SIFMA Insights

Market Structure Compendium

Recapping 2022 Market Metrics & Looking to 2023 with Our Market Structure Survey

February 2023

Market Metrics (2022 average, Y/Y change)

- Markets: S&P 500 4,098.51, -4.1%; DJIA 32,897.35, -3.4%; Nasdaq 12,231.35, -14.9%; Russell 2000 1,884.50, -16.0%
- Volatility & Volumes: VIX 25.63, +30.4%; equity ADV 11.9B shares, +4.1%; off-exchange trading 41.9%, -1.7 pps; ETF ADV 2.6B shares, +54.6%; listed options ADV 40.5M contracts, +4.8%
- Capital Formation: total (ex-SPACs) $99.4B, -77.2%; secondaries $78.5B, -65.0%; preferreds $12.4B, -78.7%; IPOs $8.5B, -94.4%; SPACs $13.1B, -91.9%

Market Structure Survey

- Volatility & Volumes estimates: VIX 20-25 (53.7% of responses); Equity ADV 10-15B shares (63.4% of responses); listed options ADV 30-40M contracts (51.2% of responses)
- Markets estimates: Decline somewhat further (51.2% of responses); upside risks = inflation, monetary policy, geopolitical; downside risks = inflation, monetary policy, geopolitical
- Retail Investor participation estimates: Equities 20-30% (61.5% of responses); options 20-30% (48.6% of responses); $0 commissions #1 factor for growth, positive investing experience for maintaining retail participation

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SIFMA Insights can be found at: https://www.sifma.org/insights

Disclaimer: This document is intended for general informational purposes only and is not intended to serve as investment advice to any individual or entity. The information in the survey was provided for information purposes only to gauge an estimate of respondents' opinions on future events. It should not be relied upon and can change at any time without notice.

SIFMA is the leading trade association for broker-dealers, investment banks and asset managers operating in the U.S. and global capital markets. On behalf of our industry's nearly 1 million employees, we advocate on legislation, regulation and business policy, affecting retail and institutional investors, equity and fixed income markets and related products and services. We serve as an industry coordinating body to promote fair and orderly markets, informed regulatory compliance, and efficient market operations and resiliency. We also provide a forum for industry policy and professional development. SIFMA, with offices in New York and Washington, D.C., is the U.S. regional member of the Global Financial Markets Association (GFMA). For more information, visit http://www.sifma.org.

Executive Summary

The post-COVID years produced golden years for capital markets. The long-running 0% interest rate environment allowed all assets to increase in value, even risk assets of all types. In equities, IPOs exploded – issuance was up +75% from 2020 versus 2019 and then another +80% from 2021 versus 2020. IPOs totaled $85.4 billion in 2020 and $153.6 billion in 2021, +86% and +234% to the three-year pre-COVID average of $46.0 billion. This boom in issuance occurred even if some of these companies should not have IPOd at the values they did. This was evidenced by some stock prices declining around 60% after the first earnings call for these newly public companies.

What a difference a year makes. Last year we saw a complete reversal, with some capital markets businesses down around 90%. Issuance essentially shut down. IPOs closed out the year at $8.5 billion in deal value, versus $153.6 billion the prior year, -94.4%. SPACs have all but disappeared at $13.1 billion versus $162.4 the prior year, -91.9%.

Markets began transitioning. The move away from 0% interest rates was well underway, as the Fed continued to raise the Fed Funds rate. The Fed raised this rate seven times last year for a total of 425 bps, an unprecedented rate of increases. This was followed by another 25 bps hike at the January meeting, bringing the range to 4.50%-4.75%. This in turn caused a revaluation of financial assets, and, with the end game uncertain, market participants were asking what should be the intrinsic value of many assets. As such, on average, markets were on a downward trend throughout last year. The average price for the S&P 500 index in 2022 was 4,098.51, -4.1% to the prior year's average. From the start of the year to the end, or from January 3 to December 30, the S&P 500 dropped 20.0%.

So what does 2023 hold for capital markets? Many economists and market participants expect the U.S. to enter a recession this year – a mild one – and the debate continues as to whether or not this is appropriately baked into markets. The 10-year Treasury peaked at 4.2340 in October of last year. By the second week of November, it came down below 4.0000, averaging 3.6776 from that point to the end of the year. (The 10-year has averaged 3.5366 YTD at the writing of this report.) Market participants expect the Fed to continue hiking rates, and it appears a 5.00 rate is baked into markets.

However, the dot plot – FOMC participants' assessments of appropriate monetary policy, showing the midpoint of target range for the Fed Funds rate – in the December 2022 Summary of Economic Projects showed a step up to higher rates. In December 2022, 55.6% of participants responded a 5.00-5.25 rate would be appropriate for 2023, with another 22.2% of participants selecting 5.25-5.50 and 11.1% of participants responding 5.50-5.75. In September, the results for the appropriate rate for 2023 were 31.6% each for 4.25-4.50, 4.50-4.75, and 4.75-5.00. This increase in Fed expectations is coupled with strong rhetoric from multiple Fed officials that they would continue on with their inflation flight. This makes some market participants wonder if markets have priced in a high enough terminal interest rate.

People can argue whether or not the U.S. is in an economic recession – the difficulty of calling a recession when the labor market remains strong. This is an area of concern for the Fed, as they're trying to cool the economy while the employment situation remains hot. And this trend is continuing in 2023. For example, the January jobs report showed nonfarm payrolls increased by 517,000, much greater than the 187,000 market estimate. The unemployment rate fell – yes, fell, when the Fed is trying to move this statistic in the upward direction – to 3.4% versus the estimate for 3.6%, the lowest jobless level since May 1969.

Despite this, an area that already feels like a recession is in financial assets highly impacted by increasing rates, i.e. stocks. We are in an asset price recession of sorts for some market segments.

As such, market participants are spending time trying figure out what the new normal will be. Meanwhile, traders and investors remain nervous about how to navigate markets over the next few months, or where to put their money to work. In 2023, if the economy gets on a better path and inflation comes under better control – perhaps by the second half of 2023 – markets could settle into their new normal phase.

Recapping 2022: Market Metrics

Before we can look to the future, we must assess the past. Inside this note, we analyze 2022 trends for stock market performance, volatility, volumes (U.S. cash equities, off-exchange trading levels, ETFs, multi-listed options), and capital formation.

We highlight the following metrics and themes for the year:

- Market Performance (average index price, Y/Y change)
  - S&P 500 4,098.51, -4.1%
  - DJIA 32,897.35, -3.4%
  - Nasdaq 12,231.35, -14.9%
  - Russell 2000 1,884.50, -16.0%
- Volatility (VIX)
  - Average 25.63, +30.4% Y/Y
  - Peak 36.45
  - Trough 16.60
- Volumes (ADV)
  - Equities: average 11.9B shares (+4.1% Y/Y); peak 20.0B shares, trough 4.6B shares
  - Equities off-exchange trading: average 41.9% of total volumes (-1.7 pps Y/Y); peak 47.0%, trough 33.3%
  - ETFs: average 2.6B shares (+54.6% Y/Y); peak 5.3B shares, trough 0.9B shares
  - Listed Options: average 40.5M contracts (+4.8% Y/Y); peak 62.2M contracts, trough 19.5M contracts
- Capital Formation
  - Total (ex-SPACs) $99.4 billion, -77.2% Y/Y
  - Secondaries $78.5 billion, -65.0% Y/Y
  - Preferreds $12.4 billion, -78.7% Y/Y
  - IPOs $8.5 billion, -94.4% Y/Y
  - SPACs $13.1 billion, -91.9% Y/Y

Looking to 2023: Market Structure Survey Results

With volatility and volumes in both equities and multi-listed options remaining at higher than historical levels, market participants continue to wonder what will be the new normal. As such, we surveyed market participants – members of our equity markets and listed options trading committees, representatives of U.S. equity and multi-listed options exchanges – about where they saw 2023 market metrics heading, as well as their views on retail investor participation.

