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Nasdaq

Are Markets Bound for a 2024 Hangover? What History and Index Options Values Tell Us About Expectations for the New Year

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Nasdaq

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As with all investments, your capital is at risk



2024 – A Hangover Year?: What History & Index Option Values Tell Us About Expectations into a New Year.

Interactive Brokers Webinar
January 13, 2024

Kevin Davitt

*Nasdaq – Head of Index Options
Content*

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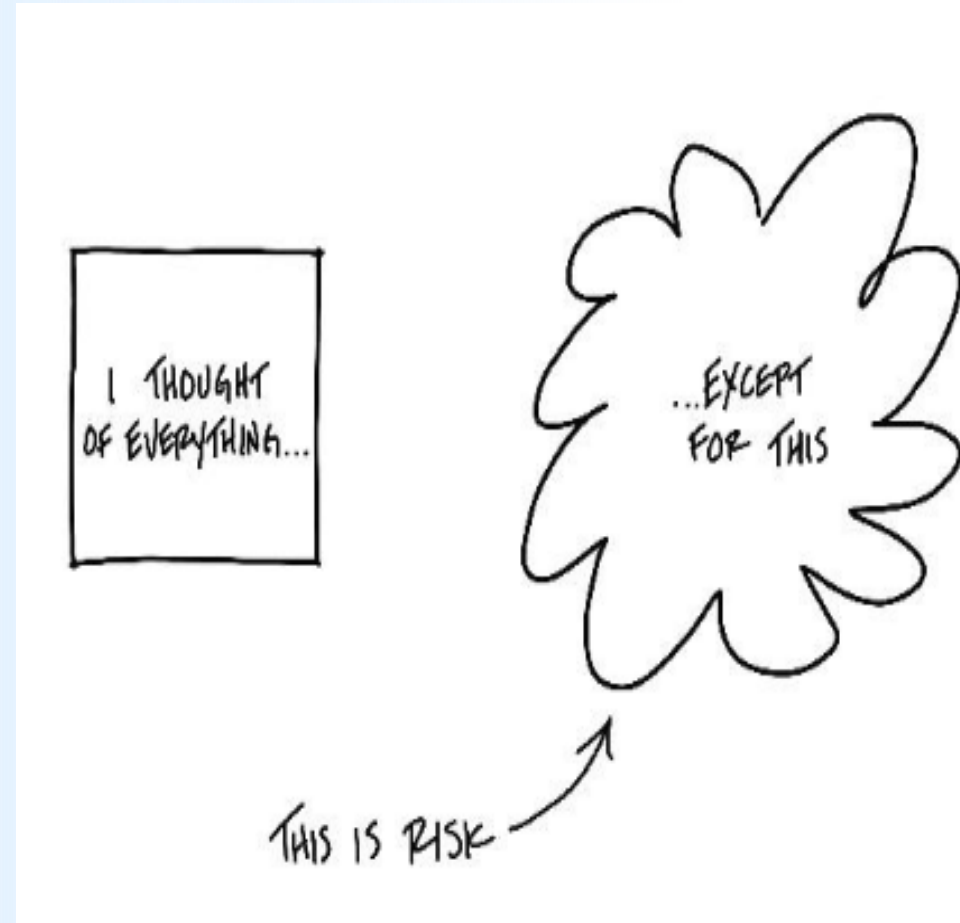
What's Risk Mean to You?

Risk is omnipresent – you will not eliminate it.

We can measure it in a variety of ways (volatility, etc.).

There's a natural desire to understand & quantify, but the real world (including capital markets) involves non-quantifiable risks.

Index options are (arguably) one of the best ways to manage portfolio risks.



Source: Behavior Gap

A Look Back

Relative Performance

Nasdaq-100® best annual performance (+55.1% TR) since 1999.

Massive outperformance from Large-Cap Growth relative to Value (1978).

10Y yield unchanged on YoY basis (with significant calendar year volatility (MOVE Index)).

The U.S. economy did not fall into a recession and the forecast is for a “soft landing”.

Small caps dramatically underperformed despite late year “catch up”.

U.S. indices outperformed global (particularly China).

US Benchmarks	2023 %	Q4 %	Q3 %	Q2 %	Q1 %
Nasdaq 100	55.1	14.6	-2.9	15.4	20.8
NASDAQ	44.7	13.8	-3.9	13.1	17.0
NDX Equal Weight	34.1	13.5	-2.5	6.4	13.9
S&P 500	26.3	11.7	-3.3	8.7	7.5
Russell 3000	25.9	12.1	-3.3	8.4	7.2
Russell 2000	16.9	14.0	-5.1	5.2	2.7
S&P Midcap 400	16.4	11.7	-4.2	4.8	3.8
Dow Jones Industrials	16.2	13.1	-2.1	4.0	0.9
SPX Equal Weight	13.8	11.9	-4.9	4.0	2.9
Russell MicroCap	9.3	16.1	-7.9	5.3	-2.9

*** Percentages represent total return

Source: Nasdaq



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A Broader Look

Shifting Financial Conditions in 2023

Mostly “middling” returns for risk assets until the end of October.

Sentiment/expectations shifted into/following the Nov 1 FOMC statement.

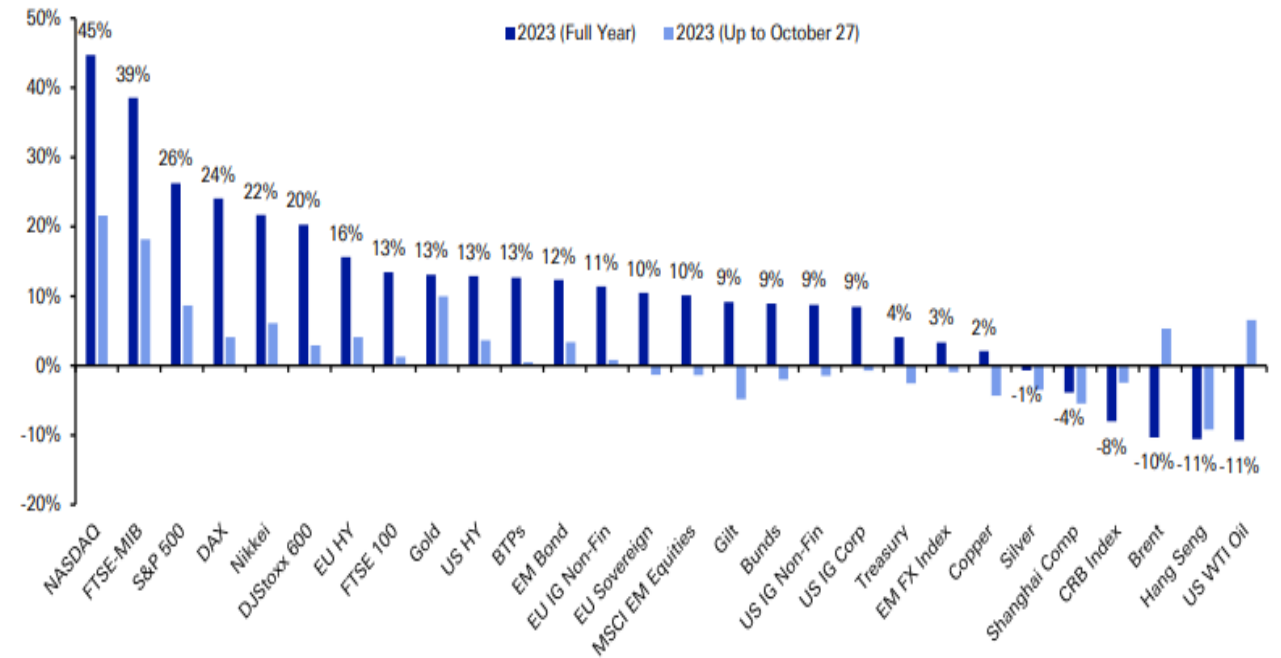
Financial Conditions started to ease.

