Options

Investors have the ability to utilize many types of options with differing characteristics ranging from the underlying asset, time of expiration, and even settlement. Below, we give a broad, comparison of two major options categories – **Index Options** and **Single-Security Options**.

Index Options (European-Style)

Single-Security Options (American-Style)

Exercise Date

Can only be exercised **on the contract’s expiration date**.

Can be exercised on **any day up until and including the expiration date**.

Settlement

Cash-Settled, an index option holder receives the cash difference between the contract strike price and value of the underlying asset.

Physically Settled, a single-security option holder receives (call) or sells (puts) the underlying asset at the strike price stated in the contract, “pocketing” the difference.

U.S. Tax Treatment

Index options are taxed as 60% Long-term Capital Gains and 40% Short-term Capital Gains.

Single-security options are taxed as 100% Short-term Capital Gains.

Examples

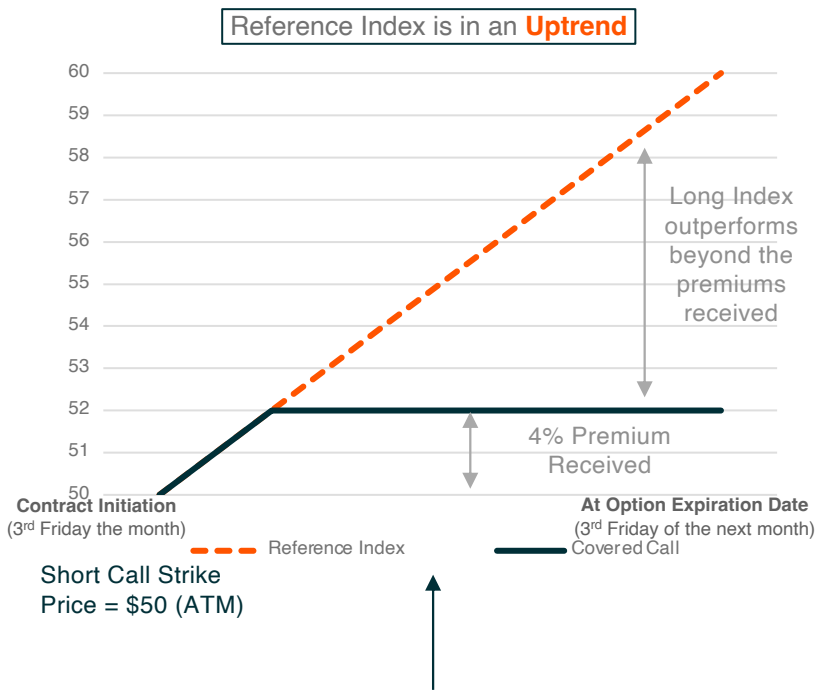
Indices such as

S&P 500
Nasdaq 100

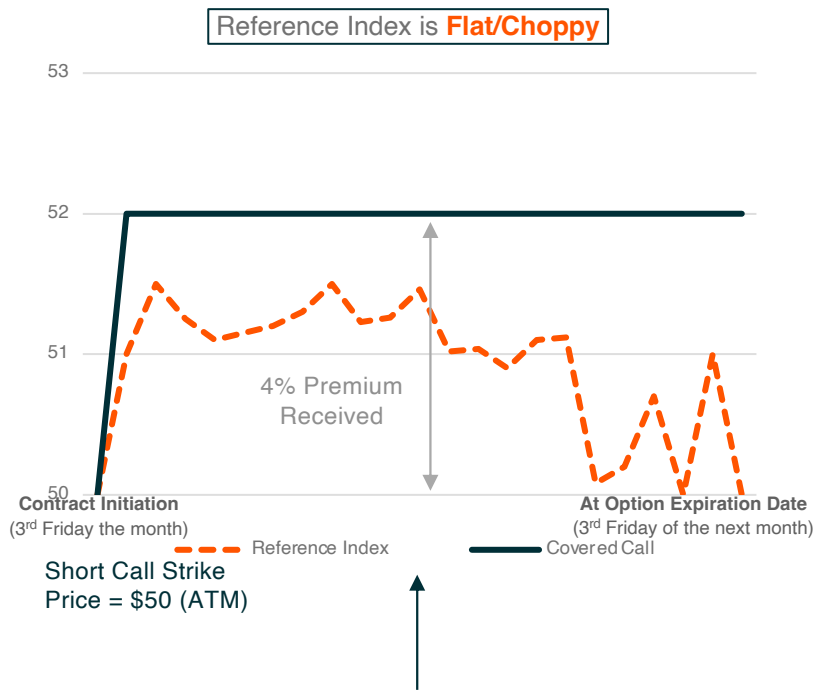
Single-Securities such as

Amazon Inc. (Stock)

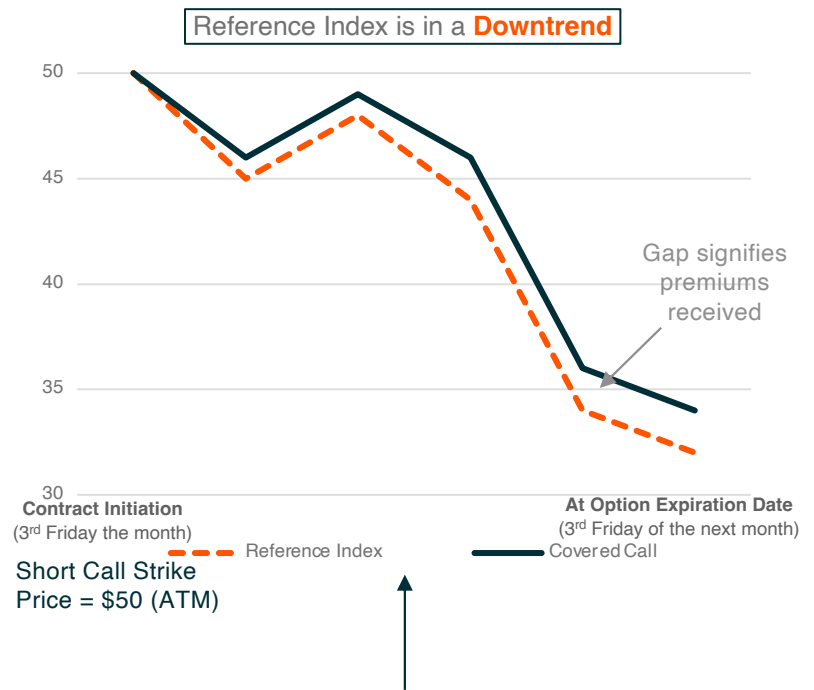
Covered Call Performance Scenarios



Covered call would be expected to **underperform** since its potential gain will be limited to the premiums received.



