NDXMAX30™ Drawdown Study
Where Really is the Leverage?

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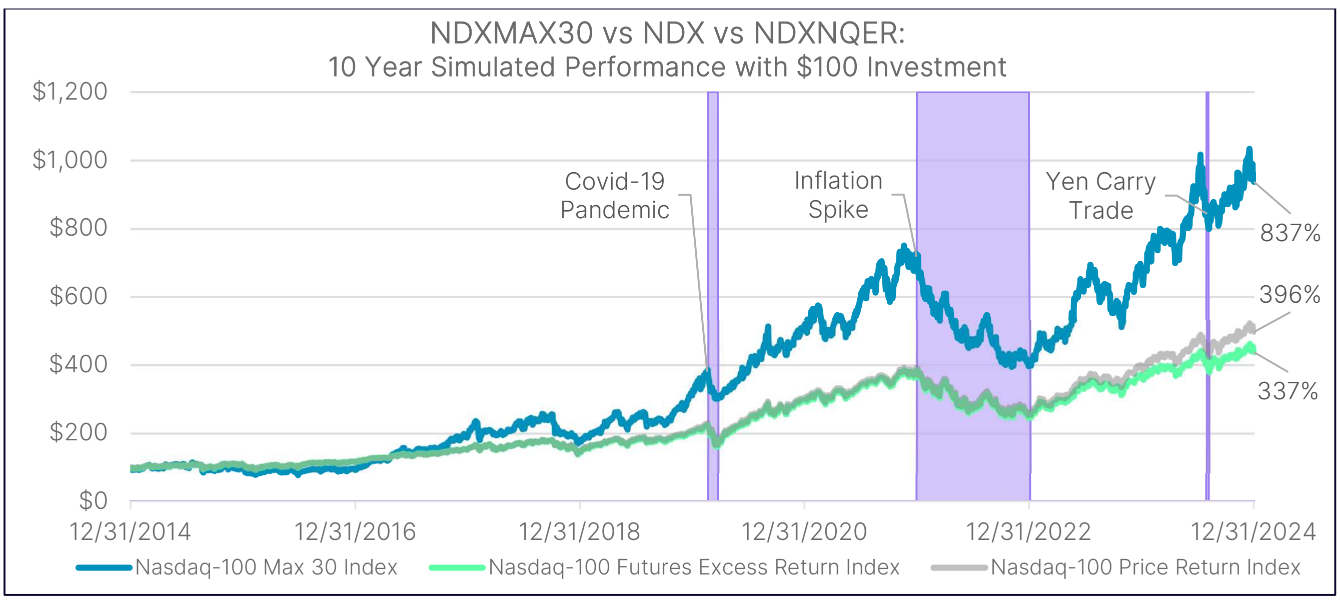
At a Glance:

- NDXMAX30™ - an index which applies volatility control and often employs a leveraged exposure to the Nasdaq-100® - has historically outperformed in bull markets and high volatility bear markets, while underperforming in lower volatility bear markets.
- The truVol® Risk Control Engine (RCE) enables the index to effectively respond to sudden changes in volatility.

The Nasdaq-100 Max 30™ Index (NDXMAX30™) launched on April 23, 2024 and is designed to deliver exposure to the Nasdaq-100 Futures Excess Return™ Index (NDXNQER™), while targeting a constant 30% level of volatility and a maximum exposure level of 300%. The index uses the truVol® Risk Control Engine (RCE) to dynamically allocate between NDXNQER and non-renumerating cash (i.e., "unallocated" exposure) to achieve the volatility target.

Given that the annualized volatility of the Nasdaq-100® (NDX®) is usually under 30%, one may assume the NDXMAX30 maintains leveraged exposure to its underlying index, NDXNQER, on an ongoing basis. While this is usually true, it is important to note that the exposure to the underlying index changes daily, meaning there are days when the index can even have deleveraged (<100%) exposure to NDXNQER. In this paper, we will explore how NDXMAX30 performed in 3 distinct drawdowns relative to NDXNQER to determine: where really is the leverage?



Sources: Nasdaq Global Indexes, Salt Financial. Data between 12/31/2014 and 12/31/2024. Index Live Date: 04/23/2024.