US 10Y Treasury yields moved from ~5% (10/19) to as low as 3.8% (12/27).

Combination boosted risk assets in last two months of calendar year.

Some of the excitement is being walked back early in 2024.

Figure 1: Returns for various financial assets over 2023 (USD terms)



Source: Bloomberg Finance LP, Deutsche Bank
Note: Equities, credit and bonds shown on total return basis, FX and commodities shown on spot return basis

Source: Midweek Macro – Michael Normyle/Nasdaq



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A Look Back...Further

Annual NDX Price Performance

Averages can be deceiving, but long-term average annual returns for NDX are $\sim +17\%$.

Relatively few years end up reflecting the “average”.

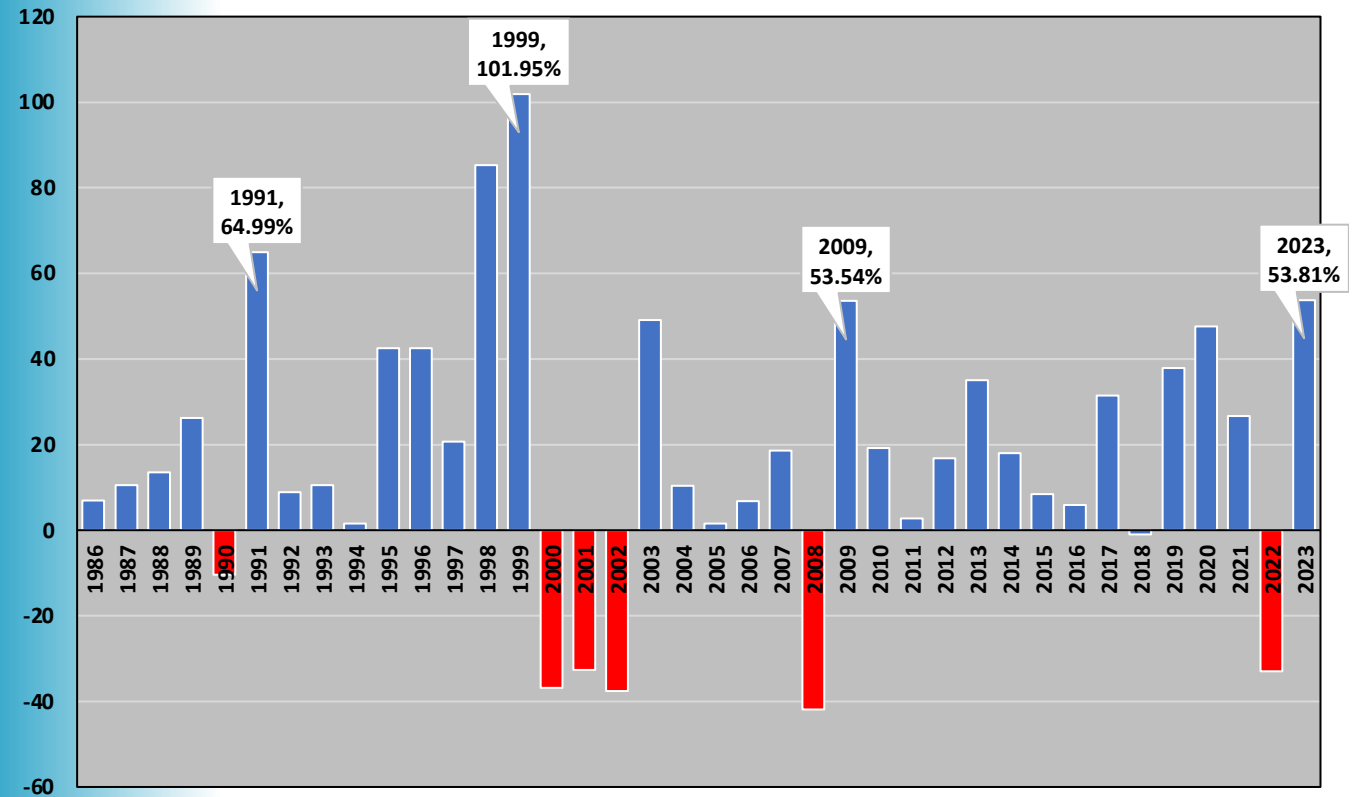
Far more up years than down.

Generally, excellent performance following difficult years (2023 “normal” in that respect).

Could there be a 2000 – 2003 stretch for NDX?

What dynamic would drive a significant decline?

NDX Price Returns Annually



Source: Nasdaq



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NDX vs. SPX (1986 – 2023)

Benefit of “Fat Tails”?

Average S&P 500 annual returns $\sim +9.94\%$ (1986 – 2023).

S&P 500 annual returns cluster more closely around $\pm 10\%$ when compared to Nasdaq-100® Index.

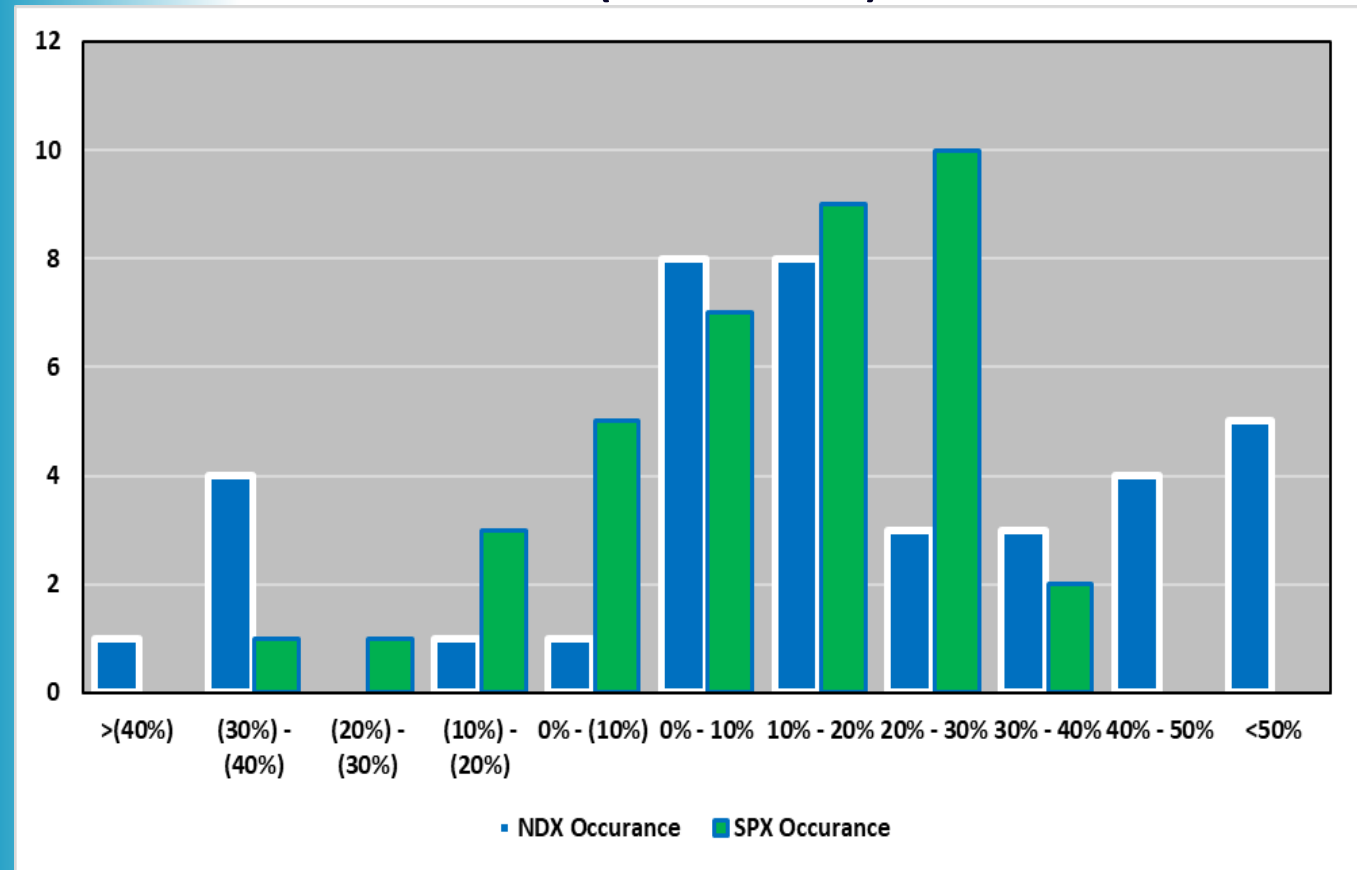
Probability of significant up or down year is historically higher in NDX.