Covered call would be expected to **outperform** if the reference index price at contract initiation ends at the same price upon contract expiration since its performance will be supported by the premium income collected from selling monthly index calls.



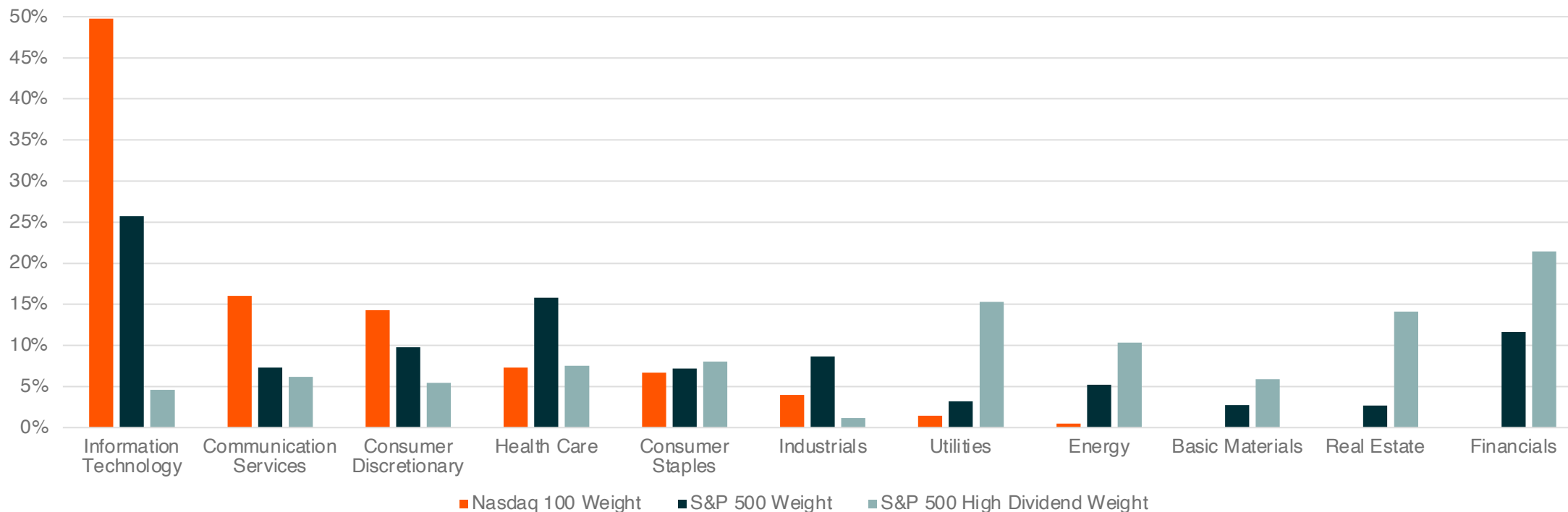
Covered call would be expected to **outperform** if the reference index falls throughout the life of the options contract due to the covered calls potentially offsetting some losses.

For illustrative purposes only. Flat/Choppy market assumes no fluctuations below the strike price. Illustrations apply to strategies that write calls on 100% of the portfolio's value.

Potentially Achieve Equity Sector Diversification within an Income Portfolio

Investors exposed to High Dividend strategies tend to be underweight growth-leaning sectors such as Information Technology, Communication Services, and Consumer Discretionary. A covered call strategy on the Nasdaq 100 can help investors monetize the volatility of these growth-style sectors while potentially increasing equity portfolio diversification.

Sector Breakdowns – Nasdaq 100 & S&P 500 vs. S&P 500 High Dividend Index



Source: Morningstar Direct. As of 12/31/2022

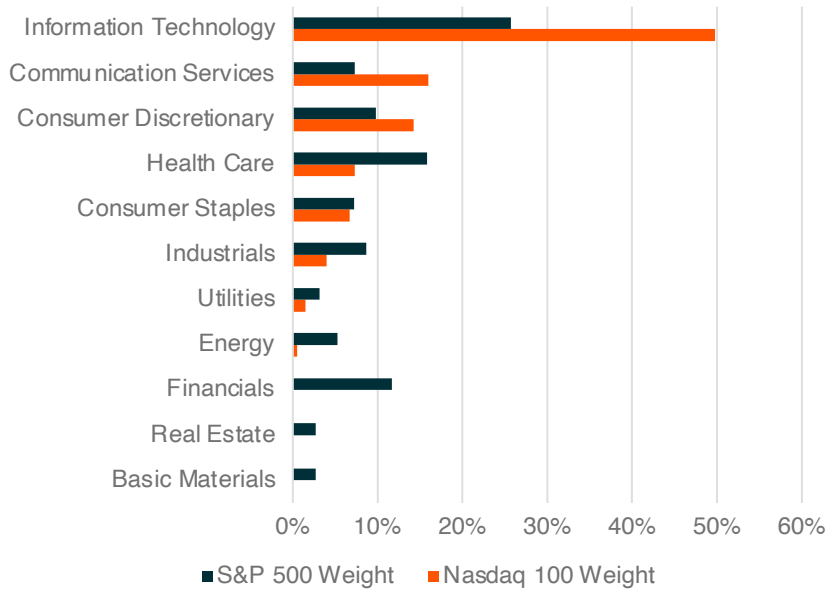
Implied Volatility, A Key Determinant of Option Premiums

Options Volatility

The difficulty of predicting the behavior of a **volatile** index commands a **higher premium** for associated options on that index because of the additional risk/reward it poses.

