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Nasdaq

U.S. Large-Cap Equity Exposure and the Impact on Volatility

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Nasdaq

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Index Options

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Index

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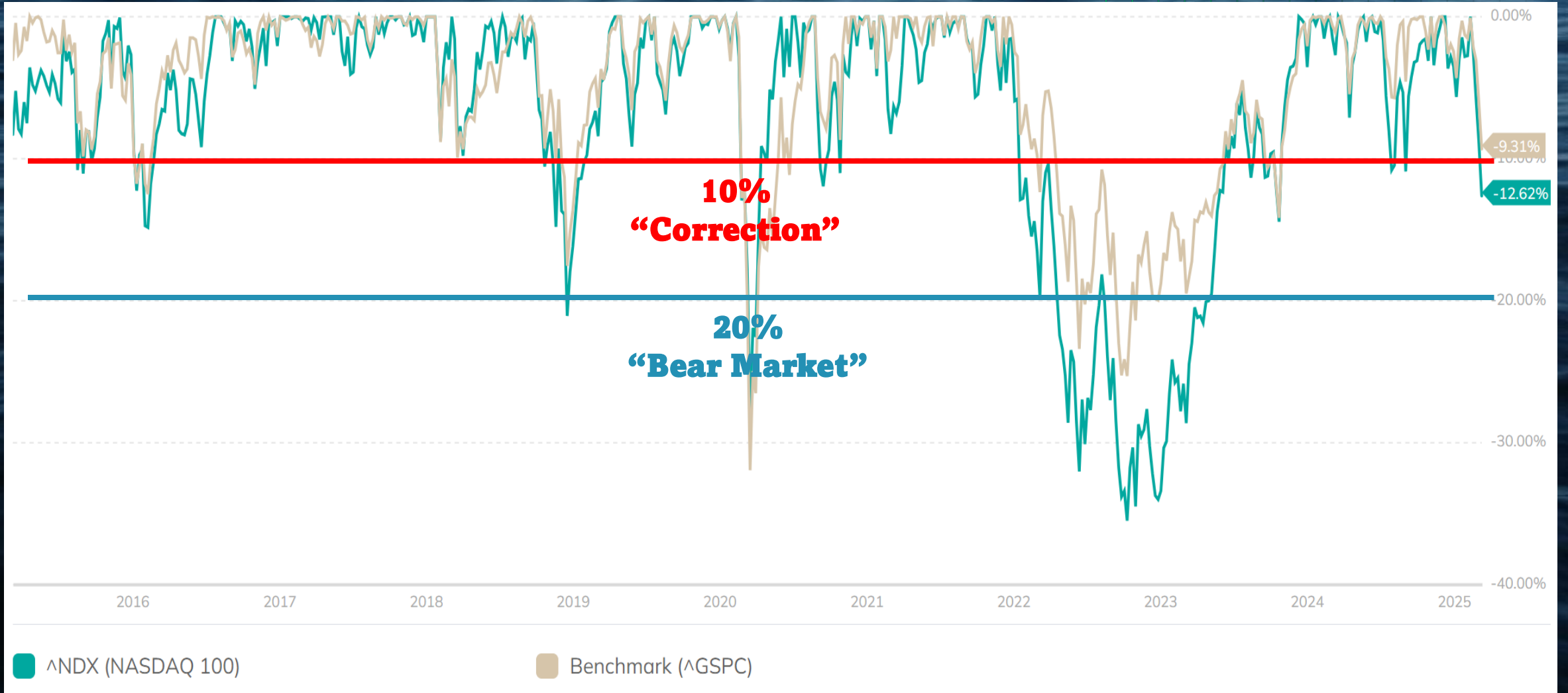
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Current Backdrop = NORMAL (so far)...



Source: Portfolio Labs



2023 Apr 2023 Jul 2023 Oct 2023 2024 Apr 2024 Jul 2024 Oct 2024 2025

^NDX_HV10
30.82

NDX 10-DAY REALIZED VOLATILITY 2023 - PRESENT

25% 10D RV

12% 10D RV

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Source: Cboe LiveVol

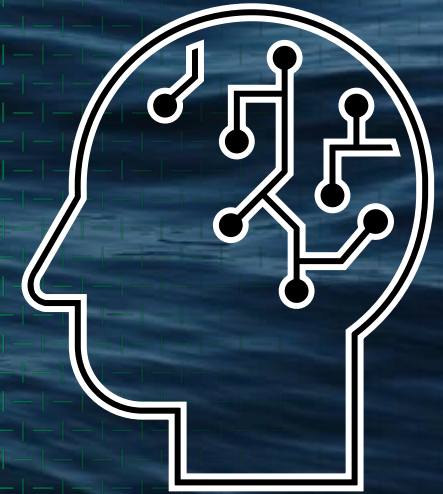
2023 Apr 2023 Jul 2023 Oct 2023 2024 Apr 2024 Jul 2024 Oct 2024 2025

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One Tiny Spark

- “Given the maturation in Technology sector (highly profitable, etc.) & the shift in S&P constituency (more tech) could you see a scenario where Nasdaq-100[®] Index (NDX) realized or implied volatility is at a discount to S&P 500 Index (SPX) volatility measures?”