Construction/methodology largely explain the annual performance differences.

Example: 9 calendar years with $+40\%$ or more compared to 0 for S&Ps.

In fairness: 5 calendar years with NDX -30% or more compared to 1 (2008) for S&Ps.

Decile Buckets NDX & SPX (1986 – 2023)



Source: Nasdaq & S&P Global Indices



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2023 Analysis

Rates Unchanged...

Reminder: NDX excludes Financials.

The Nasdaq-100® was impacted by the (regional) banking crisis, but less so...as a function of construction.

Rates/Financial conditions (which have eased dramatically in recent months) impact Tech sector (growth companies).

Unprofitable tech has lagged long term but played catch up in Q4.

Cross Index Option Spreads could be compelling if thesis is laggards become leaders.

Example: Selling longer-term RUT put/call spreads to own longer-term NDX put/call spreads.



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2020 - 2023 Analysis

Mean Reversion Trade?

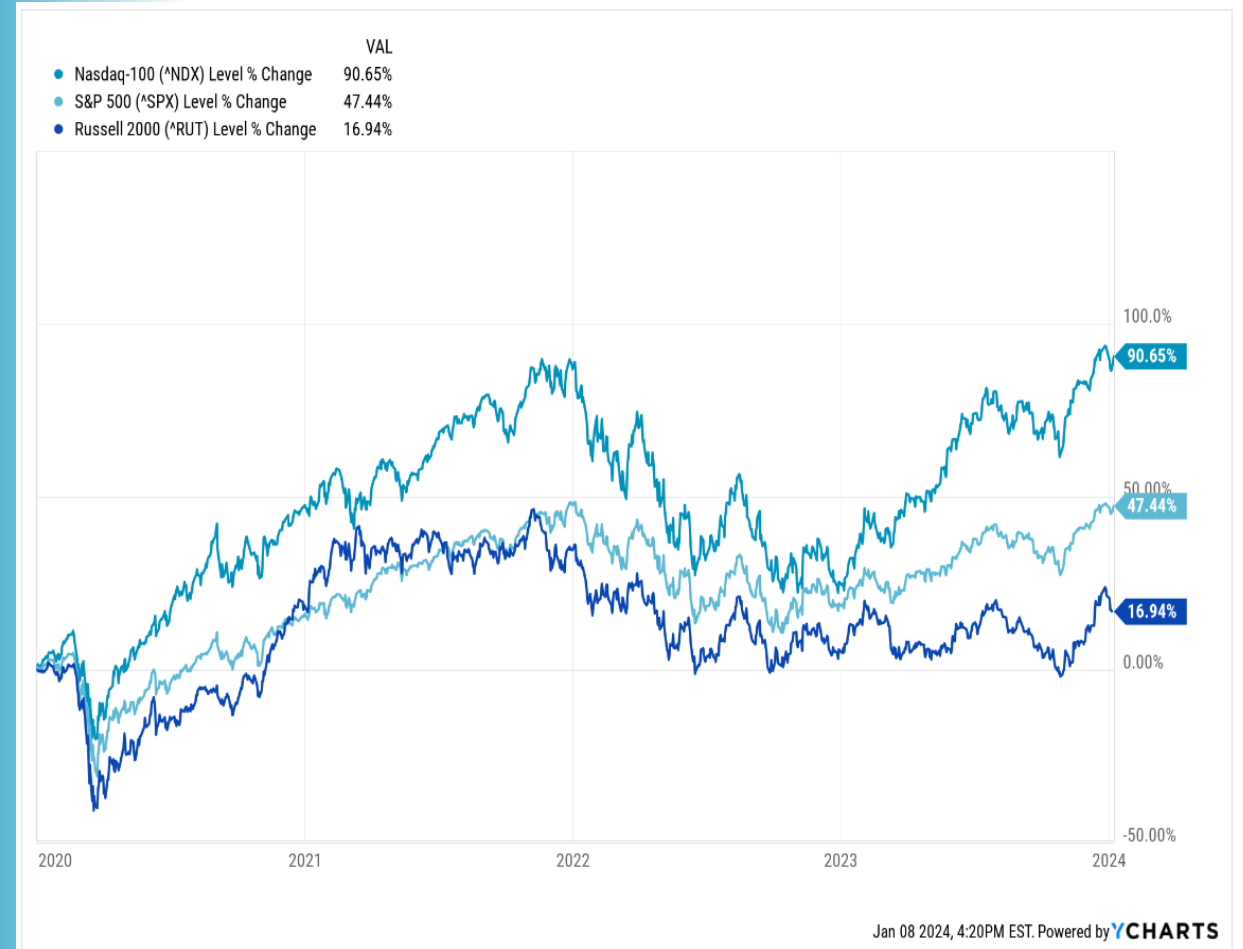
NDX returns 2020 – 2023 ~double that of SPX and 5x the small caps.

Reminder: NDX lagged meaningfully for full-year 2022.


The Small caps have underperformed for many years with brief periods of outperformance.

What if “leaders become laggards in 2024”?

Could that thesis be expressed with options?



Source: YCharts

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2020 - 2023 Vol Analysis

Opportunity in Index Volatility?

SPX forward vol measures typically at a discount to NDX/RUT forward volatility.