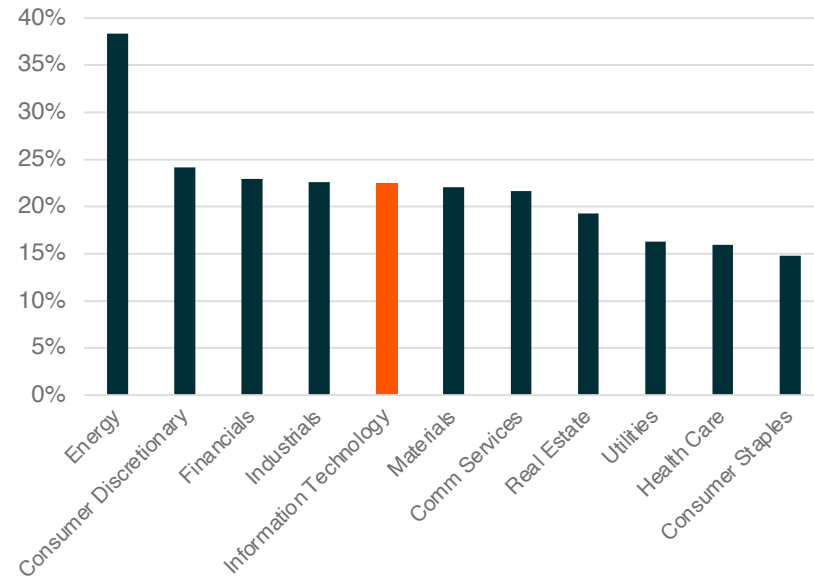
Sector Exposure

- NASDAQ-100 Index has **highest** exposure to the Information Technology sector.



5 Year S&P 500 sector volatility

- Technology sector** has exhibited higher standard deviations compared to other sectors.

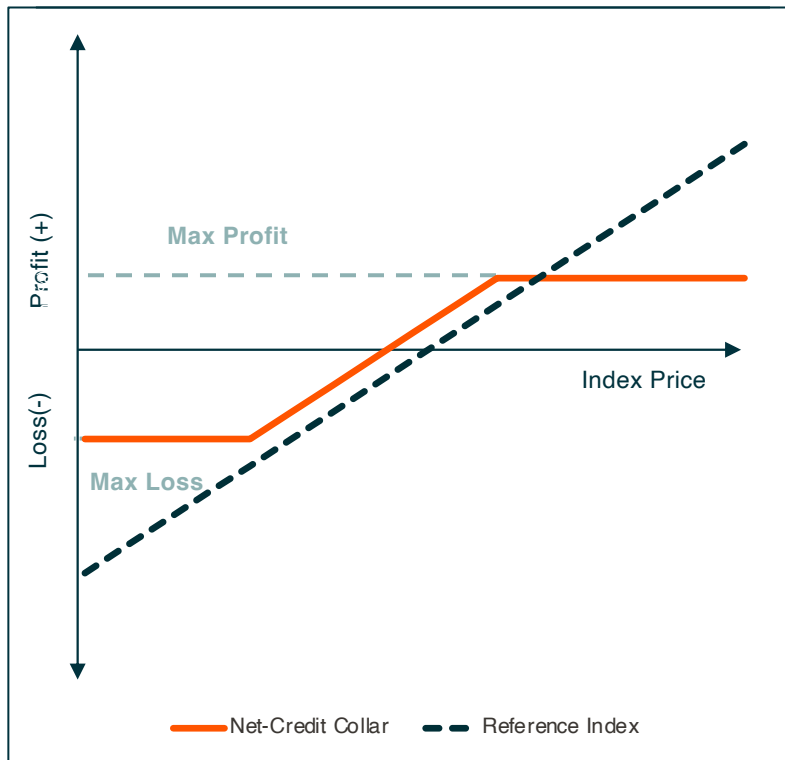


Source: Morningstar Direct as of 12/31/2022

How a Net-Credit Collar Strategy Works

A net-credit collar is a popular options strategy designed to produce income with the potential to increase risk-adjusted returns with a degree of downside protection relative to a covered call strategy.

Net-Credit Collar Strategy Payoff



Net-Credit Collar Strategy Features

- Generates higher expected income versus the reference index itself due to the premiums received from selling call options being greater than the premiums paid for buying puts.
- Generates lower expected income versus a covered call strategy since premiums will be used to purchase a protective put.
- Upside potential is capped in case the reference index appreciates beyond the strike price of the call.

Thank You!

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Using Options Strategies in a Rising Rate Environment

GLOBAL X ETFs RESEARCH

Using Options Strategies in a Rising Rate Environment

The current investment landscape presents no shortage of challenges for investors, and we expect current levels of market volatility to linger. Following over a decade of low inflation, the U.S. Consumer Price Index (CPI) is now at its highest levels in four decades, and the Federal Reserve (Fed) is aggressively tightening its monetary policy. Despite the angst in the markets, we believe investors have opportunities, outside of traditional defensive approaches. In this piece, we discuss how options-based strategies can help generate income, manage risk, or both, depending on the objective.

Key Takeaways

- In this challenging macroeconomic environment, options-based strategies may provide investors with degrees of insulation. Protective puts used in option strategies can mitigate equity drawdowns by capping the loss of the asset(s) underlying the options, creating alpha compared to just owning the asset(s).
- In a rising rate environment, options-based strategies like covered calls may provide income for investors through higher options premiums due to greater levels of implied volatility priced into the market.
- For investors looking to diversify, hedge, or generate income, options strategies that use either covered calls and/or protective puts can be useful strategies in anticipation of rates staying elevated for longer.

Investing in a Flattening Yield Curve & Rising-Rate Environment

Investors face a challenging backdrop with multiple factors driving elevated market volatility. Equity and fixed income markets are under pressure due to rising rates and the reversal of longstanding dovish monetary policies amid surging inflation. Currently, markets are pricing the federal funds rate to be 3.50–3.75% by the end of 2022, through a combination of 25 bp, 50 bps and 75 bps hikes and potentially even 100 bps.¹

Rate hikes pressured equities through the first half of the year as the Fed, and central banks around the world, tried to rein in inflation with increasingly hawkish stances. However, most of the market decline came from declining price to earnings ratios rather than deteriorating fundamentals. Rising volatility stemming from increasing rates is a challenge for equity and high yield fixed income investors because these assets have negative correlation to volatility.

While the forward 12-month S&P earnings growth was up 6.7%, the forward price-to-earnings ratio dropped from 21.4 at the beginning of the year to 17.5.²

While low following the Global Financial Crisis (GFC), inflation now appears set to be persistently higher for longer. Inflation prints remain elevated, with June's Consumer Price Index (CPI) numbers coming in at 9.1% year-over-year (YoY), its highest reading since December 1981. For investors looking to counter this, a more nuanced approach to this market may be needed.³



Nasdaq Global Indexes

February 2023

Nasdaq Index Research Team - Index Creation & Solutions

<https://www.nasdaq.com/research-insights/research>

Our rules-based, objective methodology teamed with our award-winning technology set us apart from other index providers. We pride ourselves on high-touch customer service and work with investors worldwide to create indexes that best fit their investment objectives. Whether you are an institution, fund manager, advisor or private investor, Nasdaq indexes are benchmarks that can help influence and track your investment strategies.