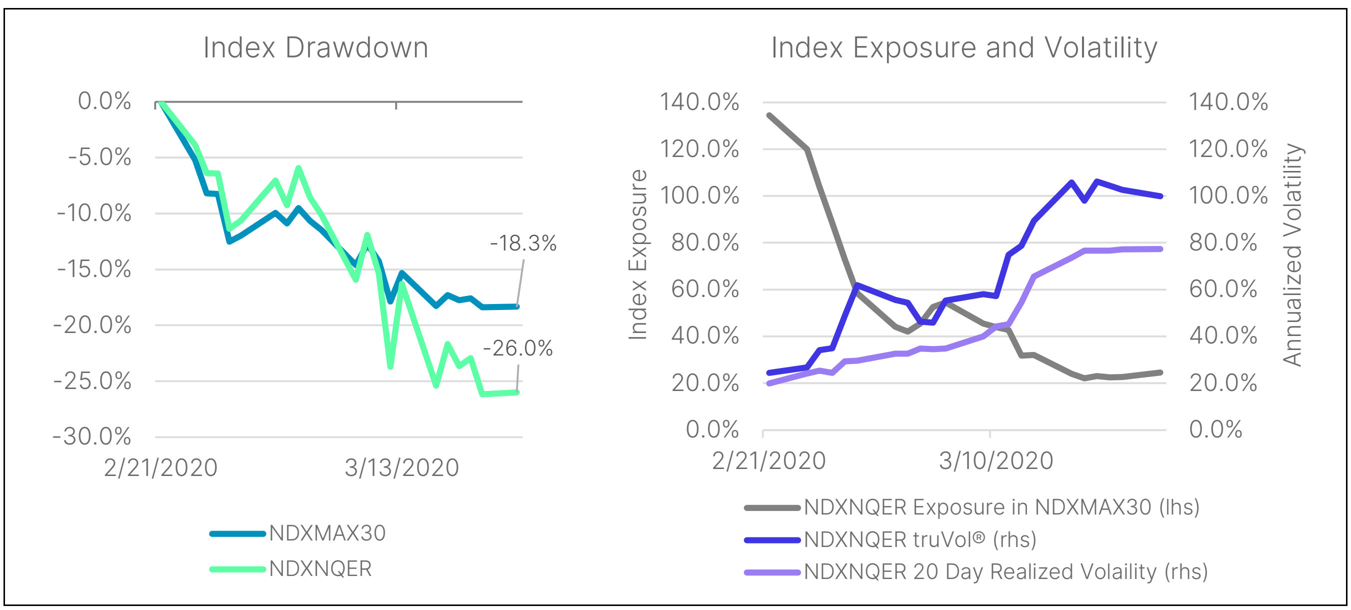
High Volatility versus Low Volatility Drawdowns

The chart above shows that NDXMAX30 usually provides leveraged exposure to NDXNQER. In the past 10 years, NDXMAX30 outperformed NDXNQER by more than double, and had an annualized return of 25.1% vs 15.9%. However, when zooming in on key market drawdowns, it was not always the case that the index maintained a leveraged exposure. To better understand the downside behavior of this index, it is important to differentiate the two types of drawdowns the index experiences – "High Volatility" and "Low Volatility".

- High Volatility Drawdown: We consider a high volatility drawdown to be one where annualized volatility (calculated by truVol® RCE) is *higher* than 30%.
    - This would usually indicate that NDXNQER exposure in NDXMAX30 is *less than* 100%, meaning an investor would have deleveraged exposure.
    - High Volatility Drawdowns usually occur in the midst of a market crash driven by large exogenous shocks, such as mass credit defaults, geopolitical instability, or even a global pandemic.
- Low Volatility Drawdown: We consider a low volatility drawdown to be one where annualized volatility (calculated by truVol® RCE) is *lower* than 30%.
    - This would usually indicate that NDXNQER exposure in NDXMAX30 is *greater than* 100%, meaning an investor would have leveraged exposure.
    - Low Volatility Drawdowns usually occur due to market cyclicality, such as increased interest rates, inflation, or unemployment.