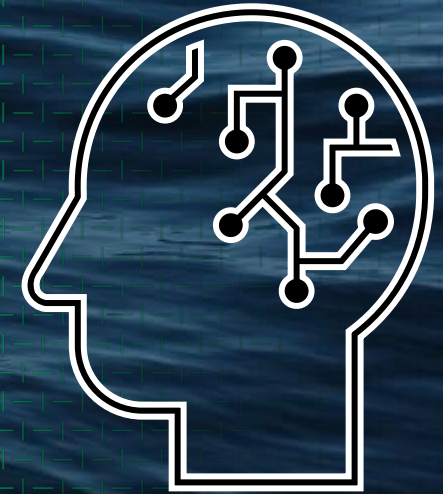
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“Thesis”

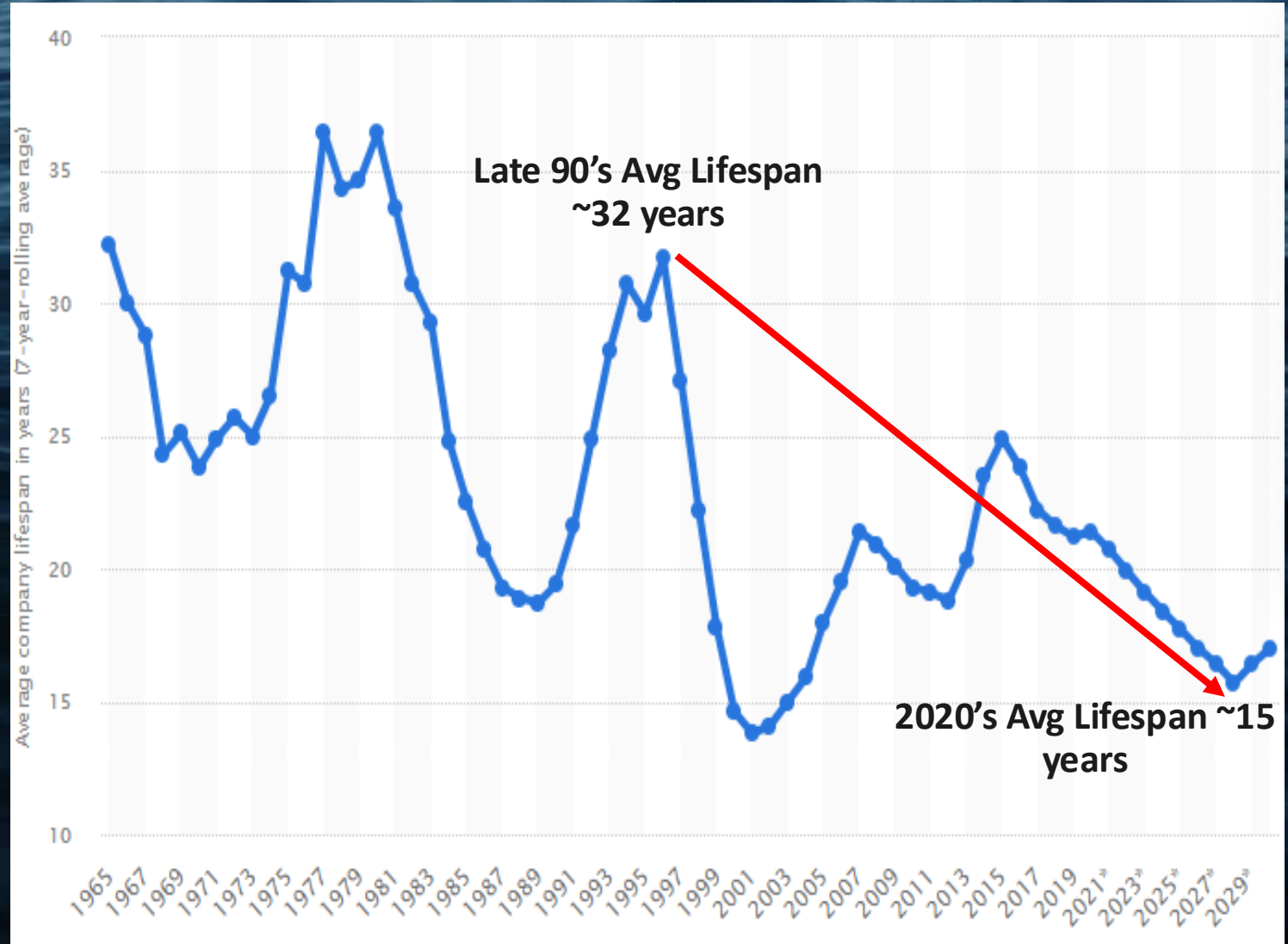
- Not all large-cap equity indexes are the same
- Over longer time frames, index returns are historically driven by a relatively small number of (outsized) winners
- The “default” exposure is broader, but is that inherently better?
- Volatility is the price of admission & it’s directionally agnostic

-An NDX advocate



Longevity: A Thing of the Past?