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Presents a Tactical Choice

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JAN 19, 2023

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RESEARCH TEAM

INDEXES RESEARCH AND INSIGHTS

When Performance Matters: Nasdaq-100 vs. S&P
500, Fourth Quarter '22



Nasdaq Index Research Team

The team averages over 10 years of industry experience. Their deep expertise covering themes, factors, multi-asset and alternatives combined with a global macro perspective provides the critical insights to support Nasdaq's index clients globally.



51

Speaking Engagements
in 2022

5,366

Attendees Reached

60,000

Video Impressions

Forthcoming in the Journal of Beta Investment Strategies, March 1, 2023

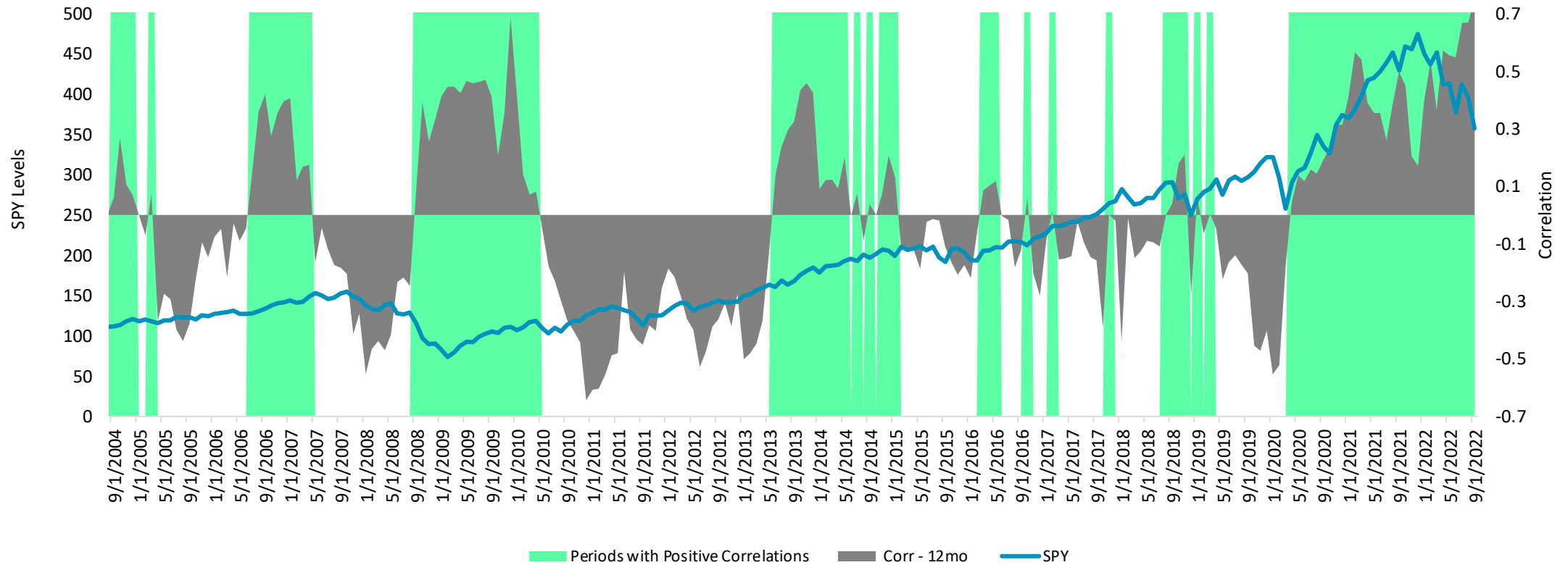
“Option-Strategy Indexes: A Powerful Tool for Improving Portfolios”

Key Points:

1. Stocks and bonds are not always negatively correlated, and in many periods have positive correlation to each other. Therefore, bonds may not always be a useful ‘hedge’ for equity portfolios.
2. Despite recent increases in interest rates, bonds may not provide yields that are attractive for most investors, and as such yield investors need to look elsewhere for income.
3. Option strategy indexes based on the Nasdaq-100 Index® may provide meaningful benefits in terms of increasing potential returns, reducing risk, and generating income, and are accessible via exchange traded funds.

Stocks and Bonds are not always negatively correlated

Exhibit 1: Rolling 12 Month Correlation Between SPY and AGG



Forthcoming in the Journal of Beta Investment Strategies, March 1, 2023

“Option-Strategy Indexes: A Powerful Tool for Improving Portfolios”

Key Findings:

1. **BXNT™ can increase distribution yield in income portfolios:** Historically, BXNT could add nearly 3% annual distribution yield and .25% annual return while increasing volatility less than 1%
2. **NQTRI™ can boost return while reducing risk in growth portfolios:** Historically, replacing half of the equity allocation of a 80/20 portfolio of 80% S&P 500 and 20% Aggregate Bonds with NQTRI increased return, reduced volatility and cut the maximum drawdown by 16%. Using a simulation study, we found that including NQTRI in a 80/20 portfolio significantly increased mean terminal wealth over 80/20 portfolios alone.
3. **Optimal portfolios include options:** various option strategies received material allocations from a mean-variance optimizer, depending on the target risk level.