We highlight the following survey trends:

- Market Performance (S&P 500)
  - Majority says? Decline somewhat further at 51.2% of responses
  - Upside risks? Inflation, monetary policy, geopolitical events
  - Downside risks? Inflation, monetary policy, geopolitical events
- Volatility (VIX)
  - Majority says? 20-25 range, 53.7% of responses
  - Return to historical levels (<20)? Very few people, 7.3% of responses
- Equity Volumes (ADV)
  - Majority says? 10-15 billion shares range, 63.4% of responses
  - Return to historical levels (<10B shares)? 31.7% of responses
- Listed Options Volumes (ADV)
  - Majority says? 30-40 million contracts range, 51.2% of responses
  - Return to historical levels (<20M contracts)? Very few people, 7.3% of responses
- Market Themes
  - Market Drivers: When asked what factors respondents believe are having the greatest impact on driving the performance of equity markets (in terms of the price of the S&P 500), 23.2% responded Fed actions, i.e. the determination of the peak Fed Funds rate. Another 21.7% responded inflation data releases, as market participants monitor the path back down to 2%. Closing out the top three responses, 18.8% replied the (potentially) pending economic recession.
- Retail Investor Participation
  - Top response for equities?
    - Last year volumes 20-30%, 61.5% of respondents

        - Going forward expectations to decrease somewhat, 50.0% of respondents
    - Top response for listed options?
        - Last year volumes 20-30%, 48.6% of respondents
        - Going forward expectations to remain about the same, 35.9% of respondents
    - Why did retail participation increase? $0 commissions, technology/access to platforms, continued work from home
    - What will keep retail engaged? Positive investing experience, maintaining $0 commissions, upward momentum in markets

Recapping 2022: Market Metrics

Comparing 2022 to 2021

Before going into more detail in each section, we first compare 2022 to 2021 market metrics:

Market Metrics	2022	2021	Y/Y % Change
Market Performance (averages)			
--S&P 500 Index (price)	4,098.51	4,272.97	-4.1%
--DJIA Index (price)	32,897.35	34,055.29	-3.4%
--Nasdaq Index (price)	12,231.35	14,371.66	-14.9%
--Russell 2000 Index (price)	1,884.50	2,242.89	-16.0%
Volatility & Volumes (averages)			
--VIX (price)	25.63	19.66	+30.4%
--Equity ADV (B shares)	11.9	11.4	+4.1%
--Off-Exchange Trading (% of total volumes)	41.9%	43.6%	-1.7 pps
--ETF ADV (B shares)	2.6	1.7	+54.6%
--Listed Options ADV (M contracts)	40.5	38.7	+4.8%
Capital Formation ($B, aggregate**)**			
--Total (ex-SPACs)	99.4	435.9	-77.2%
--Secondaries	78.5	224.3	-65.0%
--Preferreds	12.4	58.0	-78.7%
--IPOs	8.5	153.6	-94.4%
--SPACs	13.1	162.4	-91.9%

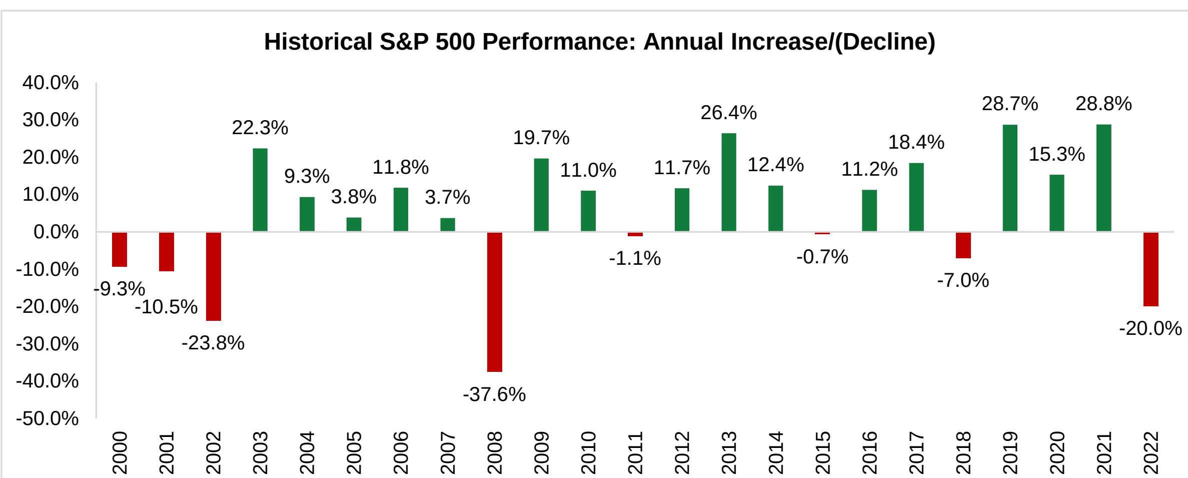
Source: Bloomberg, Cboe Global Markets, Dealogic, SIFMA estimates

Market Performance Metrics

2022 started off struggling with high inflation. Personal consumption expenditures (PCE) – the Fed's preferred inflation measure for setting monetary policy – was +6.1% Y/Y in January and continued to climb until peaking in June at +7.0% Y/Y. While it has come down since then, the last read in December was +5.0%. (The more commonly followed Consumer Price Index, or CPI, declined again in December. It came in at +6.4% Y/Y seasonally adjusted, down from +7.1% in November.) This represents a significant gap to the Fed's 2% target. This increased concerns around monetary policy, as markets attempted to estimate the Fed's final target interest rate and when that will be reached. The Fed Funds Rate ended the year in the 4.25%-4.5% range, after being raised again at the December FOMC meeting (+50 bps). There is a balancing act – the Fed must raise rates high enough to cool inflation but not push the U.S. into a deep recession.

Inflation. Rates. Recession. On top of that, Russia invaded Ukraine early in 2022, sending oil and other commodity prices sky rocketing. And we cannot forget that China's zero-COVID policy continued to wreak havoc on supply chains last year, furthering the inflation problem. As China announced a relaxation of its policies in December, we will see if/when these changes stick and roll through to supply chains.

Given everything we experienced last year, the S&P 500 posted its worst year since 2008 (the global financial crisis), -20.0% from start to end of year. This snapped a three-year streak of strong returns, ranging from +15.3% to +28.8%. Looking back to 2000, the only other year posting a greater decline was 2002 (the dotcom bubble crash), at -23.8%.