S&P 500 Realized Volatility Measures:

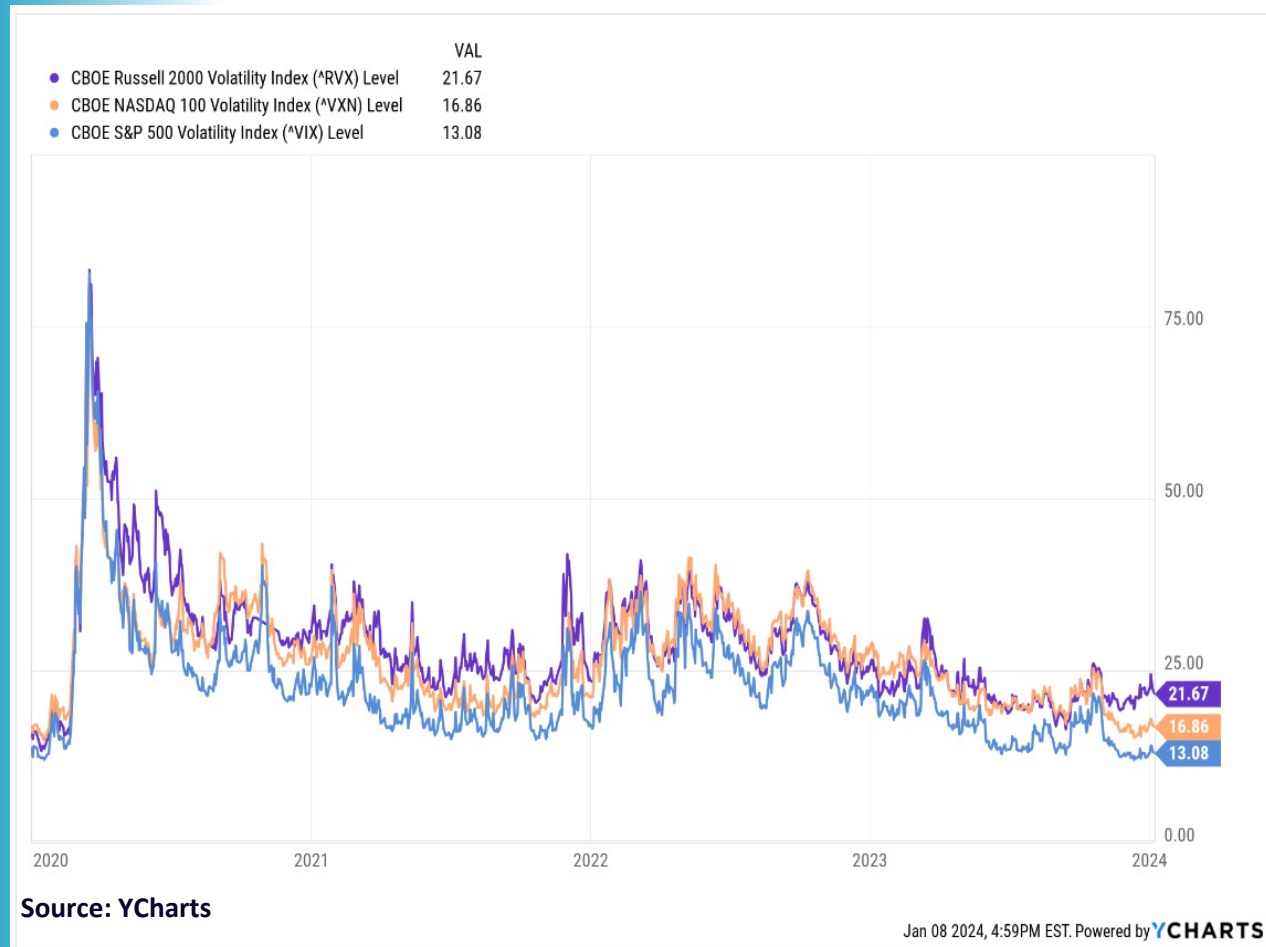
- 90D = 11.8%
- 180D = 11.1%
- 360D = 16.9%


NDX Realized Volatility Measures:

- 90D = 15.9%
- 180D = 16.5%
- 360D = 22.5%

RUT Realized Volatility Measures:

- 90D = 21.7%
- 180D = 19.6%
- 360D = 22.3%



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NDX Options Vols

At/Near Post-Covid Lows

Visual:

- Purple = NDX 6M HV
- Pink = NDX 1Y HV
- Orange = NDX 6M IV
- Yellow = NDX 1Y IV

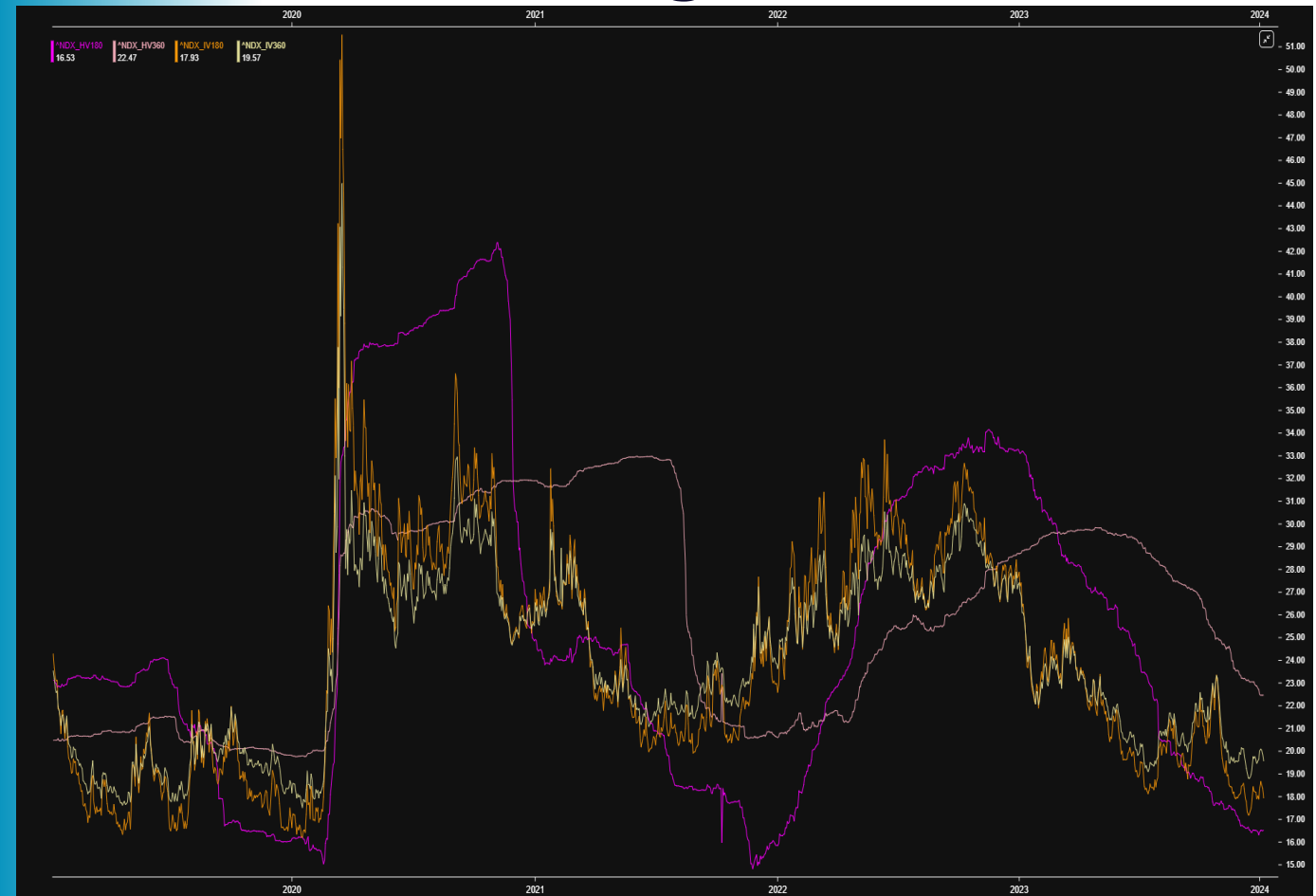
Questions:

- Do you anticipate HV move back to pre-Covid levels (slightly lower)?
- Do you consider longer term Index option strategies?
- Do you understand the vega sensitivity of longer dated options?

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NDX Long Term Vols



Source: Cboe Live Vol Pro

NDX Options Analysis

Information in Options Market

There's tremendous information embedded in Index options if you understand how to "read" it.