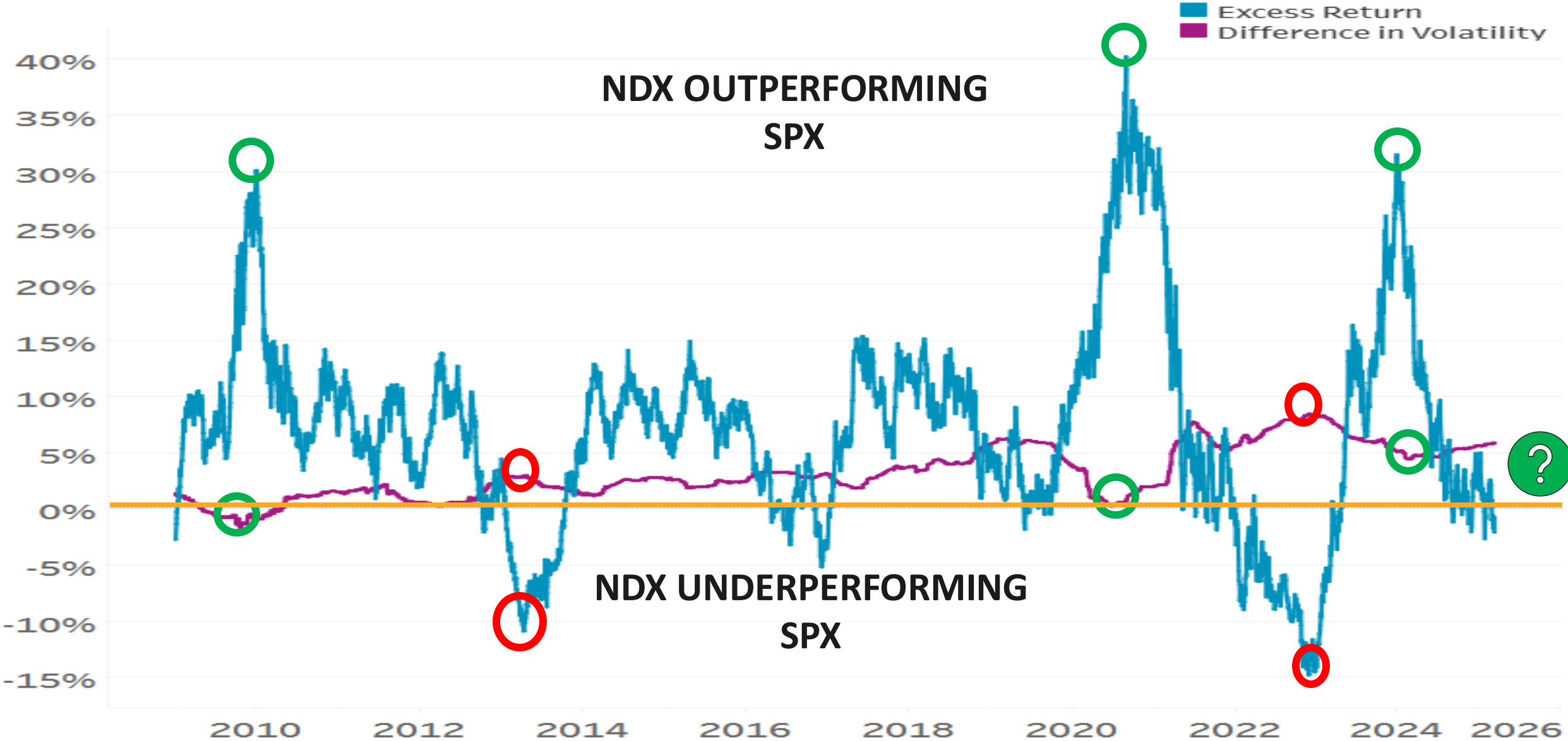
- Statista data shows consistently declining lifespan for average SPX constituent
- The “Information Age” is unique:
 - Rate of change ++
 - Index turnover ++
 - What are the implications?



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Rolling 1-Year NDX Excess Returns vs. Differences in Volatility



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Source: Nasdaq Index Research

Big Picture: Realized Vol View

- On average, NDX realizes +3.3 vols relative to the SPX
- SPX avg. deviation larger in absolute terms
 - NDX avg. dev = +/-6.2 vols
 - SPX avg. dev = +/-6.5 vols
- Implications: Vol Spread (relationship) tends to narrow in crisis & widen in low macro vol markets:
 - Knock on effects for out/underperformance...

Annual Volatility

	NDX	SPX
2007	18.73%	16.05%
2008	42.27%	41.02%
2009	26.46%	27.27%
2010	19.49%	18.06%
2011	23.86%	23.35%
2012	15.46%	12.76%
2013	12.35%	11.07%
2014	14.08%	11.38%
2015	17.86%	15.51%
2016	16.20%	13.11%
2017	10.29%	6.69%
2018	22.77%	17.10%
2019	16.36%	12.49%
2020	36.60%	34.69%
2021	18.57%	13.11%
2022	32.52%	24.19%
2023	18.08%	13.08%
2024	18.25%	12.67%
2025	22.22%	15.83%