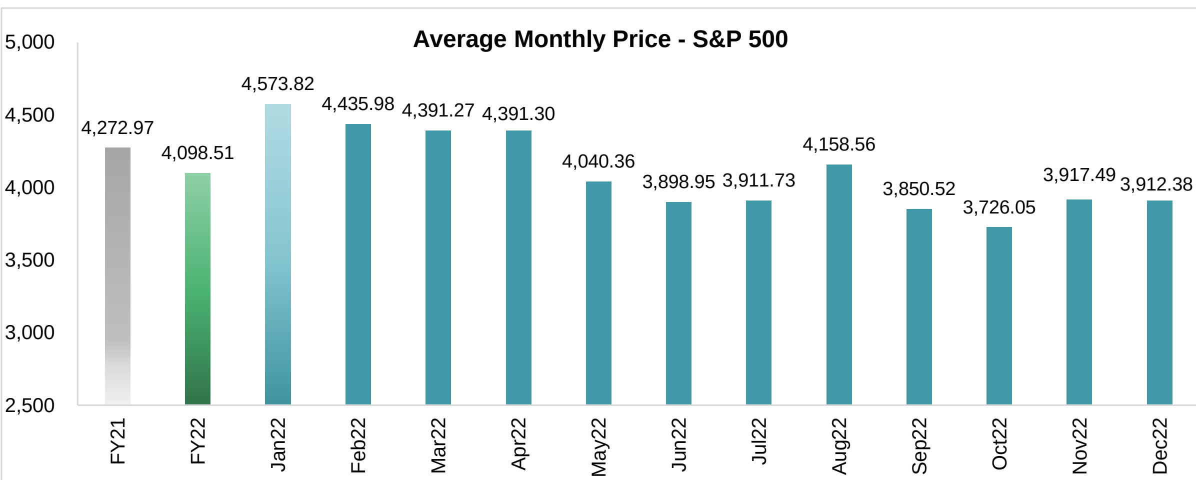


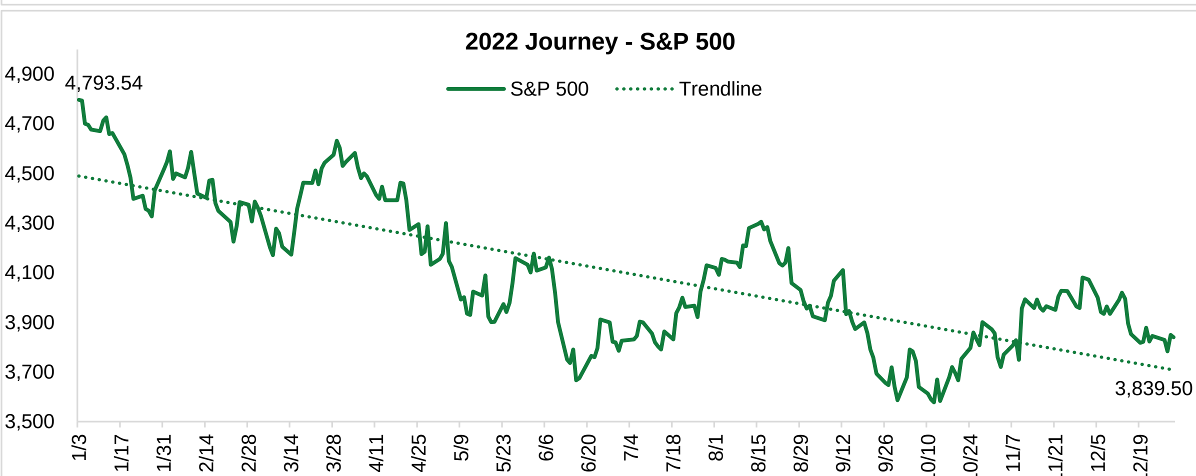
Source: Bloomberg, SIFMA estimates

On the following pages, we highlight keys trends for 2022 across the different stock market indexes.

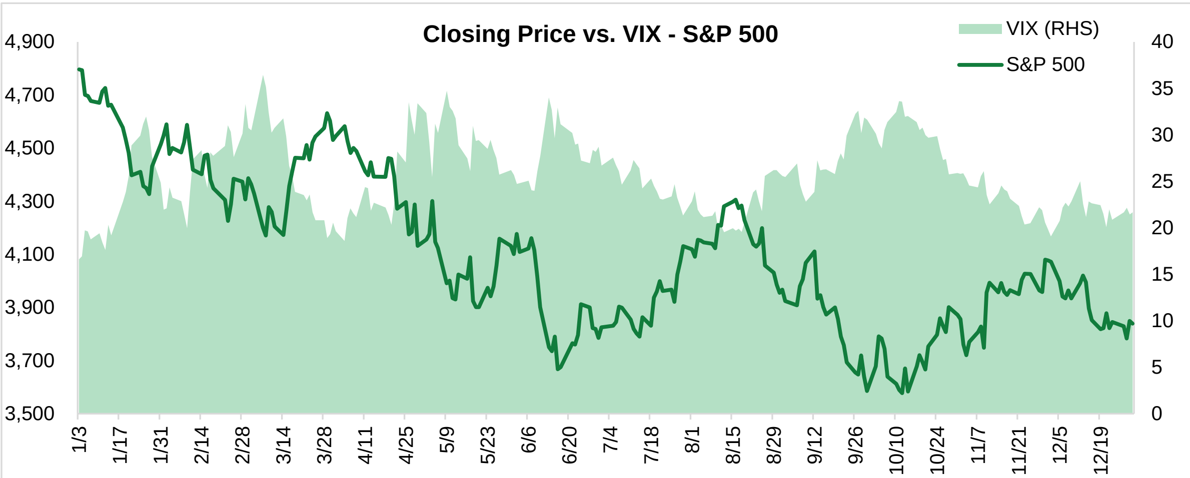
S&P 500

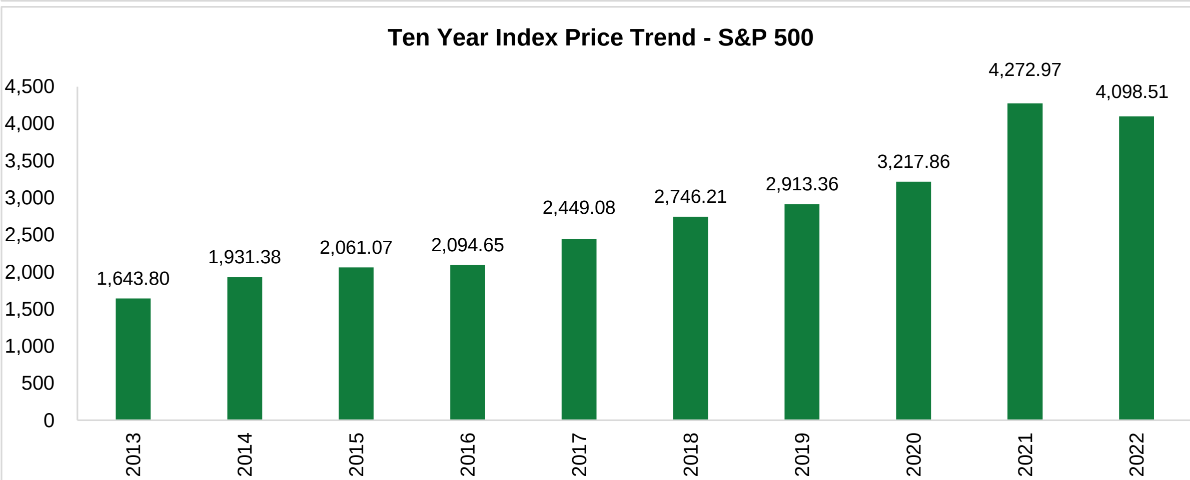
- 2022 average 4,098.51
  - -4.1% Y/Y
  - Daily peak 4,796.56 on January 3
  - Daily trough 3,577.03 on October 12
- Average monthly level 4,100.70
  - Monthly peak 4,573.82 in January
  - Monthly trough 3,726.05 in October
- 10-Year CAGR 9.6%