Skew plots the relationship in volatility terms of different strikes and expiries.

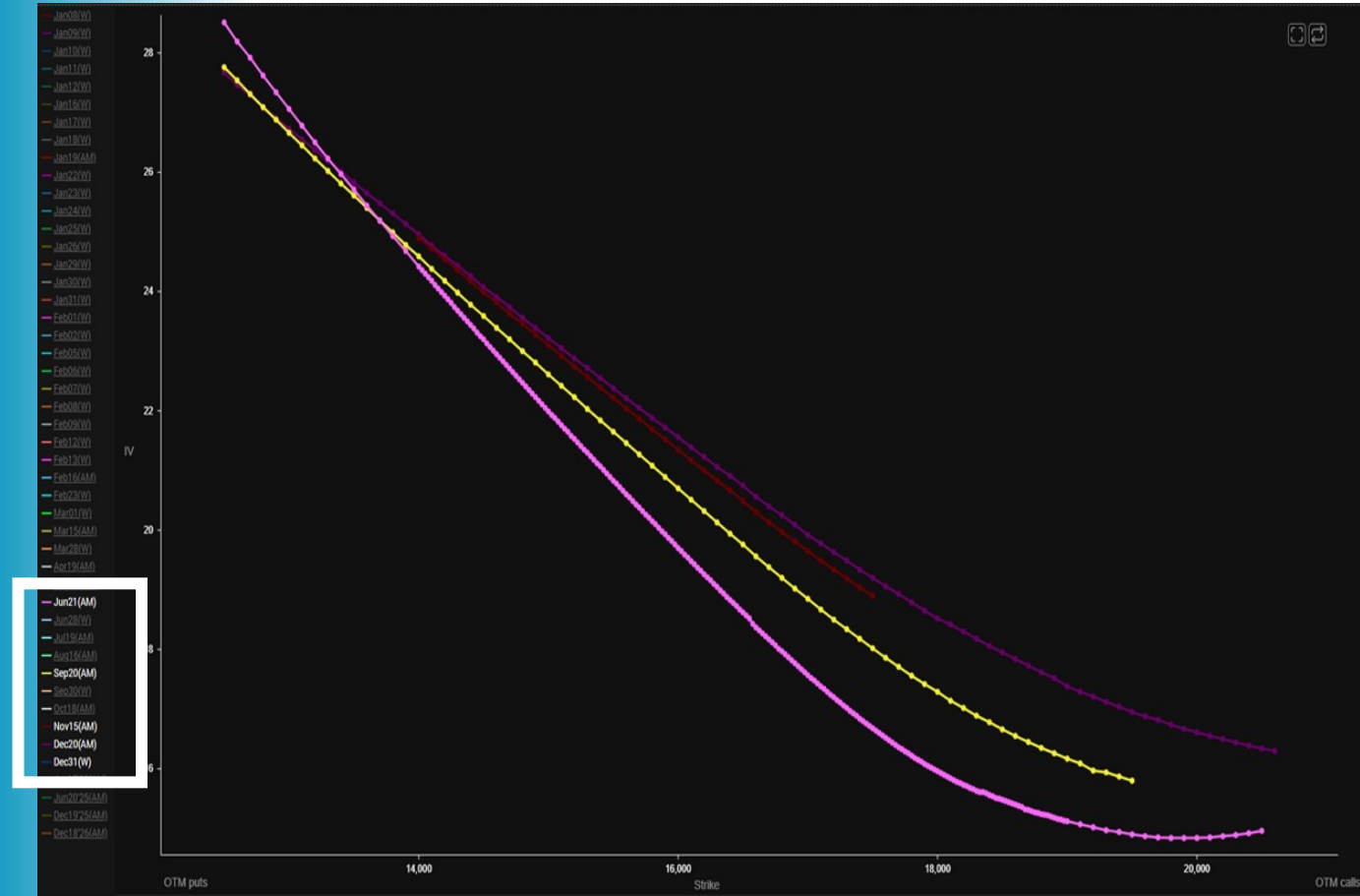
Longer dated options tend to exhibit a "flatter" skew than shorter dated alternatives.

Index options values driven by relevant futures price as opposed to spot market.

Example:

- NDX spot = 16,650
- June NQ futures = 16,985
- Dec NQ futures = 17,350

NDX Out Month Skew



Source: Cboe Live Vol Pro

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NDX Options Analysis

Information in Options Market

Visual plots (mostly) shorter dated NDX skew and includes EOY skew for comparison.

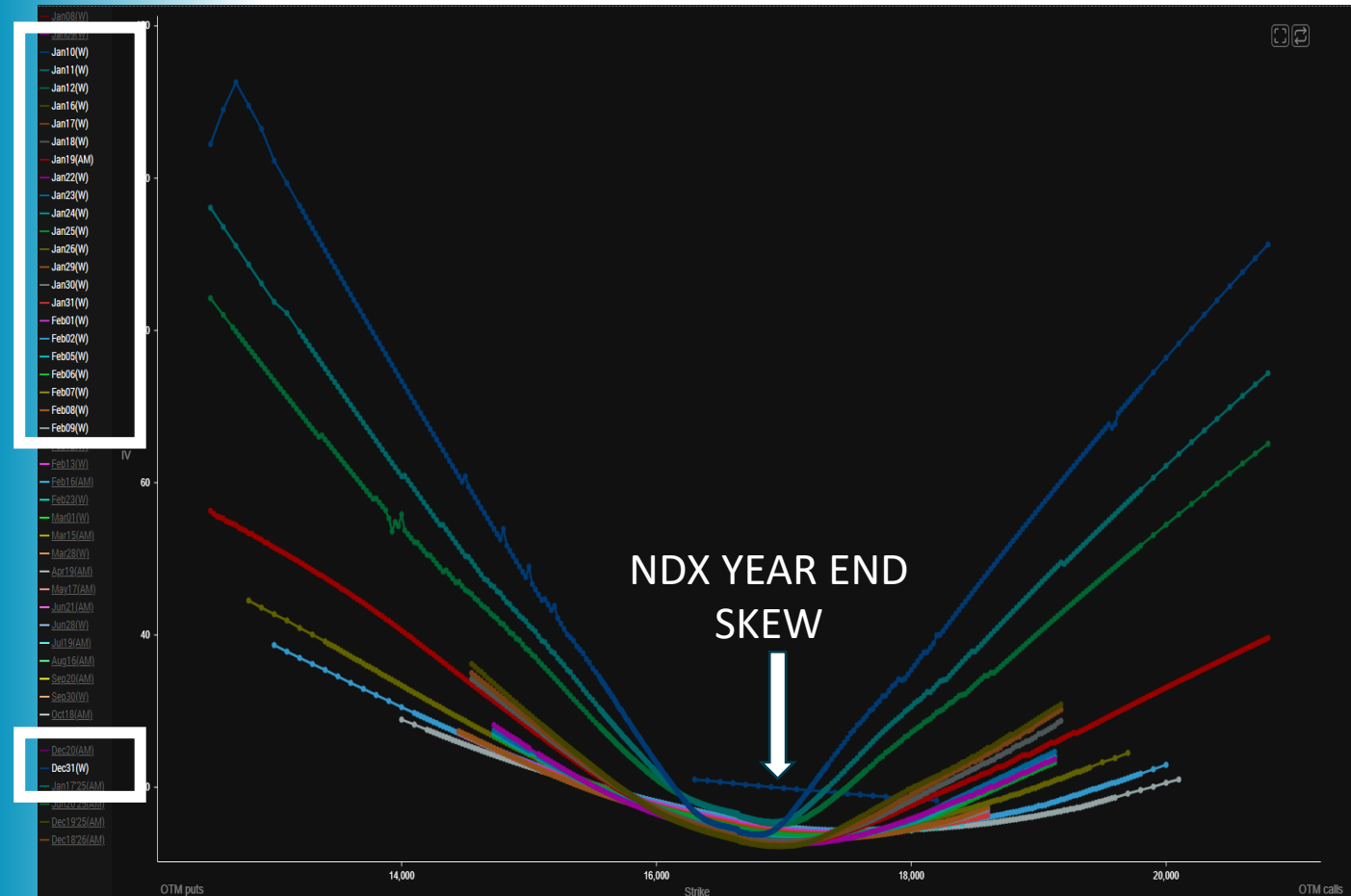
Clearly skew is much more pronounced for near-dated options.