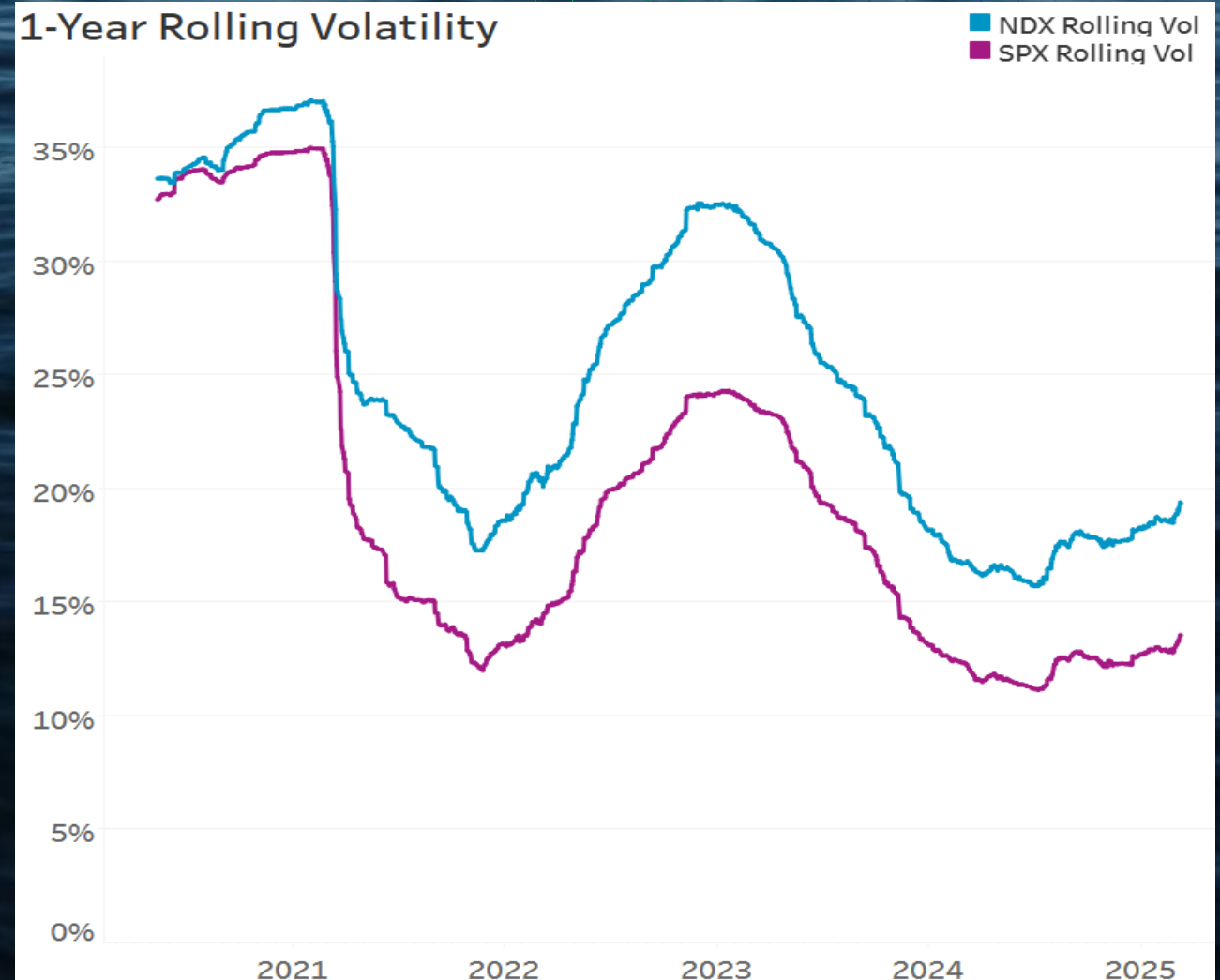
Source: Nasdaq Index Research



Overview

Longer-Term Realized Vol

- NDX RV is nearly always $>$ SPX RV
- Moves in the vol spread tend to accompany periods of meaningful out/under performance
 - Causation vs. Correlation?
 - What's the impact of overall market correlations?



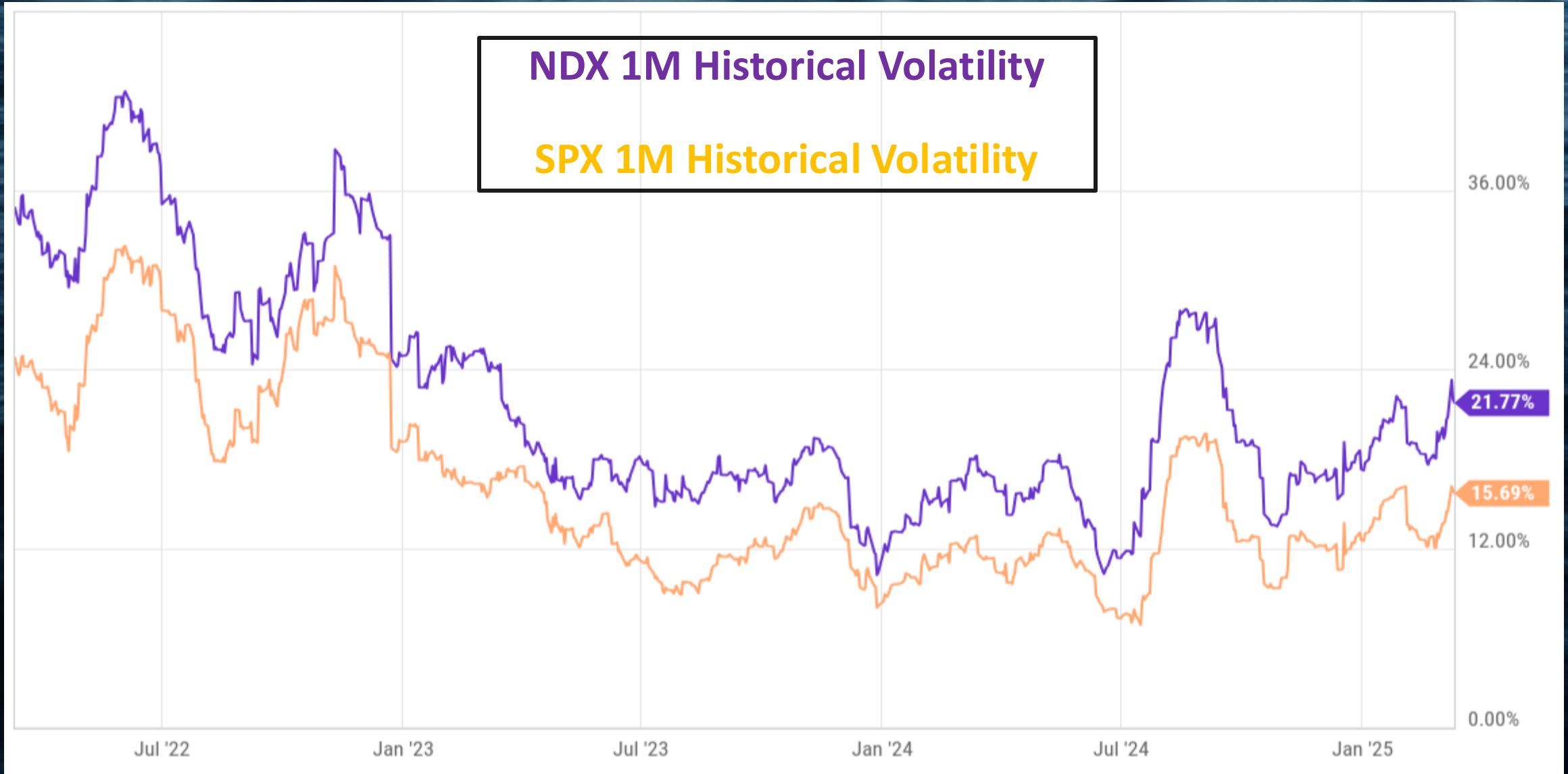
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Source: Nasdaq Index Research