Below is an example of a high volatility drawdown:

COVID-19 Drawdown: February 21, 2020 – March 23, 2020



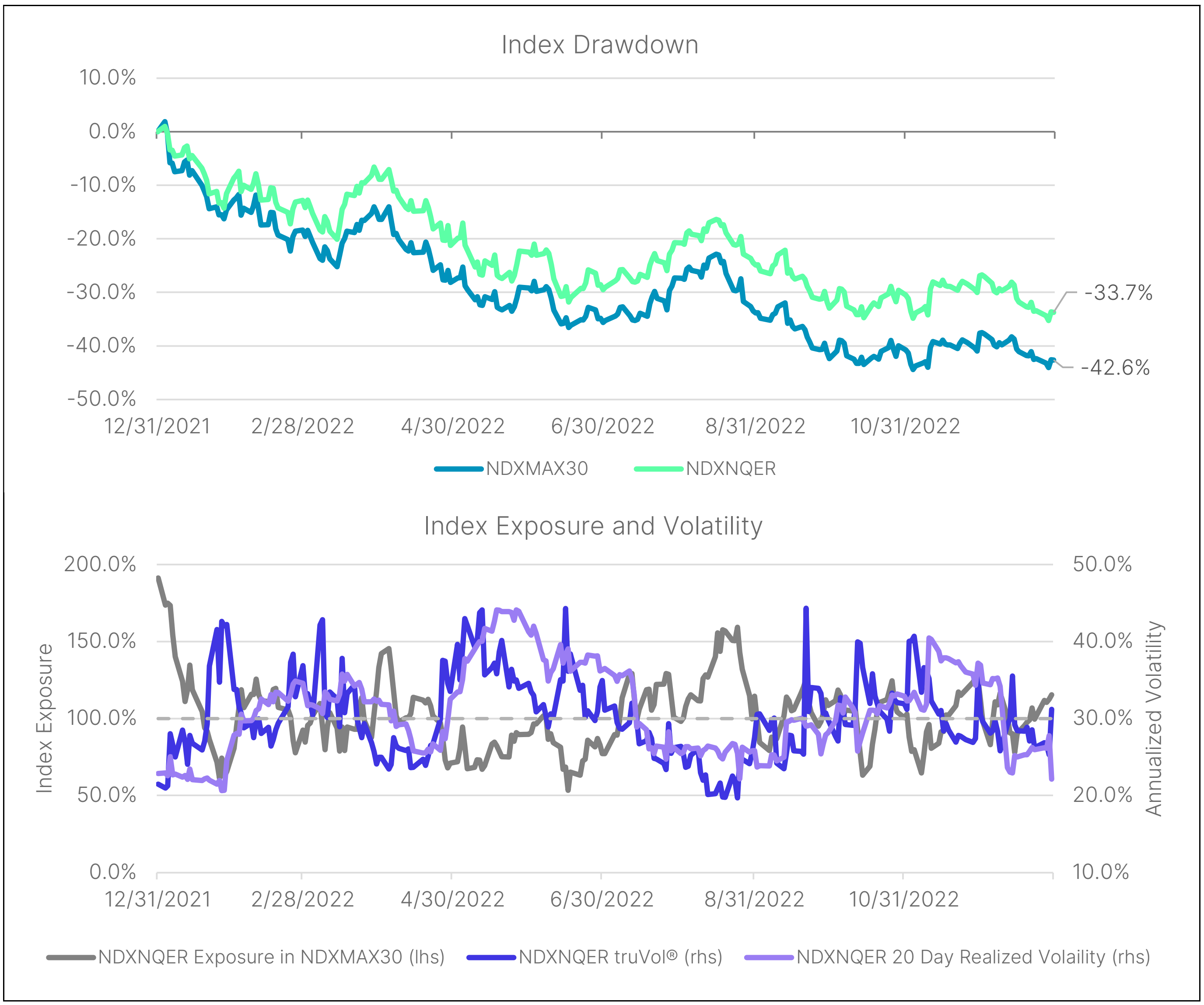
Sources: Nasdaq Global Indexes, Salt Financial.