Source: Bloomberg, SIFMA estimates

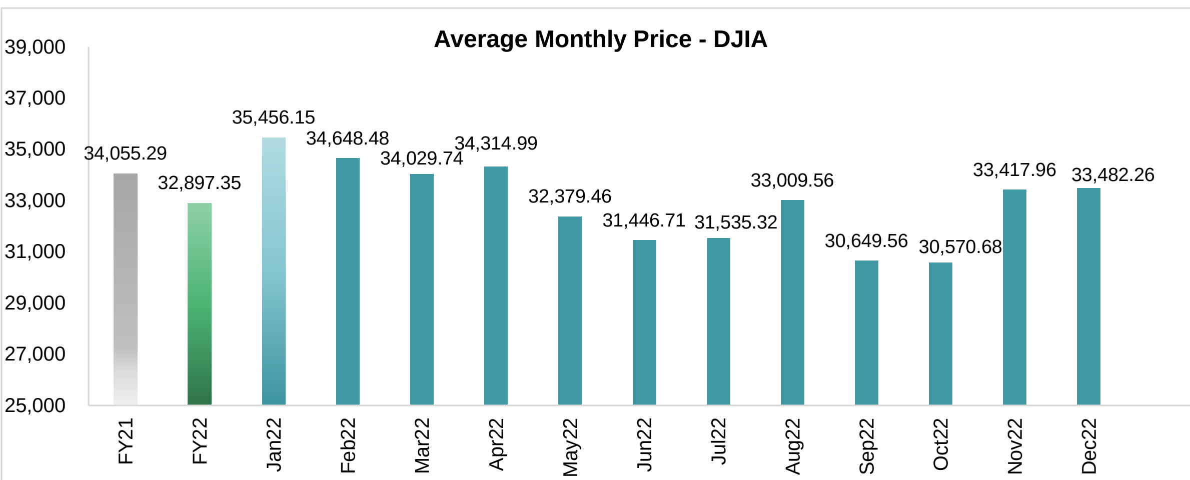


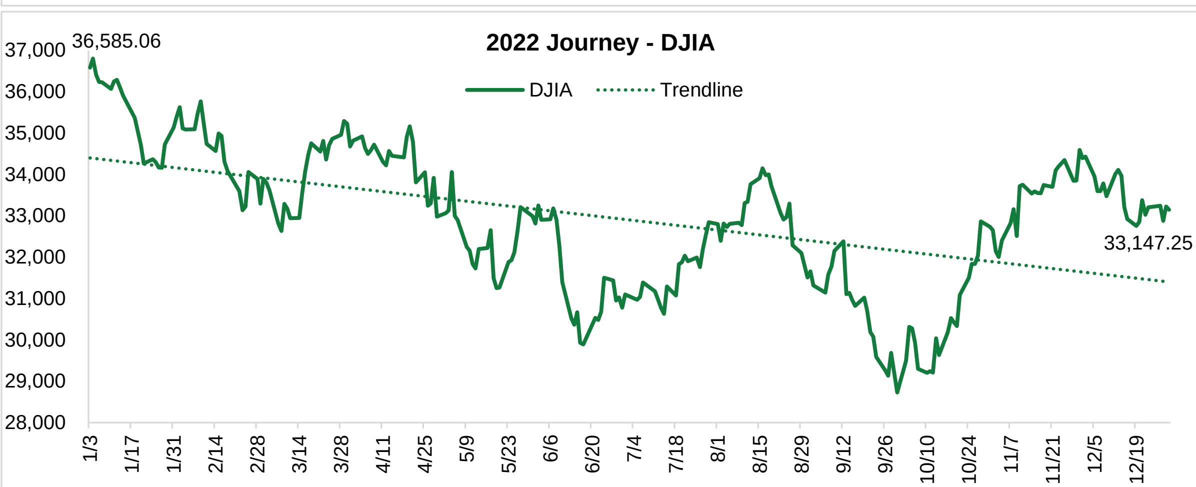


Source: Bloomberg, SIFMA estimates

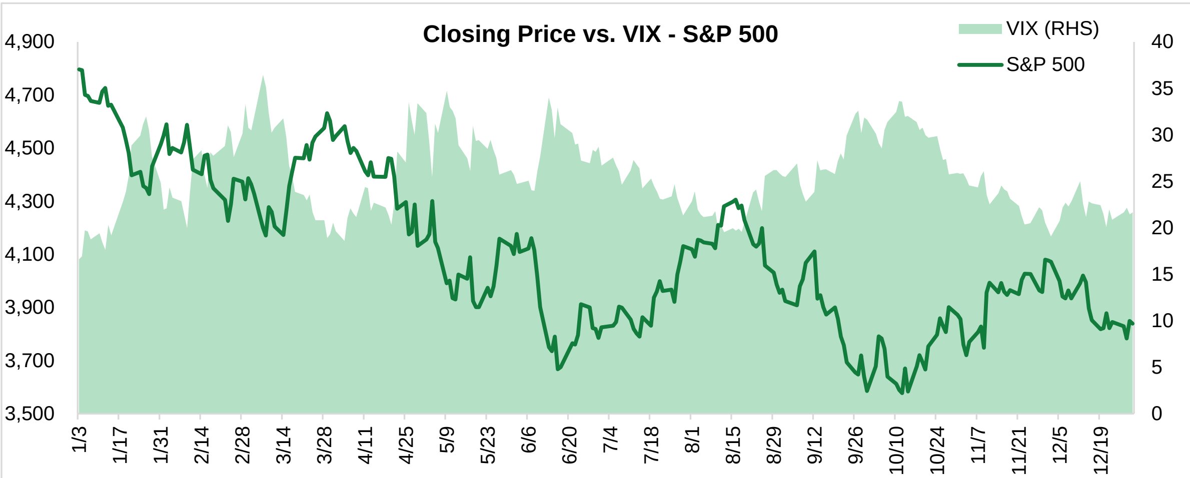
Dow Jones Industrial Average (DJIA)