Historical Volatility

1M Realized Volatility

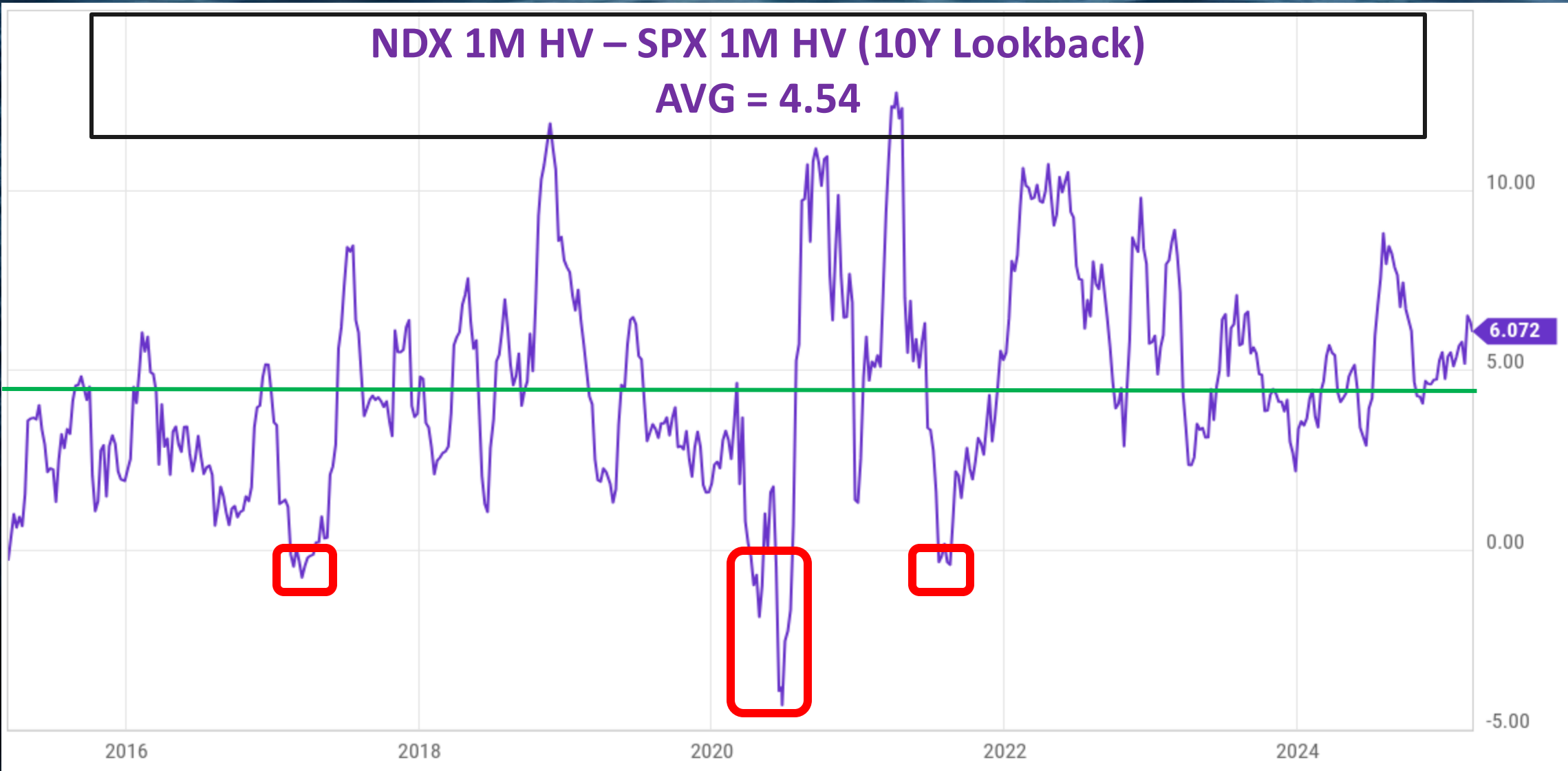
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Historical Volatility

Long-Term Realized Vol Spread

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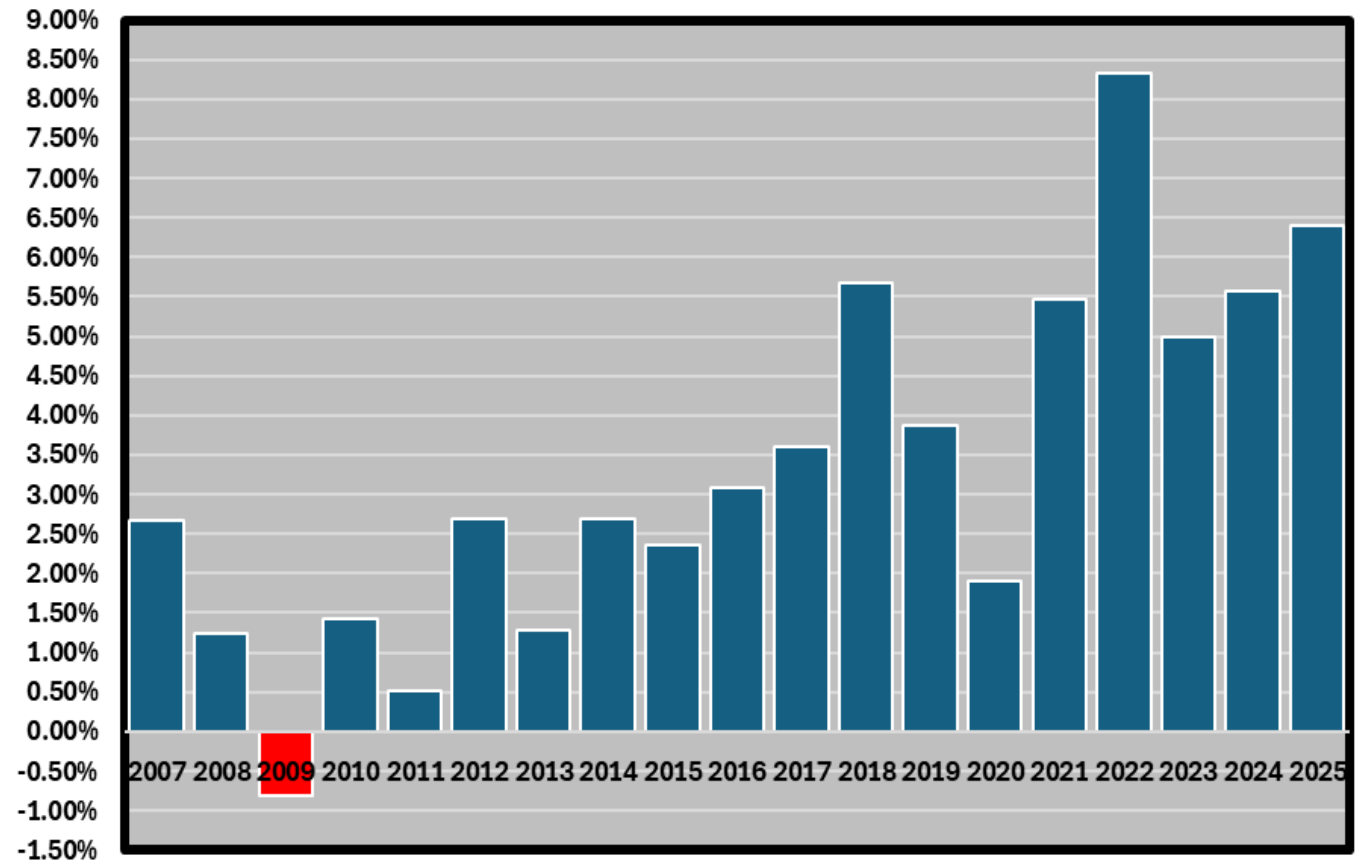
Source: YCharts