Forthcoming in the Journal of Beta Investment Strategies, March 1, 2023

“Option-Strategy Indexes: A Powerful Tool for Improving Portfolios”

1. BXNT can increase distribution yield in income portfolios

Exhibit 9: Hypothetical Portfolio Results, with and without Options

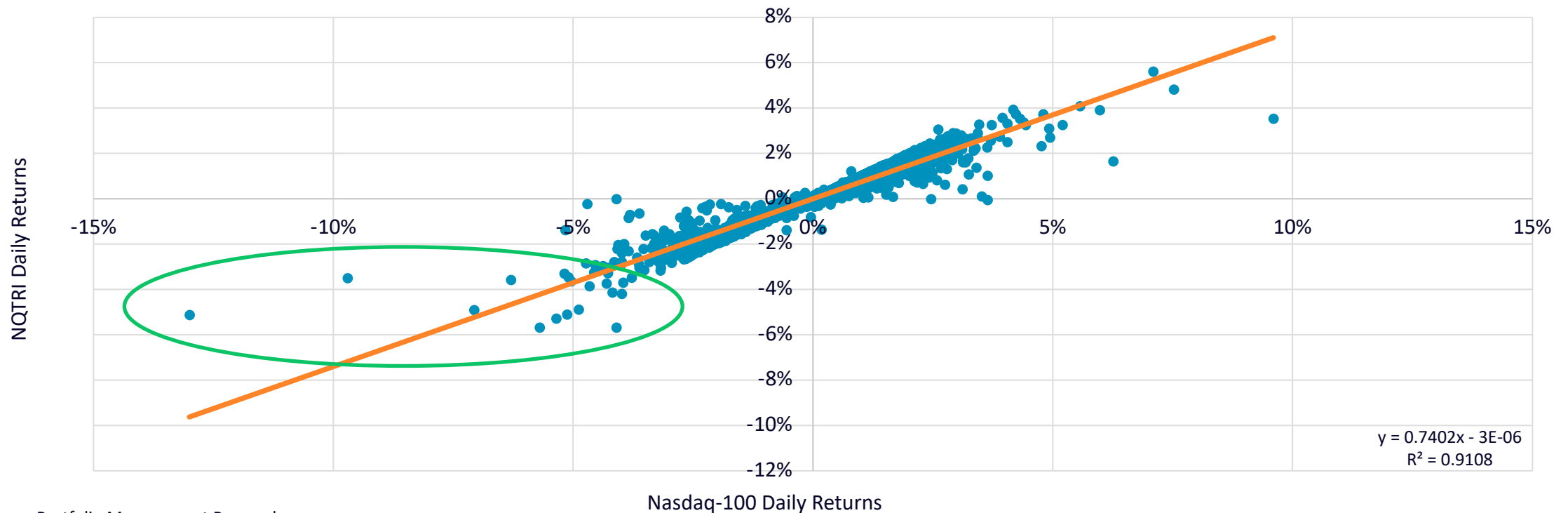
| | 40/60 | 30/70 | 20/80 | 40/60+ | 30/70+ | 20/80+ |
|-------------------------|--------------|--------------|--------------|---------------|---------------|---------------|
| Ann. Return | 7.21% | 6.04% | 4.87% | 7.47% | 6.30% | 5.13% |
| Ann. Std. Dev. | 6.65% | 5.52% | 4.58% | 7.57% | 6.35% | 5.26% |
| Sharpe Ratio | 1.08 | 1.09 | 1.06 | 0.99 | 0.99 | 0.97 |
| Dist. Yield | 1.81% | 1.87% | 1.93% | 4.63% | 4.69% | 4.75% |
| Asset Allocation | | | | | | |
| Equity | 40% | 30% | 20% | 30% | 20% | 10% |
| Bond | 60% | 70% | 80% | 45% | 55% | 65% |
| Option | 0% | 0% | 0% | 25% | 25% | 25% |

Forthcoming in the Journal of Beta Investment Strategies, March 1, 2023

“Option-Strategy Indexes: A Powerful Tool for Improving Portfolios”

2. NQTRI can boost return while reducing risk in growth portfolios

Exhibit 6: NQTRI vs. Nasdaq-100 Index

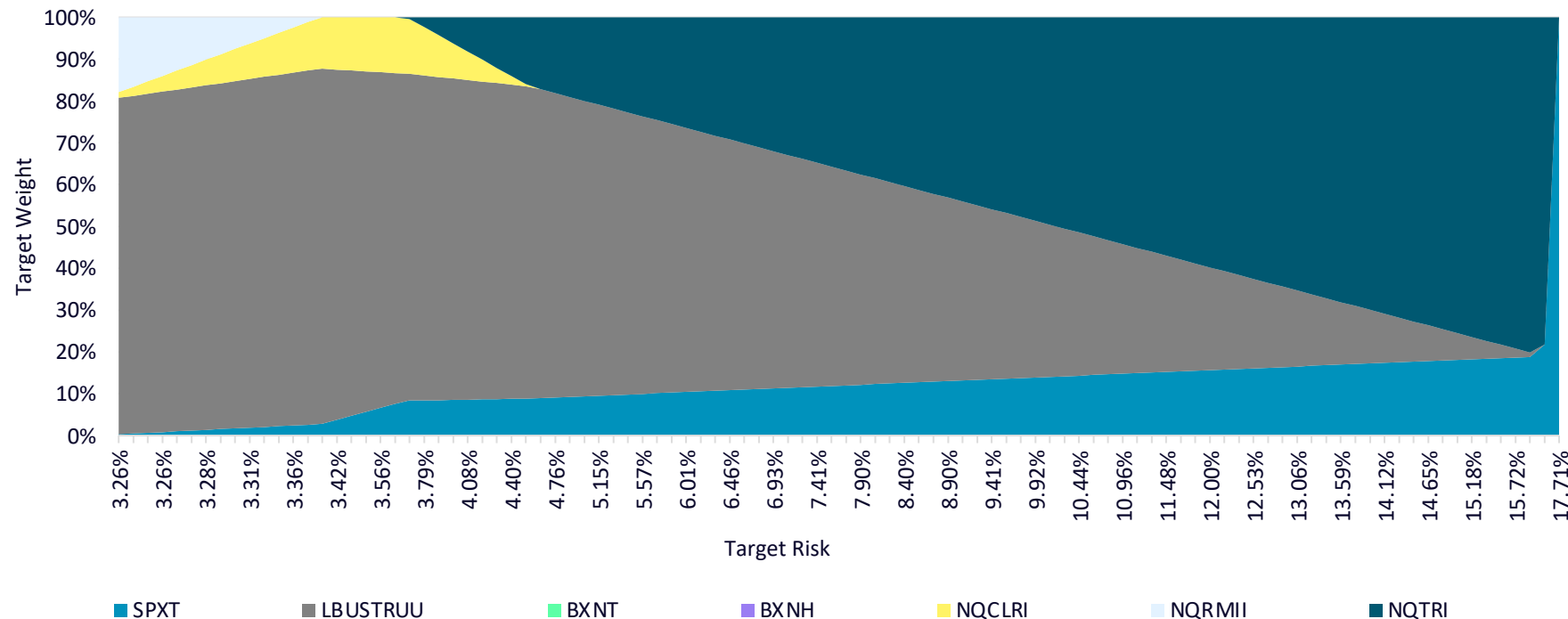


Forthcoming in the Journal of Beta Investment Strategies, March 1, 2023

“Option-Strategy Indexes: A Powerful Tool for Improving Portfolios”