When examining backtested index performance during the initial market drawdowns from COVID-19, NDXNQER exposure in NDXMAX30 was less than 100% starting on February 26, 2020 – *the fourth trading day of the drawdown*. This is illustrated by the solid gray line on the chart located above-right, which demonstrates a consistent decrease in market exposure as volatility increases. Notably, truVol® calculated a spike in volatility much quicker than a traditional rolling 20 day realized volatility metric, which led to much more rapidly decreased exposure in NDXNQER during the drawdown.

As a result, NDXMAX30 lost 18.3% vs 26.0% for NDXNQER, mitigating nearly a third of the downside. Although it underperformed in the first few days of the pandemic due to an initially leveraged exposure, the index's quick adjustment to the extreme volatility ensured that the downside risk was appropriately managed for the remainder of the period. By protecting losses, the NDXMAX30 put itself in a stronger position to lever up and recover as volatility stabilized below 30% in the subsequent couple of months.

Given NDXMAX30's ability to outperform NDXNQER in both bull markets and during periods of high volatility, it is important to understand the scenario in which NDXMAX30 may underperform. Below is an example of a low volatility drawdown:

2022 Inflation Spike: December 31, 2021 – December 30, 2022



Sources: Nasdaq Global Indexes, Salt Financial.

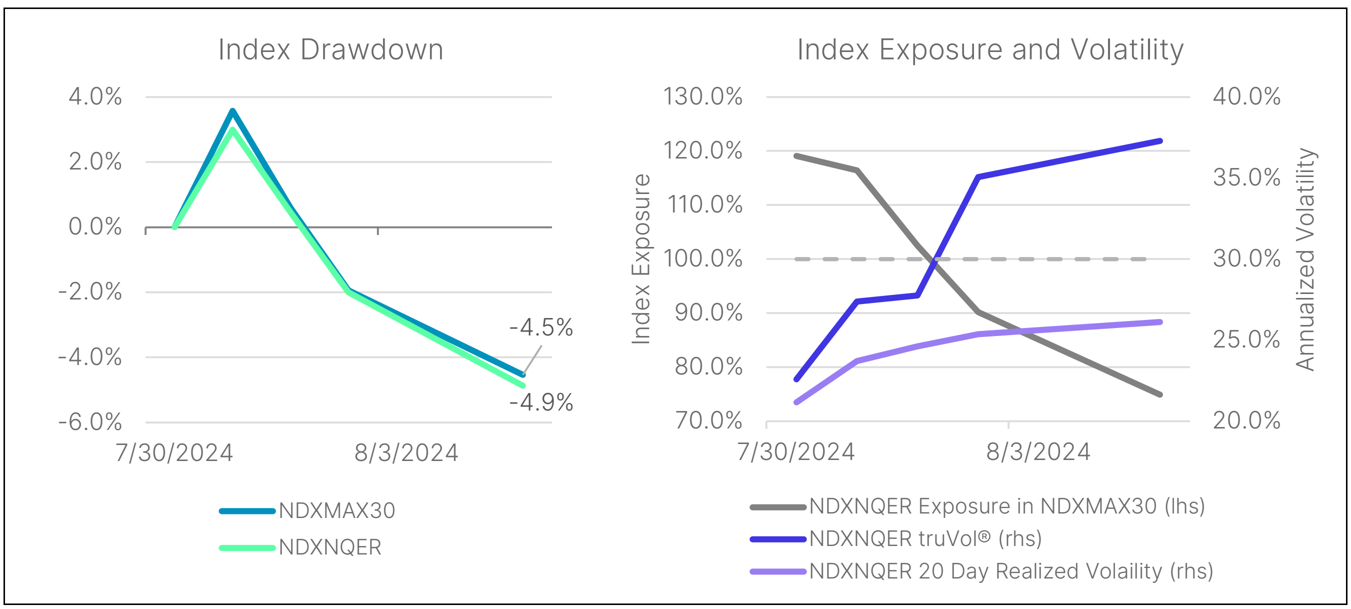
The yearlong drawdown throughout 2022 impacting the Nasdaq-100 was driven primarily by inflation and the subsequent increase in interest rates to combat said inflation. Because there was never a crash in the market, but rather a slow decline spread across a year, the volatility of NDXNQER mostly remained range-bound between 20% and 40%. At the start of the year, the index held exposure of 191.2% that took 12 business days to slowly drop below 100%. During that period, NDXMAX30 dropped by 10.0%, amplifying NDXNQER's drawdown of 6.8% by almost 50%, with an average exposure of 143.2%. This established a lower basis from which four subsequent declines later in the year compounded on.