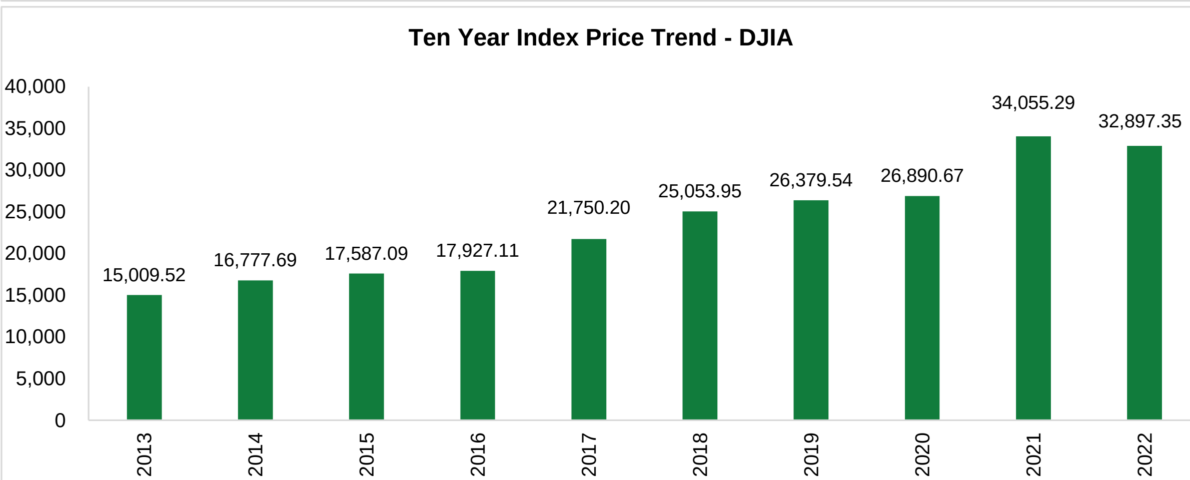
- 2022 average 32,897.35
    - -3.4% Y/Y
    - Daily peak 36,799.65 on January 4
    - Daily trough 28,725.51 on September 30
- Average monthly level 32,911.74
    - Monthly peak 35,456.15 in January
    - Monthly trough 30,570.68 in October
- 10-Year CAGR 8.2%