3. Optimal portfolios include options

Exhibit 10: Optimal Weights for Stocks, Bonds & Option Indexes



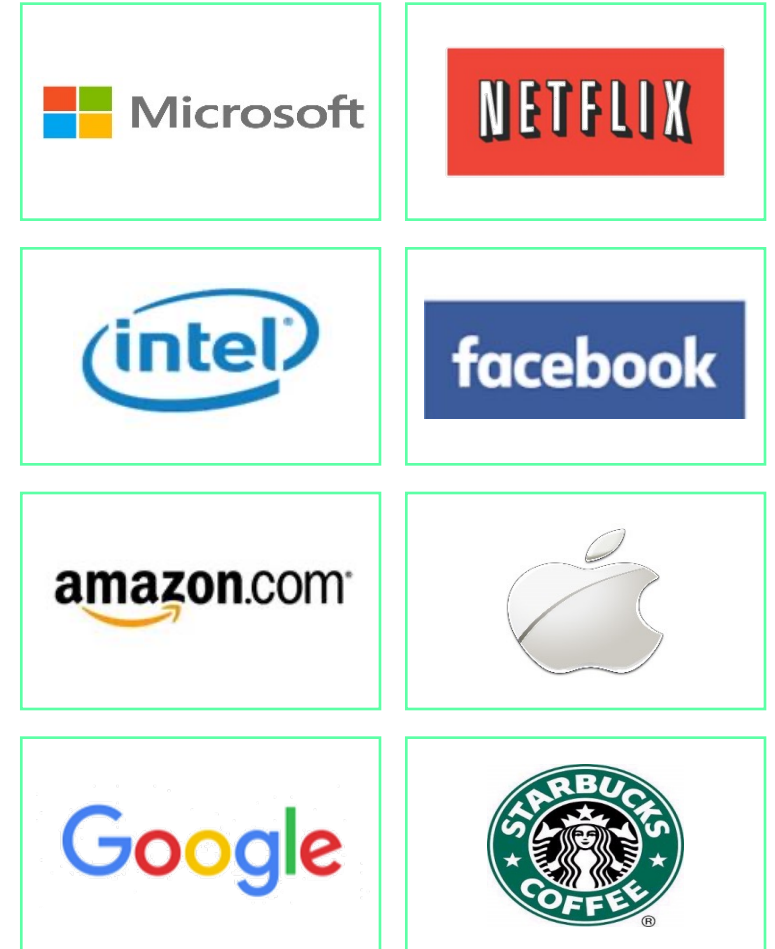
The Nasdaq-100 Index

Nasdaq-100 Index: Overview

The disruptors; the game-changers; the forward-thinkers.

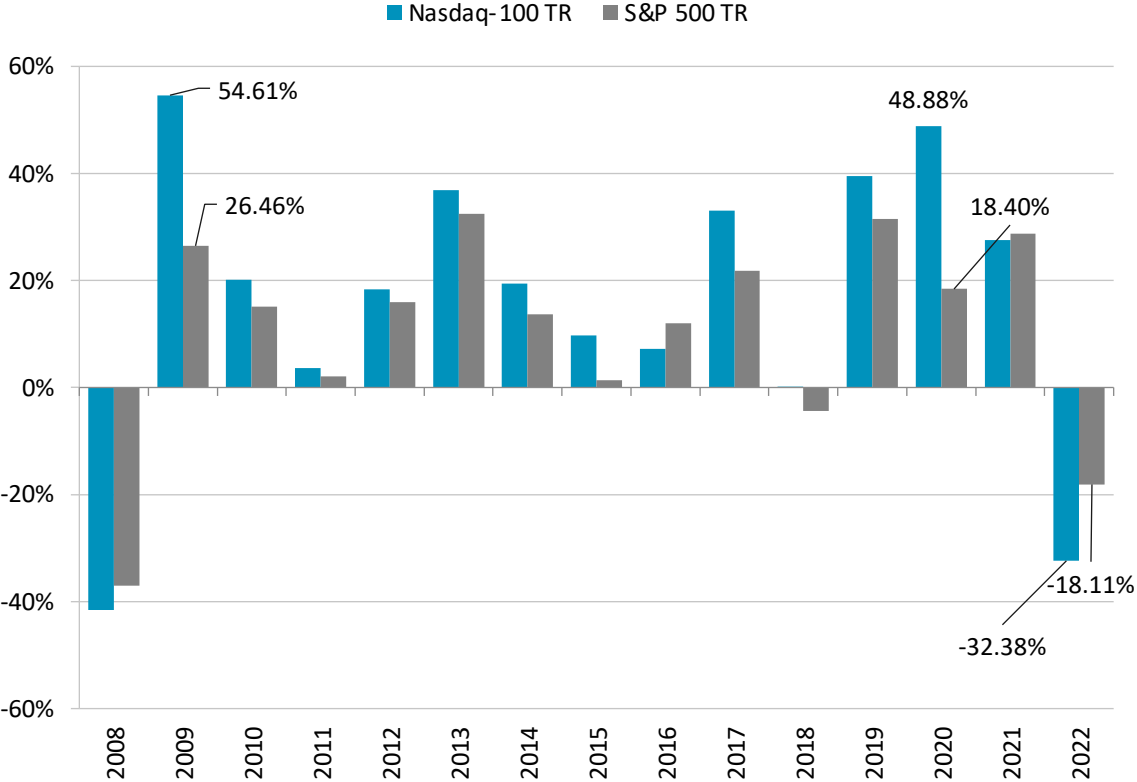
Companies that influence our lives daily, in multiple areas.

- GE, Chicago Gas Company, American Sugar Company, and the other original Dow Industrials accelerated the growth of the US economy at the turn of the 20th century and helped spur its transformation from agricultural to industrial.
- By mid-century, GE was still one of the nation's 10 largest companies by market cap, joined by the automakers (GM/Ford/Chrysler), Big Oil (Exxon Mobil, Texaco, Gulf Oil), and other large, diversified industrial companies like DuPont.
- At the turn of the 21st century, the Internet/Tech Bubble heralded the transformation of the economy from industrial to technological; from analog to digital; from hardware to software.
- Today, Apple, Amazon, Google, Facebook and Microsoft have become global leaders in the technology sector by creating products and services that are essential to both individual consumers and enterprise customers. From software, computing, and communications, to entertainment, advertising, and e-commerce, their platforms represent the new "diversified industrials" of the 21st century.
- Beyond the biggest names, companies like Intel and Netflix specialize in narrower applications of technology, while the rest of the Nasdaq-100[®] encompasses innovation-driven companies in other sectors, like Starbucks.