As a result, NDXMAX30 lost 42.6% in 2022 vs 33.7% for NDXNQER, amplifying the decline by more than 25%. Given volatility rarely spiked outside a limited range, there was no extended period during the year when NDXMAX30 was able to reduce exposure to substantially mitigate downside as it did during COVID-19. Instead, it behaved similarly to how it does in a bull market – providing aggregate leveraged exposure to NDXNQER.

Yen Carry Trade Unwind: Understanding the Impact of truVol®

NDXMAX30 was launched on April 23, 2024, with the previous two examples mentioned based on backtested data. For that reason, the unwind of the Yen Carry trade – one of the bigger drawdowns of 2024 – emerged as an out-of-sample test of the truVol® Risk Control Engine, as shown below:

Yen Carry Trade Unwind: July 30, 2024 – August 5, 2024



Sources: Nasdaq Global Indexes, Salt Financial.

The yen carry trade unwind was caused by the Bank of Japan raising their interest rates from 0.00% to 0.25% in July of 2024, alongside significant quantitative tightening. By August 2024, large sums of investors were forced to unwind their carry trades, leading to sharp declines in American and Japanese equity markets.

One of the most fascinating aspects of the workings of the truVol® RCE is how it was able to pick up volatility prior to the decline of the

A carry trade is a trading strategy used by investors where large sums of capital are borrowed at low interest rates to invest in assets that will return more than the interest rate owed. It's a very profitable strategy, until interest rates spike as they did in Japan during 2024.

market. As volatility continued to pick up, truVol® took only 2 business days to bring exposure to NDXNQER below 100%. From the start to the end of the drawdown, exposure dropped from 119.1% to 74.9%, and this drop allowed NDXMAX30 to decline less in value than NDXNQER by the end of the unwind despite that initially leveraged exposure.

Conclusion

In conclusion, the NDXMAX30™ Index has effectively managed volatility and exposure using the truVol® Risk Control Engine (RCE). By dynamically adjusting exposure to the Nasdaq-100 Futures Excess Return™ Index (NDXNQER™), it seeks to maintain its 30% volatility target, providing leveraged exposure during low volatility and deleveraged exposure during high volatility drawdown periods.

The analysis of key market drawdowns, including the COVID-19 pandemic, the inflation spike of 2021-2022, and the Yen Carry Trade Unwind of 2024, demonstrates the index's ability to protect against significant losses during heightened volatility. NDXMAX30 outperformed NDXNQER in both bull markets and high volatility scenarios, showcasing its effectiveness in managing risk and enhancing returns.
As the financial landscape evolves, it may offer a robust solution for investors seeking to navigate market uncertainties while capitalizing on growth opportunities. By leveraging advanced volatility control mechanisms, it provides a balanced approach to risk and return, making it a valuable addition to many investment strategies looking to put principal at risk.

For further detail on the methodology of the index, please visit:
NDXMAX30 Index Data

For further information on Nasdaq's Capabilities, please visit:
Nasdaq Global Indexes
Nasdaq Insurance Solutions

Sources: Nasdaq Global Indexes, FactSet, Bloomberg, Salt Financial.
All Data as of 12/31/2024 unless otherwise specified.

About Salt Financial and their award-winning approach to volatility control:

Salt Financial LLC is a leading provider of index solutions and risk analytics, powered by the patent-pending truVol® Risk Control Engine (RCE). We leverage the rich information contained in intraday prices to better estimate volatility to develop index-based investment products for insurance carriers, investment banks, asset managers, and fund sponsors. Salt is committed to collaborating with industry leaders to empower the pursuit of financial outperformance for investors worldwide. For more information, please visit www.saltfinancial.com.