Source: Bloomberg, SIFMA estimates

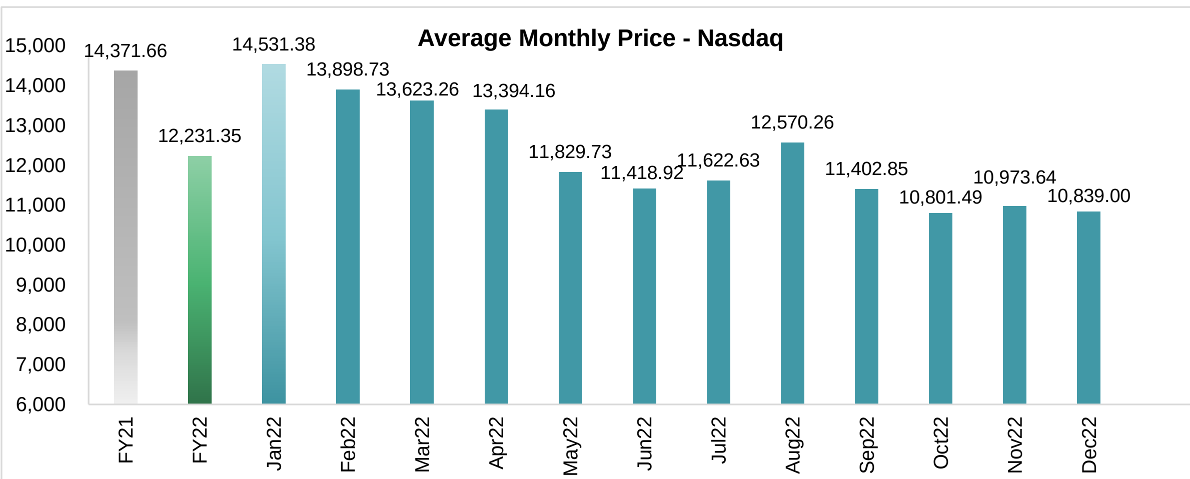


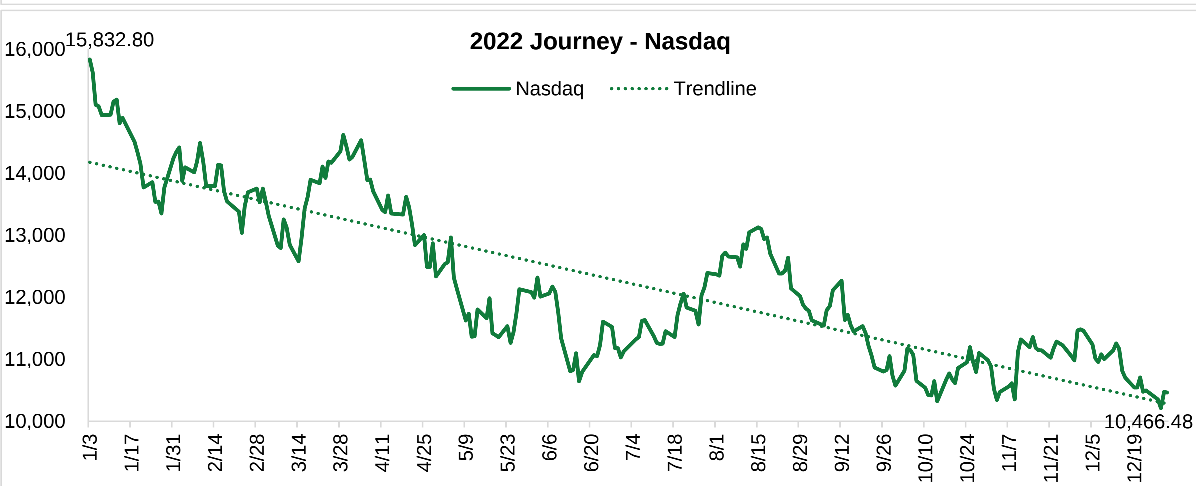


Source: Bloomberg, SIFMA estimates

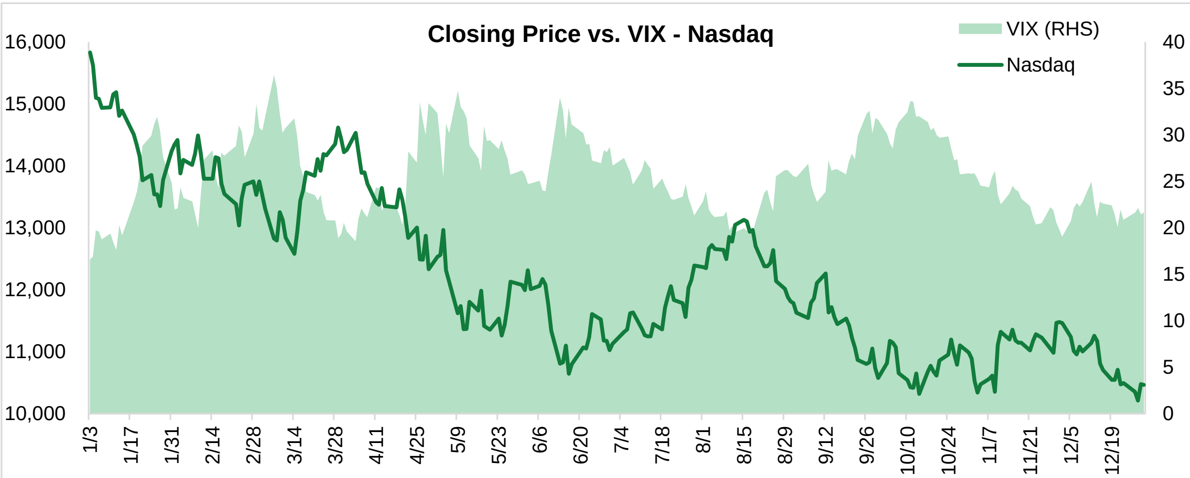
Nasdaq Composite

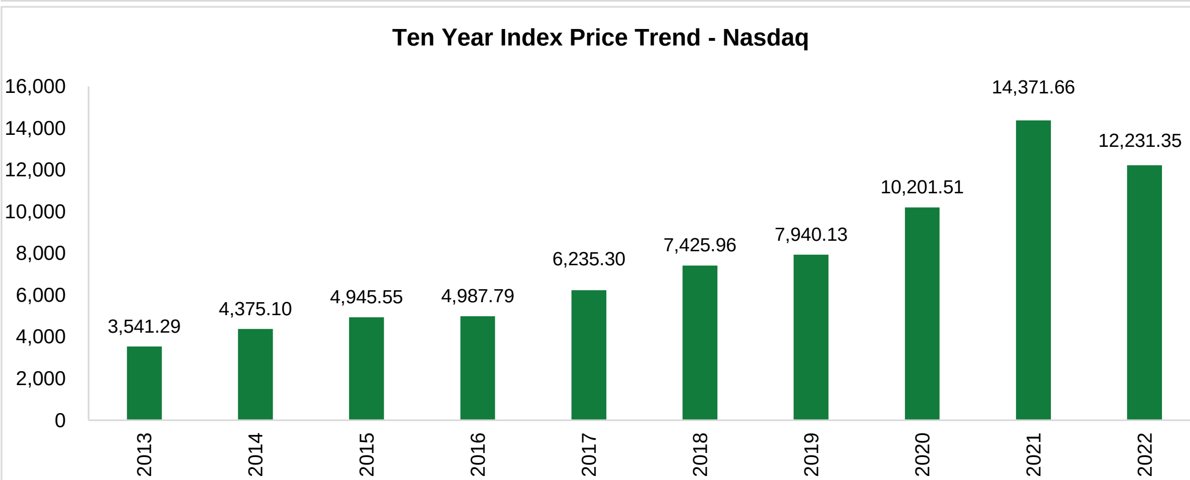
- 2022 average 12,231.35
    - -14.9% Y/Y
    - Daily peak 15,832.80 on January 3
    - Daily trough 10,213.29 on December 28
- Average monthly level 12,242.17
    - Monthly peak 14,531.38 in January
    - Monthly trough 10,801.49 in October
- 10-Year CAGR 13.2%