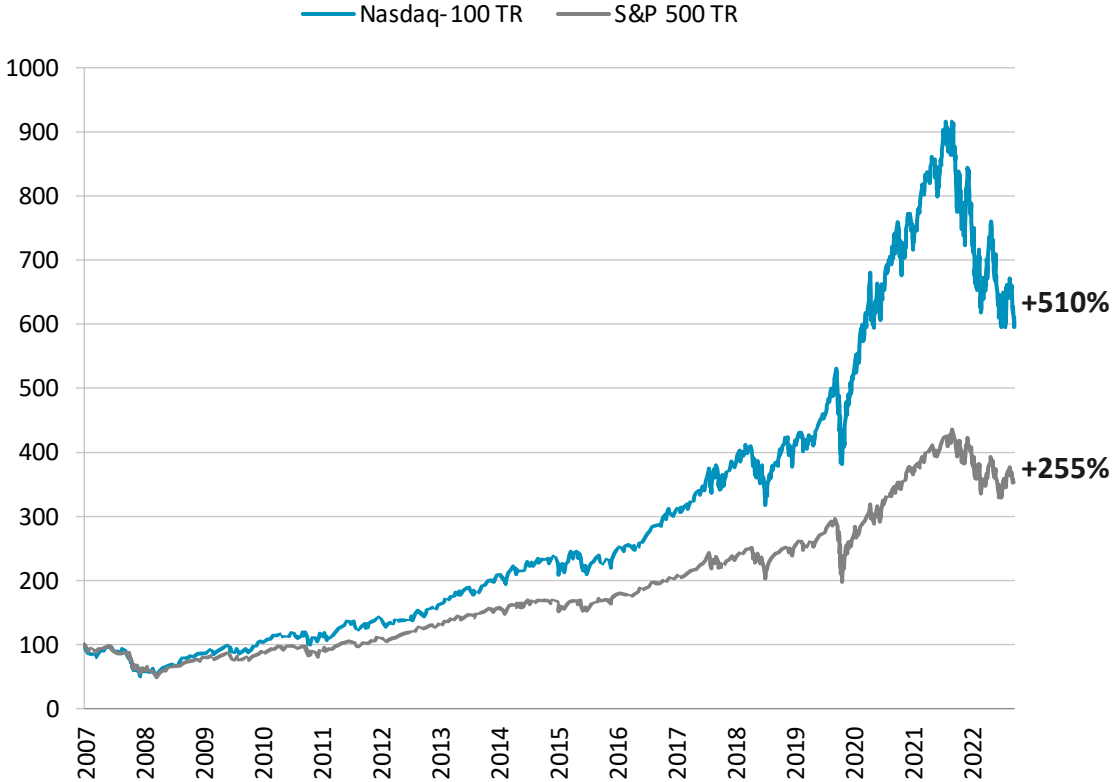


Nasdaq-100 Index: Performance vs. S&P 500

INDEX ANNUAL TOTAL RETURNS



INDEX PERFORMANCE SINCE DECEMBER 31, 2007



- NDX has outperformed SPX in 11 of the past 15 calendar years, including by more than 30% in 2020; underperformance in 2022 was ~13%

- Cumulative total returns through December 30, 2022 were 510% for NDX – doubling the returns of 255% for SPX.

Performance Data (Total Return)

| Year | Calendar Year Return | | Correlation NDX + SPX | Calendar Year Volatility | |
|------|----------------------|---------|--------------------------|--------------------------|---------|
| | Nasdaq-100 | S&P 500 | | Nasdaq-100 | S&P 500 |
| 2007 | 19.24% | 5.49% | 0.890 | 18.68% | 15.99% |
| 2008 | -41.57% | -37.00% | 0.945 | 42.22% | 40.89% |
| 2009 | 54.61% | 26.46% | 0.935 | 26.47% | 27.25% |
| 2010 | 20.14% | 15.06% | 0.949 | 19.48% | 18.06% |
| 2011 | 3.66% | 2.11% | 0.948 | 23.75% | 23.24% |
| 2012 | 18.35% | 16.00% | 0.920 | 15.44% | 12.74% |
| 2013 | 36.92% | 32.39% | 0.901 | 12.49% | 11.16% |
| 2014 | 19.40% | 13.69% | 0.924 | 14.06% | 11.36% |
| 2015 | 9.75% | 1.38% | 0.947 | 17.85% | 15.50% |
| 2016 | 7.27% | 11.96% | 0.916 | 16.17% | 13.11% |
| 2017 | 32.99% | 21.83% | 0.801 | 10.32% | 6.69% |
| 2018 | 0.04% | -4.38% | 0.949 | 22.70% | 17.04% |
| 2019 | 39.46% | 31.49% | 0.950 | 16.31% | 12.46% |
| 2020 | 48.88% | 18.40% | 0.937 | 36.29% | 34.37% |
| 2021 | 27.51% | 28.71% | 0.877 | 18.52% | 13.08% |
| 2022 | -32.38% | -18.11% | 0.967 | 32.43% | 24.13% |

 NDX outperformed SPX

Nasdaq-100 Additions in 2022

| Effective Date | Ticker | Company Name | ICB Industry | ICB sector | Market Cap, \$Bn | YTD'22 Return, % |
|----------------|--------|---------------------------------|------------------------|-------------------------------------|------------------|------------------|
| 12/19/2022 | BKR | Baker Hughes | Energy | Oil, Gas and Coal | 29.1 | 20.7 |
| 12/19/2022 | CSGP | CoStar Group | Real Estate | Real Estate Investment and Services | 31.7 | -1.5 |
| 12/19/2022 | FANG | Diamondback Energy | Energy | Oil, Gas and Coal | 24.2 | 27.4 |
| 12/19/2022 | GFS | GlobalFoundries | Technology | Technology Hardware and Equipment | 33.4 | -4.8 |
| 12/19/2022 | RIVN | Rivian Automotive | Consumer Discretionary | Automobiles and Parts | 21.9 | -76.9 |
| 12/19/2022 | WBD | Discovery, Inc. | Consumer Discretionary | Media | 24.3 | -57.5 |
| 11/21/2022 | ENPH | Enphase Energy | Energy | Alternative Energy | 42.7 | 71.7 |
| 1/24/2022 | ODFL | Old Dominion Freight Line, Inc. | Industrials | Industrial Transportation | 33.0 | -16.5 |
| 2/22/2022 | AZN | AstraZeneca PLC | Health Care | Pharmaceuticals and Biotechnology | 215.1 | 19.7 |