Over time, vol tends to move toward its long term mean/average.

Example:

- NDX spot = 16,650
- June NQ futures = 16,985
- Dec NQ futures = 17,350

NDX Skew Comparison



Source: Cboe Live Vol Pro

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NDX NASDAQ 100 Stock Index NASDAQ
 16644.64 -338.66 -2.08% Ask Bid

Market Closed 16 hours till open. Showing last prices.

Options Wizard View Calls & Puts SMART

CALLS				PUTS				
Bid	Ask	Last	Delta	Strike	Bid	Ask	Last	Delta
71.30	82.80	69.00	0.072	22000	4498.80	4532.30	C4824.27	-0.923
20	7	+6.70			2	2		
82.50	94.10	C71.40	0.080	21800	4319.50	4352.80	C4642.40	-0.915
20	7				2	2		
95.20	107.20	C81.85	0.090	21600	4141.80	4174.90	C4461.89	-0.905
20	6				2	2		
109.90	122.10	C93.60	0.100	21400	3966.10	3998.90	C4282.68	-0.895
20	6				2	2		
126.60	139.20	C107.15	0.112	21200	3792.50	3825.00	C4105.27	-0.884
20	6				2	2		
145.80	158.70	C123.05	0.124	21000	3621.40	3653.50	C3930.20	-0.871
24	4				2	2		
156.30	169.40	C131.70	0.131	20900	3536.80	3568.70	C3843.37	-0.864
20	4				2	2		
168.30	180.80	C140.95	0.138	20800	3452.90	3484.60	C3757.14	-0.857
4	4				2	2		
180.40	192.90	C150.80	0.146	20700	3369.70	3401.20	C3671.51	-0.849
4	4				2	2		
192.30	205.90	C161.25	0.154	20600	3287.40	3318.60	C3586.48	-0.841
20	4				2	2		
206.70	219.70	C172.35	0.163	20500	3205.90	3236.90	C3502.10	-0.832
4	4				2	2		
220.70	234.30	C184.40	0.172	20400	3125.20	3156.00	C3418.66	-0.823
6	4				2	2		
236.20	249.90	C197.05	0.181	20300	3045.40	3076.00	C3335.83	-0.814
6	4				2	2		
252.10	266.30	C210.65	0.190	20200	2966.60	2996.90	C3253.99	-0.805
6	4				2	2		
269.10	283.80	C224.75	0.200	20100	2888.80	2918.80	C3172.57	-0.796
20	4				2	2		
287.80	302.30	C240.25	0.210	20000	2811.90	2841.70	C3092.59	-0.786
5	4				2	2		
306.70	322.60	C255.90	0.220	19900	2736.20	2765.70	C3012.78	-0.776
24	25				2	2		

CALLS				PUTS				
Bid	Ask	Last	Strike	Bid	Ask	Last	Delta	
327.10	343.00	C272.80	0.230	19800	2661.50	2690.70	C2934.18	-0.765
20	2			2	2			
348.60	364.80	C291.15	0.241	19700	2588.00	2616.90	C2857.04	-0.754
20	4			2	2			
371.30	387.20	C309.90	0.252	19600	2515.70	2544.30	C2780.31	-0.743
20	2			2	2			
395.20	411.30	C329.05	0.263	19500	2444.50	2472.80	C2703.98	-0.732
20	3			2	1			
420.40	437.20	C349.98	0.274	19400	2374.60	2402.60	C2628.43	-0.721
22	4			2	2			
446.80	463.00	C372.99	0.286	19300	2306.00	2333.70	C2556.96	-0.709
20	4			2	2			
474.40	491.10	C395.99	0.298	19200	2238.60	2266.00	C2484.48	-0.697
22	2			2	2			
503.40	520.20	C420.90	0.310	19100	2172.50	2199.60	C2413.91	-0.685
22	4			2	2			
533.70	551.20	C446.40	0.323	19000	2107.80	2134.60	C2343.93	-0.673
22	2			2	2			
565.40	582.60	C474.14	0.335	18900	2044.40	2070.90	C2276.19	-0.660
20	2			2	2			
598.40	615.90	C505.23	0.348	18800	1982.40	2008.60	C2211.79	-0.647
22	2			2	2			
632.80	650.50	C536.32	0.360	18700	1921.80	1947.60	C2147.40	-0.635
20	2			2	2			
668.50	686.50	C567.41	0.373	18600	1862.50	1888.00	C2083.01	-0.622
20	2			2	2			
705.70	724.00	C601.36	0.386	18500	1804.70	1829.80	C2021.48	-0.609
20	2			2	2			
744.20	762.80	C635.32	0.399	18400	1748.20	1773.00	C1959.96	-0.596
20	2			2	2			
784.10	803.30	C670.62	0.412	18300	1693.10	1717.50	C1899.77	-0.583
4	2			2	2			
825.40	844.90	C705.91	0.425	18200	1639.30	1663.50	C1839.59	-0.570
4	2			2	2			

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Delta Implied Probabilities
NDX Standard Dec
Expiration
Spot: 16,655
Futures: 17,350

21,600 = ~25% OTM = 9%
 20,000 = ~15% OTM = 21%
 18,200 = ~5% OTM = 42.5%

16,500 = ~5% OTM = 38%
 14,700 = ~15% OTM = 20%
 13,000 = ~25% OTM = 11%

25 Delta Risk Reversal =
 19,600C v. 15,300P
 C Value = ~377
 P Value = ~605

Source: IBKR Platform

CALLS				PUTS				
Bid	Ask	Last	Delta	Strike	Bid	Ask	Last	Delta
1982.70	2069.40	C1797.98	0.675	16100	801.40	818.60	C926.55	-0.321
2	2			2	22			
2049.60	2076.60	C1882.57	0.685	16000	773.20	790.30	C895.65	-0.311
2	2			2	22			
2117.50	2144.70	C1927.25	0.694	15900	745.80	762.80	C864.85	-0.301
2	2			2	22			
2186.10	2213.60	C1992.60	0.703	15800	719.30	736.10	C834.72	-0.292
2	2			2	22			
2255.60	2283.30	C2059.16	0.713	15700	693.70	710.30	C805.80	-0.283
2	2			2	22			
2325.90	2353.80	C2126.44	0.721	15600	668.80	685.30	C777.60	-0.274
2	2			2	20			
2397.00	2425.10	C2194.37	0.730	15500	644.70	661.00	C750.25	-0.265
2	2			2	12			
2468.80	2497.20	C2263.65	0.739	15400	621.60	637.60	C723.85	-0.257
2	2			2	20			
2541.40	2570.00	C2333.43	0.747	15300	598.80	614.80	C698.15	-0.248
2	2			2	20			
2614.60	2643.50	C2404.02	0.755	15200	576.90	592.80	C673.25	-0.240
2	2			2	20			
2688.60	2717.60	C2475.40	0.763	15100	555.60	571.40	C649.15	-0.232
2	2			2	20			
2763.20	2792.50	C2547.49	0.771	15000	535.20	550.70	C625.76	-0.224
2	2			2	20			
2838.50	2868.00	C2620.44	0.778	14900	515.30	530.70	C603.23	-0.217
2	2			2	20			
2914.50	2944.10	C2693.40	0.786	14800	496.80	511.30	C580.71	-0.209
2	2			4	20			
2991.00	3020.90	C2766.35	0.793	14700	478.00	492.60	C558.18	-0.202
2	2			5	20			
3068.20	3098.20	C2841.15	0.800	14600	459.70	474.40	C537.50	-0.195
2	2			6	20			
3145.90	3176.10	C2916.94	0.807	14500	442.60	456.80	C517.80	-0.189
2	2			5	24			
3224.30	3254.70	C2992.84	0.813	14400	425.60	439.90	C498.22	-0.182
2	2			5	20			