Source: Bloomberg, SIFMA estimates

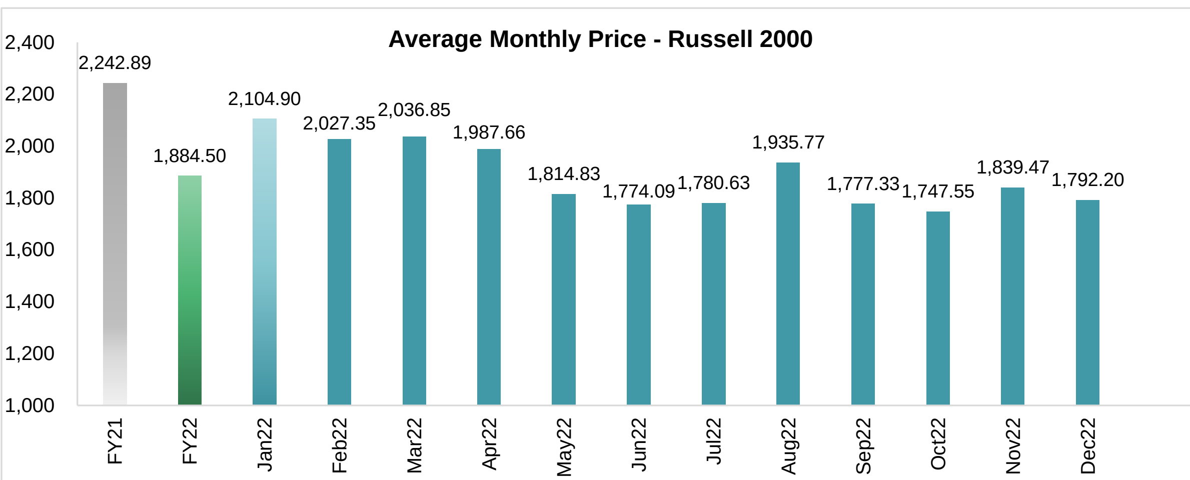


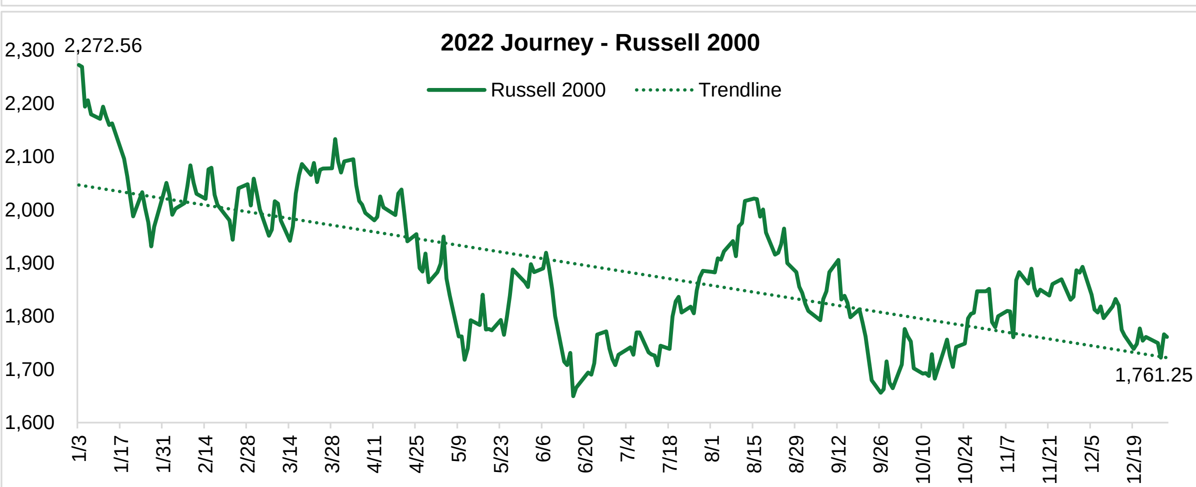


Source: Bloomberg, SIFMA estimates

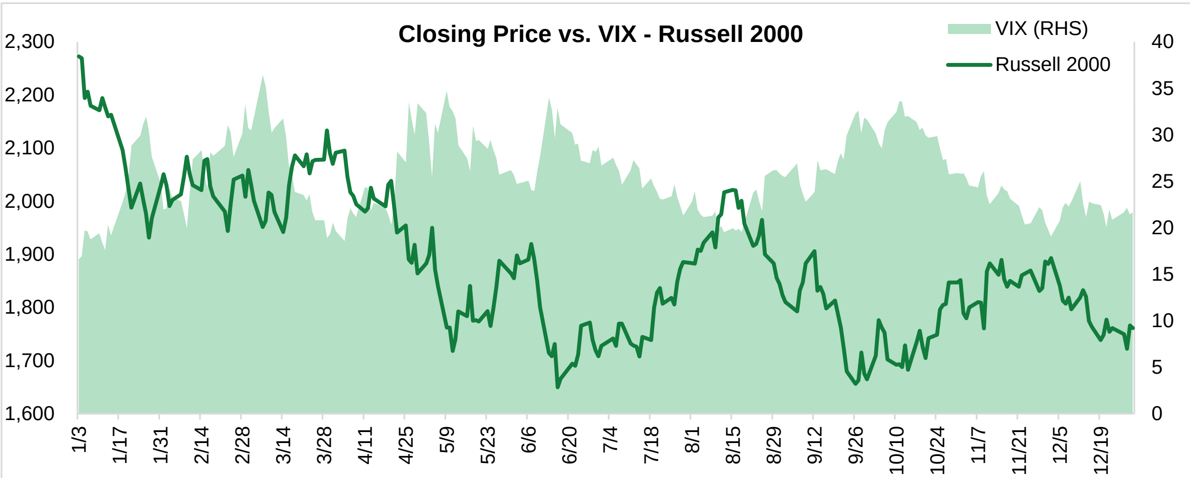
Russell 2000

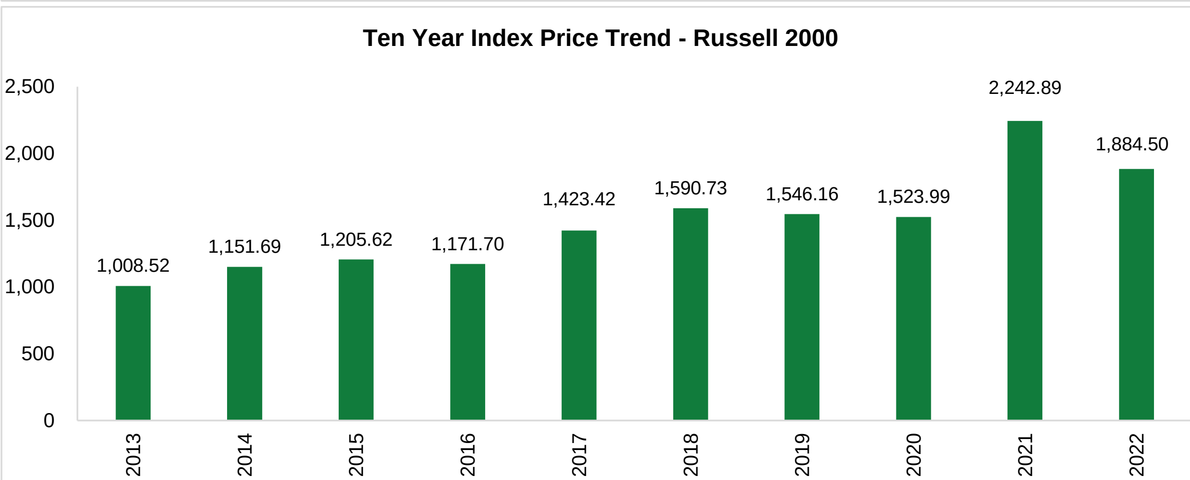
- 2022 average 1,884.50
  - -16.0% Y/Y
  - Daily peak 2,272.56 on January 3
  - Daily trough 1,649.84 on June 16
- Average monthly level 1,884.89
  - Monthly peak 2,104.90 in January
  - Monthly trough 1,747.55 in October
- 10-Year CAGR 6.5%





Source: Bloomberg, SIFMA estimates



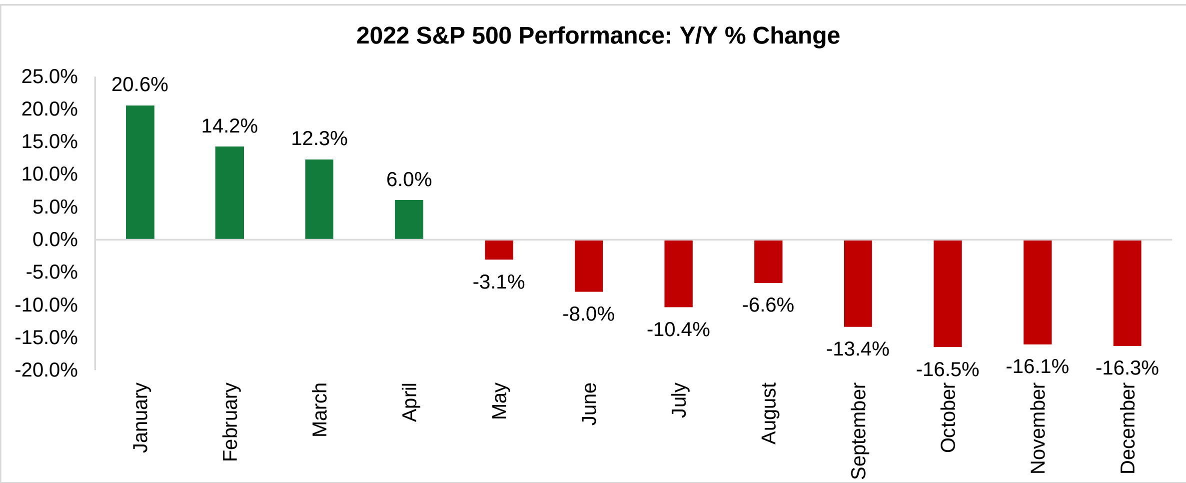


Source: Bloomberg, SIFMA estimates

Market Performance Themes

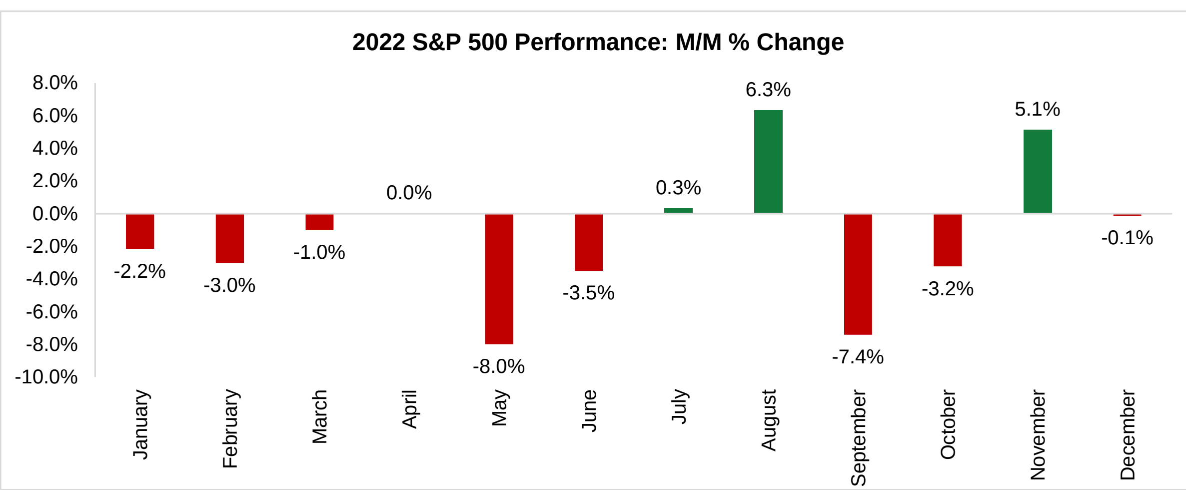
S&P 500's Journey across 2022

The S&P 500 took quite journey throughout 2022, and, unfortunately, not in a positive manner. We first look at Y/Y percent changes across the months. Despite high inflation, the S&P 500 remained positive for the first four months of the year. Each month the increase shrank, finally turning negative in May. December closed out the year at -16.3% Y/Y.