Nasdaq-100 Deletions in 2022

| Effective Date | Ticker | Company Name | ICB Industry | ICB sector | Market Cap, \$Bn | YTD'22 Return, % |
|----------------|--------|---------------------------|------------------------|-----------------------------------|------------------|------------------|
| 12/19/2022 | BIDU | Baidu, Inc. | Technology | Software and Computer Services | 33.1 | -23.6 |
| 12/19/2022 | DOCU | DocuSign, Inc. | Technology | Software and Computer Services | 11.3 | -63.0 |
| 12/19/2022 | MTCH | Match Group, Inc. | Technology | Software and Computer Services | 11.7 | -68.3 |
| 12/19/2022 | NTES | NetEase, Inc. | Consumer Discretionary | Leisure Goods | 47.0 | -29.9 |
| 12/19/2022 | SPLK | Splunk Inc. | Technology | Software and Computer Services | 14.3 | -24.4 |
| 12/19/2022 | SWKS | Skyworks Solutions, Inc. | Technology | Technology Hardware and Equipment | 15.0 | -39.6 |
| 12/19/2022 | VRSN | VeriSign, Inc. | Technology | Software and Computer Services | 21.2 | -21.3 |
| 1/24/2022 | PTON | Peloton Interactive, Inc. | Consumer Discretionary | Travel and Leisure | 3.6 | -68.2 |
| 2/14/2022 | XLNX | Xilinx, Inc. | Technology | Technology Hardware and Equipment | 48.4 | -8.1 |
| 11/21/2022 | OKTA | Okta, Inc. | Technology | Software and Computer Services | 10.4 | -69.7 |

Source: Nasdaq Global Indexes, Factset as of December 15, 2022



The Fundamentals

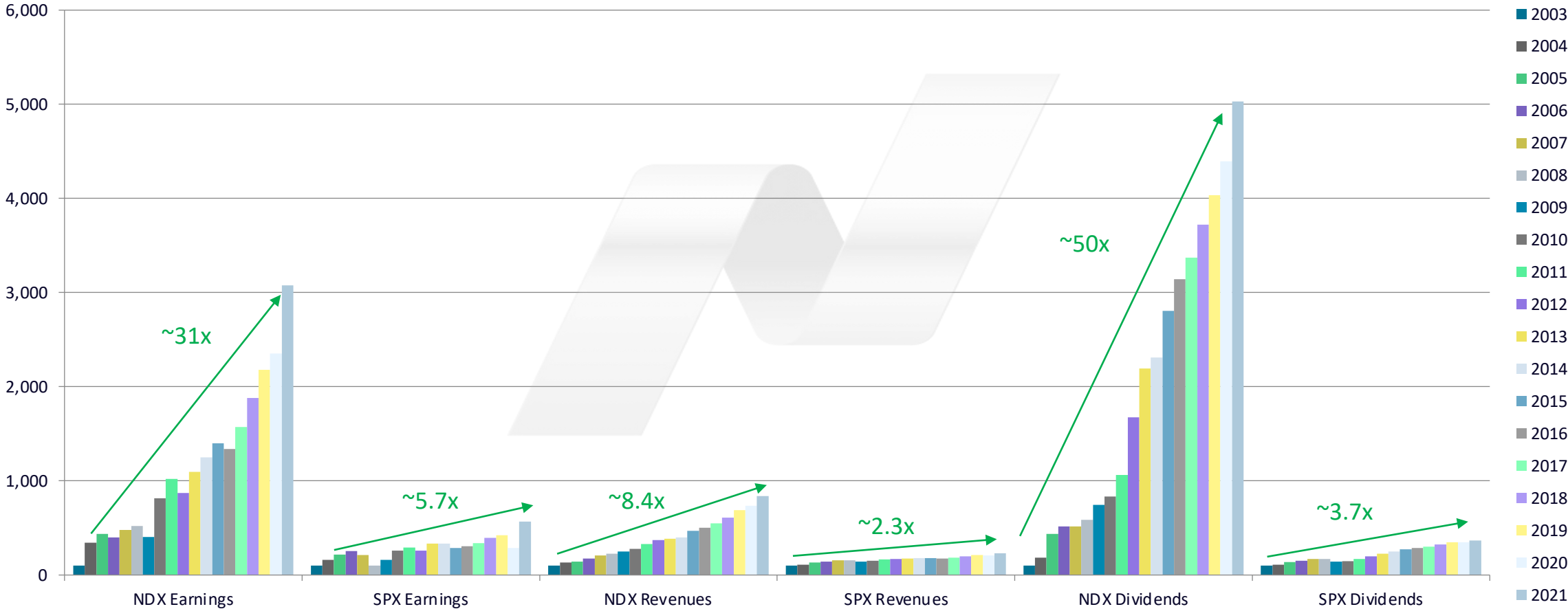


Nasdaq-100 Index: Fundamentals

- The fundamental data behind the NASDAQ-100 has drastically improved over the past decade despite a volatile economy and the greatest financial market collapse since the Great Depression.
- Earnings, the most basic number to value a company, have skyrocketed, showing maturation of the companies as they increase revenues but reduce costs. Costs have been controlled, shares were bought back, dividends have increased, and P/E has contracted.
- Since 2003, NDX has had a Compound Annual Growth Rate (CAGR) of:
 - + 21% in earnings
 - + 13% in revenues
 - + 24% in dividend value
 - - 7% in P/E
- The shift in NDX fundamentals has resulted in significant outperformance over other US large cap indexes.



Nasdaq-100 vs. S&P 500: Fundamentals Over Time



Current TTM Dividend Yield: 0.81% (NDX) vs. 1.55% (SPX)

Source: Nasdaq, Factset, Bloomberg. Data as of 12/31/2021. Current TTM Dividend Yields as of 8/3/2022.

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