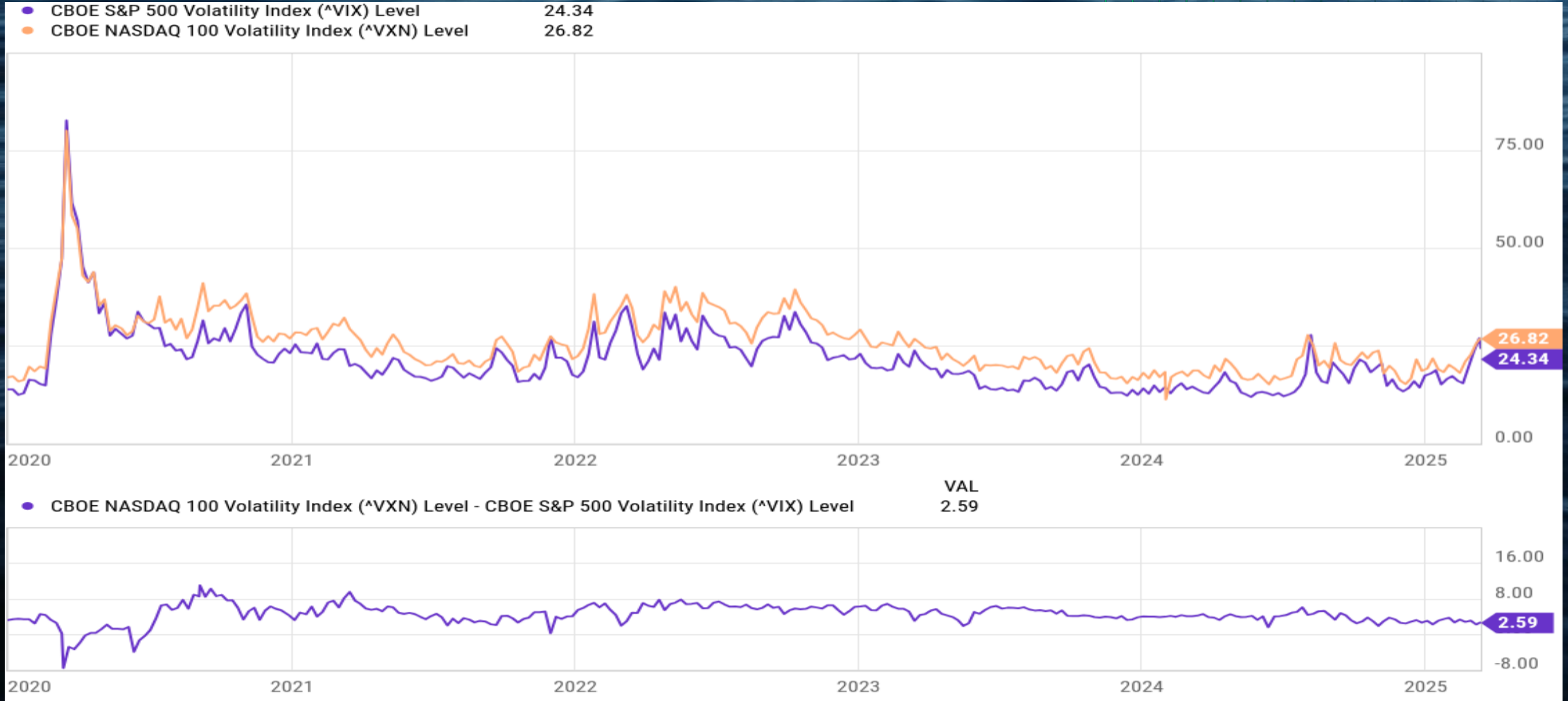
Average Spread Continues to Widen

- Annual realized vol spread generally wider post pandemic
- In general, spread narrows during risk off markets:
 - Higher correlations = narrower spreads
 - Lower correlations = wider spreads
 - Implied + realized correlations made historic lows (late 2024)