CALLS				PUTS				
Bid	Ask	Last	Delta	Bid	Ask	Last	Delta	
3543.10	3574.10	C3004.04	0.839	14000	363.30	372.50	372.10	-0.156
2	2			3	5	-55.40		
3624.20	3655.30	C3083.20	0.845	13900	349.00	363.00	C411.18	-0.151
2	2			6	20			
3705.60	3736.90	C3162.80	0.850	13800	334.80	349.20	C395.29	-0.146
2	2			4	20			
3787.60	3819.00	C3242.90	0.855	13700	321.90	335.80	C379.91	-0.140
2	2			6	20			
3870.10	3901.60	C3323.80	0.860	13600	308.90	322.90	C365.33	-0.135
2	2			4	20			
3953.00	3984.70	C3404.70	0.865	13500	296.60	310.40	C350.75	-0.130
2	2			4	20			
4036.40	4068.10	C3486.30	0.870	13400	285.60	298.40	C336.87	-0.125
1	2			6	20			
4120.10	4152.00	C3568.40	0.875	13300	273.30	286.80	C323.49	-0.121
2	2			6	20			
4204.30	4236.30	C3651.43	0.879	13200	262.30	275.70	C311.04	-0.116
2	2			4	24			
4288.90	4321.00	C4034.47	0.884	13100	251.70	264.90	C298.59	-0.112
2	2			6	20			
4373.90	4406.10	C4117.50	0.888	13000	241.80	254.50	C286.14	-0.107
2	2			4	20			
4459.30	4491.60	C4201.30	0.892	12900	231.90	244.50	C274.46	-0.103
2	2			4	20			
4545.10	4577.40	C4285.60	0.896	12800	222.40	234.90	C263.28	-0.099
2	2			4	26			
4631.20	4663.60	C4370.40	0.900	12700	213.10	225.60	C252.60	-0.095
2	2			4	26			
4717.60	4750.10	C4455.50	0.904	12600	204.30	216.70	C242.22	-0.092
2	2			4	20			
4804.40	4837.00	C4540.90	0.907	12500	196.10	208.00	C232.14	-0.088
2	2			6	16			
4891.50	4924.20	C4626.60	0.911	12400	188.00	199.80	C222.36	-0.085
2	2			6	20			
4978.90	5011.70	C4712.80	0.914	12300	180.10	191.80	C213.07	-0.081

2023 Vol Analysis

RVX Decouples...

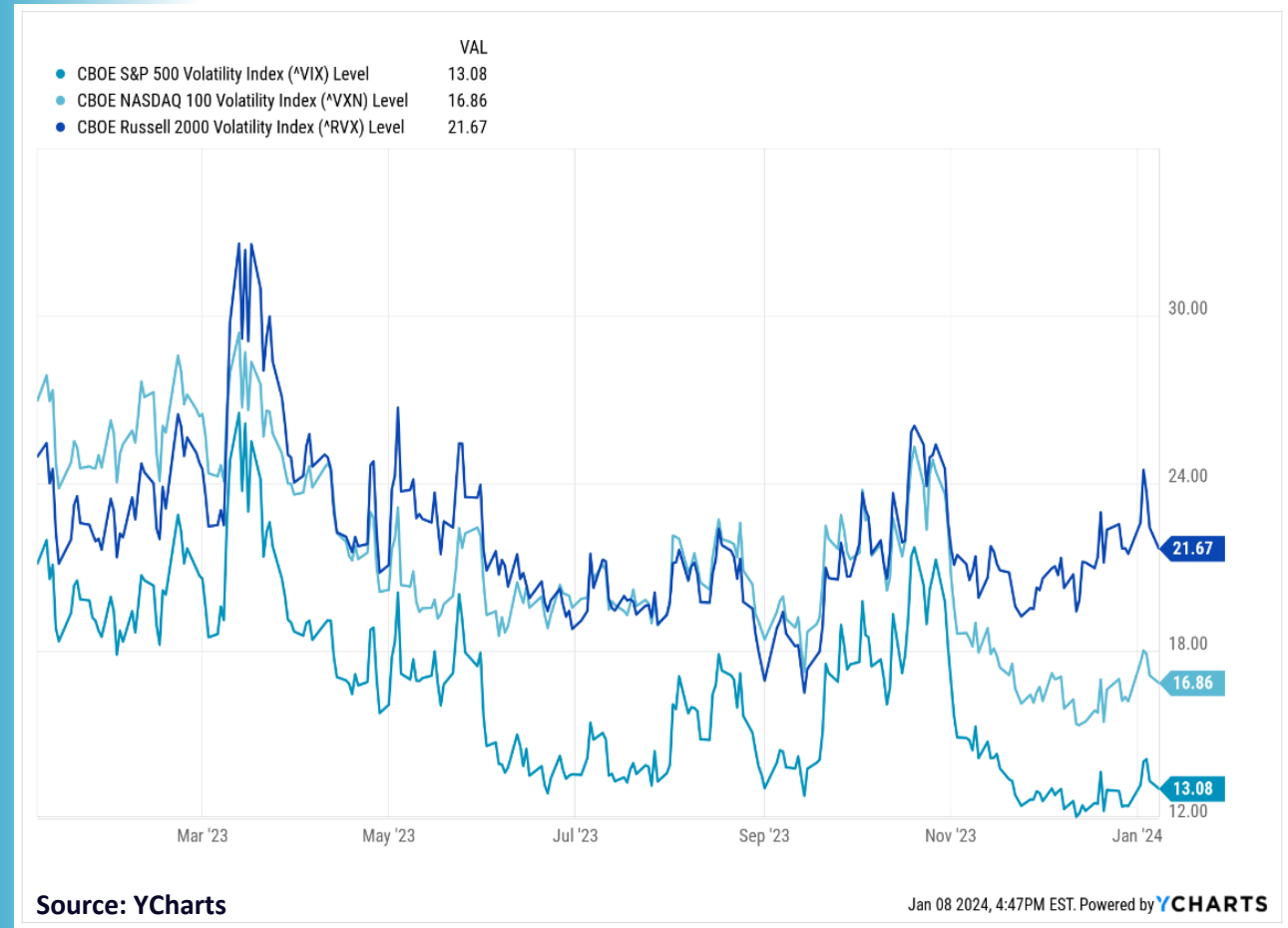
Argument could be made:

- Forward vol in R2K is “rich” relative to other index vols.
- Spread between Index vols at ~2-year wides.

Only way to get listed exposure to forward NDX and RUT/IWM vol is via options market.