Average Vol Spread by Year



Forward Vol Relationship



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Source: YCharts



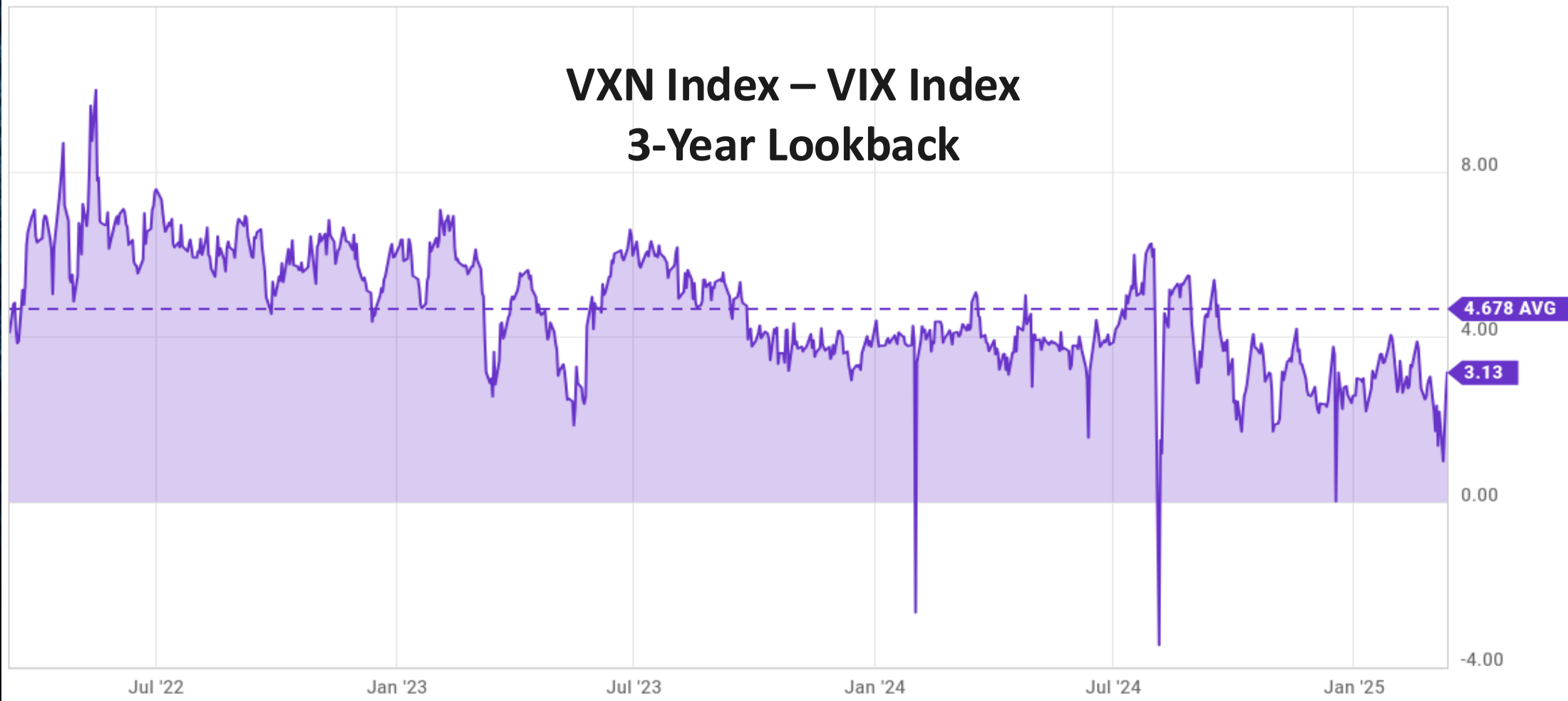
Forward Vol Relationship

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CBOE NASDAQ 100 Volatility Index (^VXN) Level - CBOE S&P 500 Volatility Index (^VIX) Level 3.13