There are countless permutations whereby this could be expressed.

Index Near Term Vols



Any stock, options or futures symbols displayed are for illustrative purposes only and are not intended to portray recommendations, or an invitation or inducement to trade a particular financial instrument or to engage in an investment activity. There is a substantial risk of loss in trading futures and options. Past performance is not indicative of future results.



Just an Example

- Thesis:
 - Small Caps “outperform” relative to Growth/Tech in 2024.
 - Expressed using Standard Dec 2024 Index options (RUT & NDX).
 - Sized for ~equivalent notional/directional exposure.
 - Primary Risk:
 - **RUT falls ~18% (Dec expiry) AND NDX does not decline by 12% or more.**
 - Spot references: 16,650 NDX & 1975 RUT.
- More Specifically (but also HYPOTHETICALLY):
 - +1 NDX Dec 20 (AM) 2024 14,700/14,000 PS. (\$70k max value)
 - Pay out 120.00 or \$12,000 in premium.
 - +625 NDX vega.
 - -10 RUT Dec 20 (AM) 2024 1750/1650 PS. (\$100k max value)
 - Collect 14.50(10) or \$14,500 in premium.
 - -~650 RUT vega.
 - Net/Net short \$2,500 in Dec premium.

Index Vol Spread Analysis

Ideal Scenario *

NDX settles below 14k on Dec expiration. A decline of 16% or more.

RUT settles above 1750 on Dec expiration. Doesn't fall by more than 11.4%.

Up \$58,000 on long NDX PS

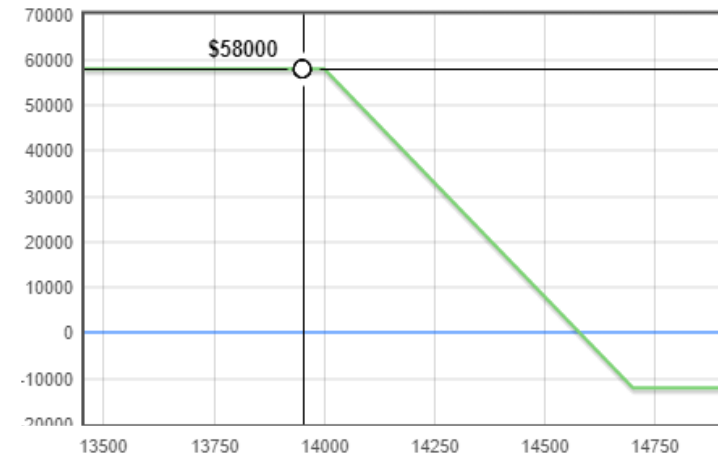
Collect \$14,500 in RUT premium

Collect the \$2500 in aggregate premium.

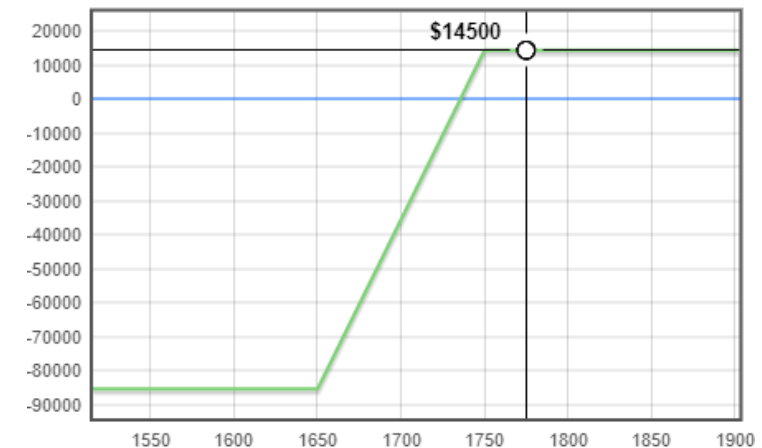
Total: +\$75k.

- ***IDEAL SCENARIOS RARELY COME TO FRUITION!**

NDX Best Case...



RUT Best Case...



Source: IBKR Platform

Worst Case Scenario*

NDX settles above 14,700 on Dec expiration. Didn't decline by more than 11.7%.

RUT settles below 1650 on Dec expiration. Declining 16.5% or more.

NDX worth \$0.

RUT worth \$100k

Collect the \$2500 in aggregate premium.

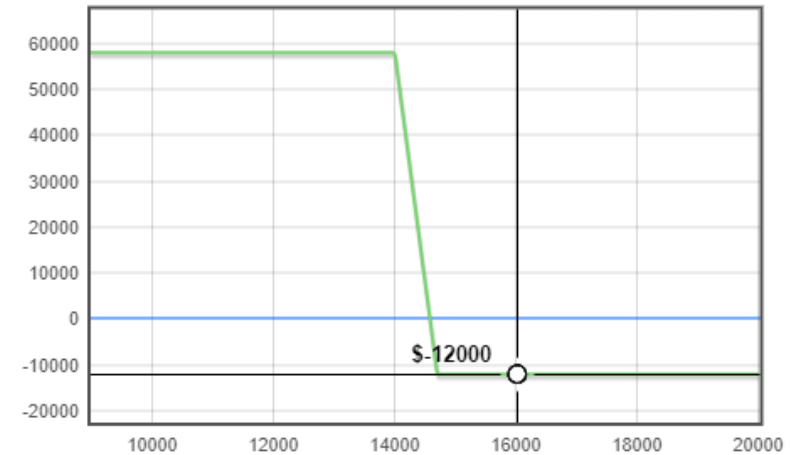
Total: \$97,500 loss.

- ***Worst case scenarios may come to fruition!**
- **Could consider XND or alternative R2K product.**

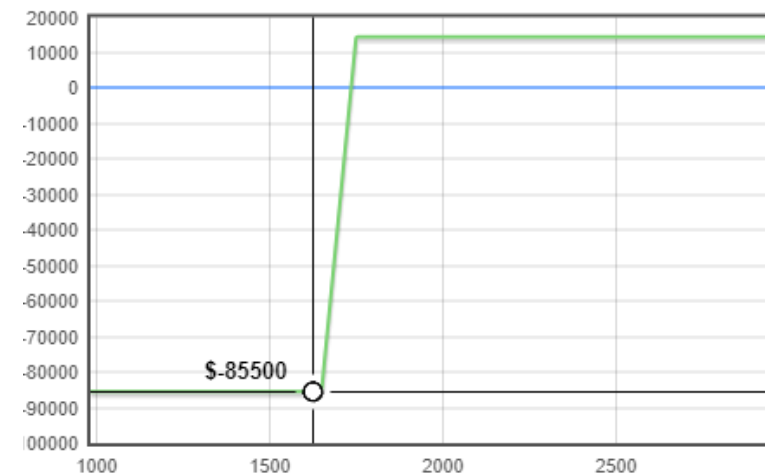
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NDX Worst Case...



RUT Worst Case...



Source: IBKR Platform

What's Your Risk & Your Thesis?

- **Historically Speaking:**

- Equity Indexes trend higher annually.
- Understanding **your risk and outlook** is more important than ubiquitous “noise”.
- The “Wall of Worry” in 2024 feels less imposing than a year ago.
- The “Big Risk” is likely something nobody is considering.
 - Sizing often more important than overall position.

- **Index Options Markets:**

- Liquidity continues to flow into index markets.
- Do you anticipate a continuation of 2023 trends (Growth outperforms) or a mean reversion on part of small cap/value?
- Do you consider longer-dated index options markets to express your thesis?
- Ability to spread risk across indexes.
- Smaller notional products offer smaller wallet size accounts access to similar strategies.