VXN Index – VIX Index 3-Year Lookback

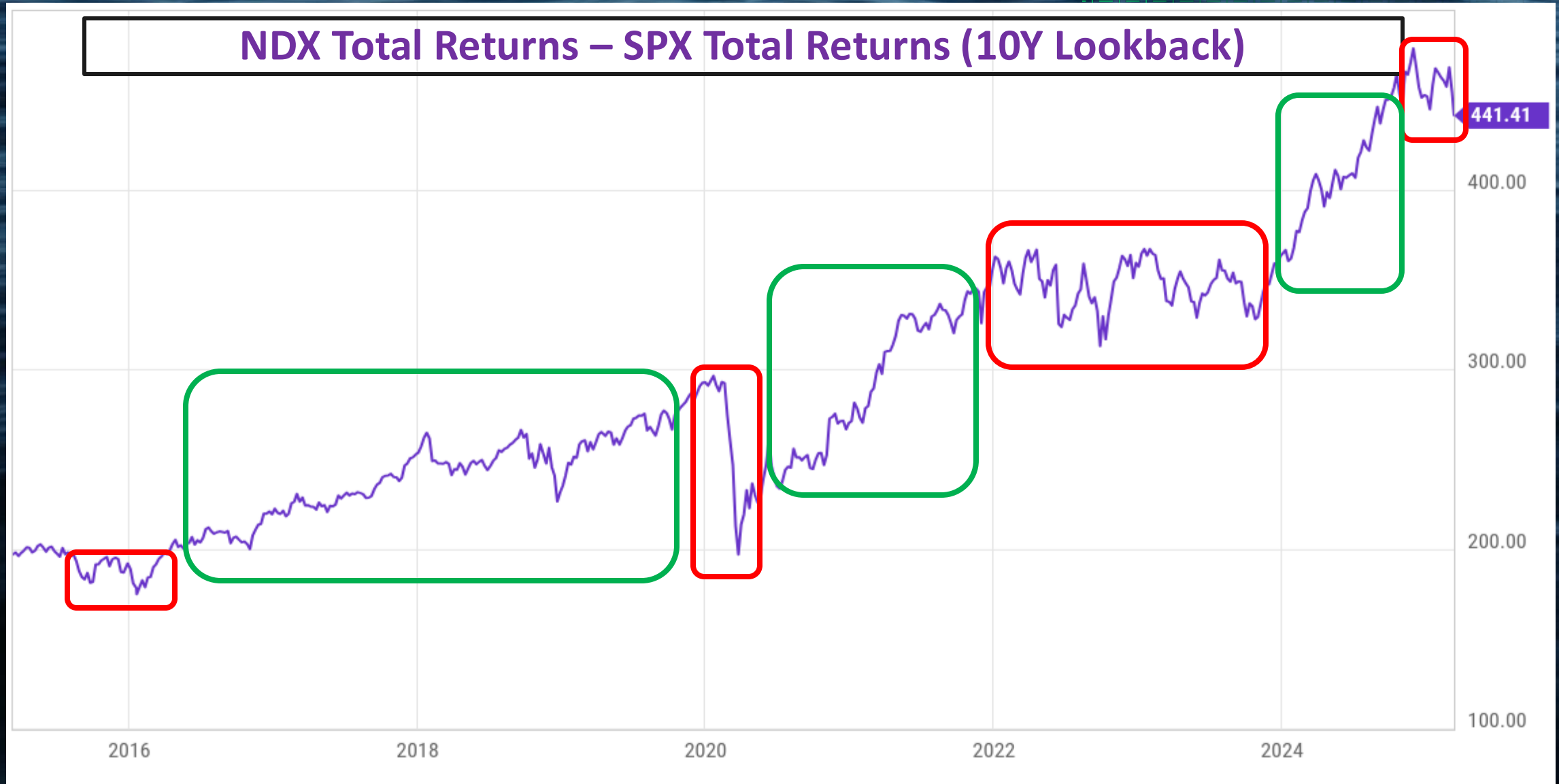


Source: YCharts



Index Total Return Spread

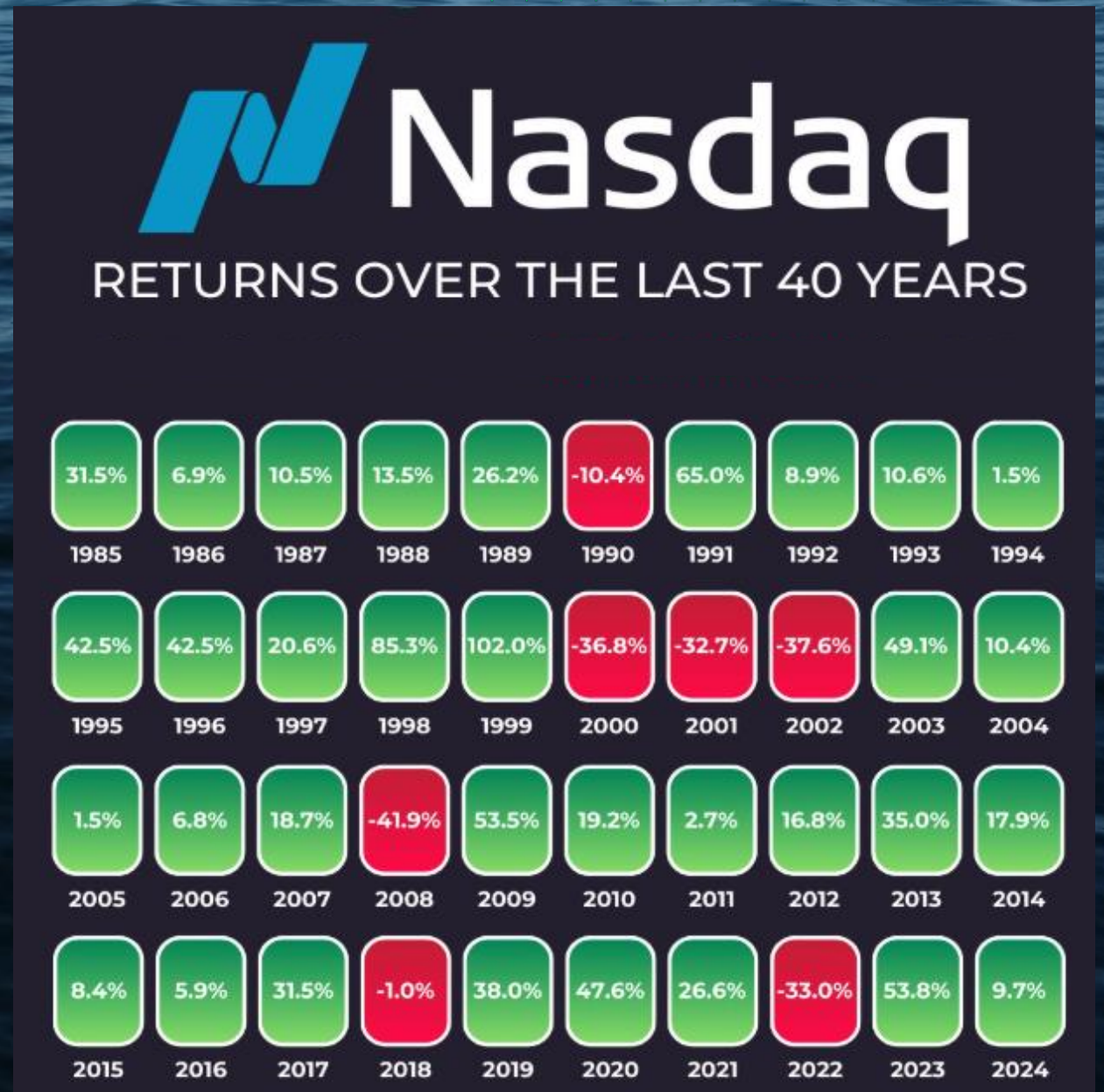
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Evolution

Long-Term Performance

- Your reference asset matters & diversification is important... is there a point at which there's diminishing marginal returns (from diversification)?
- Index exposure can be managed over discrete time frames w/ optionality



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Source: Nasdaq Index Research

Conclusion

Questions?

Contact Us:

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Thank you!