Source: Bloomberg, SIFMA estimates

On a M/M percent change basis, only three months were positive for the year (and one flat month). The highest M/M increase of +6.3% in August was lower than the highest declining M/M change, -8.0% in May. December closed out the year essentially flat, -0.1%.

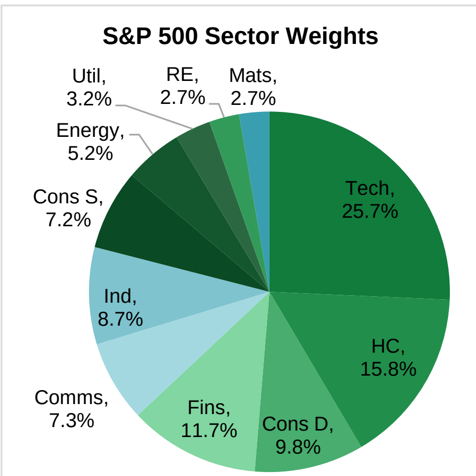


Source: Bloomberg, SIFMA estimates

Performance by Sector

Inflation. Rates. Recession. These economic factors created a drag on all sectors of the S&P 500. Only energy posted a positive return for the year, with all other sectors declining. However, the key factor being watched was monetary policy – what would be the Fed's peak interest rate and when would it occur. As such, the continuation of rising rates weighed more heavily on sectors such as technology.

These sectors are weighted more heavily in the S&P 500. Below we show the final weightings for 2022. However, we note that consumer discretionary – which includes Tesla (TSLA) and Amazon (AMZN) – was higher for much of the year, in the 11-12% range. Communications also used to be in the 8-9% weight range.



Source: Bloomberg, SIFMA estimates
Note: As of December 31, 2022. Cons S = consumer staples, HC = healthcare, Mats = materials, RE = real estate, Ind = industrials, Fins = financials, Tech = technology, Cons D = consumer discretionary, Comms = telecommunications, Util = utilities

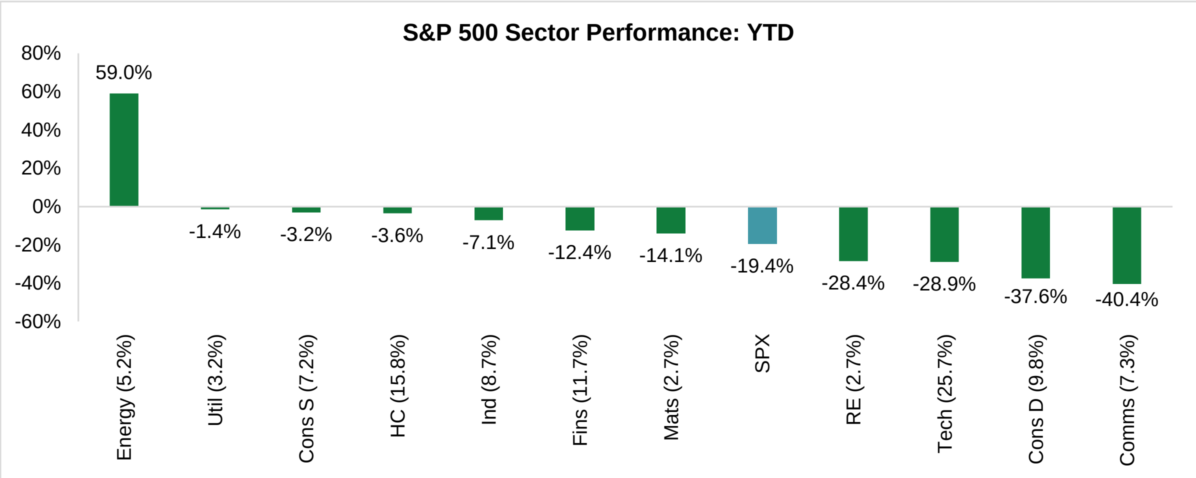
These sectors showed significant declines as higher market cap stocks in each sector lost market cap over concerns around rising interest rates and the impact on future earnings. These sectors – and firms – were more exposed to the economic factors market participants were watching.

- Technology -25.7% (from start to end of year)
- Consumer discretionary -37.6%
- Communications -40.4%

Further, the only positive sector – energy, +59.0% – represented only 5.2% of the index.

Looking at market performance by sector, we highlight the following:

- Only energy was positive for the year
- Best performing sectors: energy at +59.0% and utilities at -1.4%
- Worst performing sectors: communications at -40.4% and consumer discretionary at -37.6%



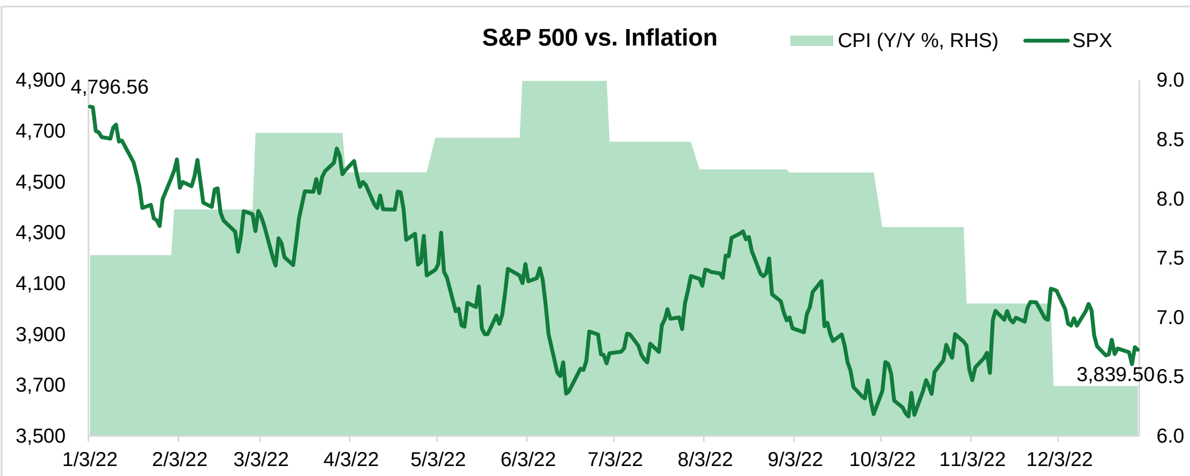
Source: Bloomberg, SIFMA estimates

Note: Parenthesis indicate sector weight in the index. Cons S = consumer staples, HC = healthcare, Mats = materials, RE = real estate, Ind = industrials, Fins = financials, Tech = technology, Cons D = consumer discretionary, Comms = telecommunications, Util = utilities

Market Performance vs. Inflation

Last year, inflation was at levels not seen since the 1980s, and markets ebbed and flowed – mostly in the downward direction – based on inflation reports. And, importantly, the Fed based its monetary policy on inflation data. CPI started the year at +7.5% Y/Y change in January, peaking at +9.0% in June and ending the year at +6.4% in December. (We note that inflation reports have a one month lag, i.e. markets did not see the +6.4% December data until January of this year.)

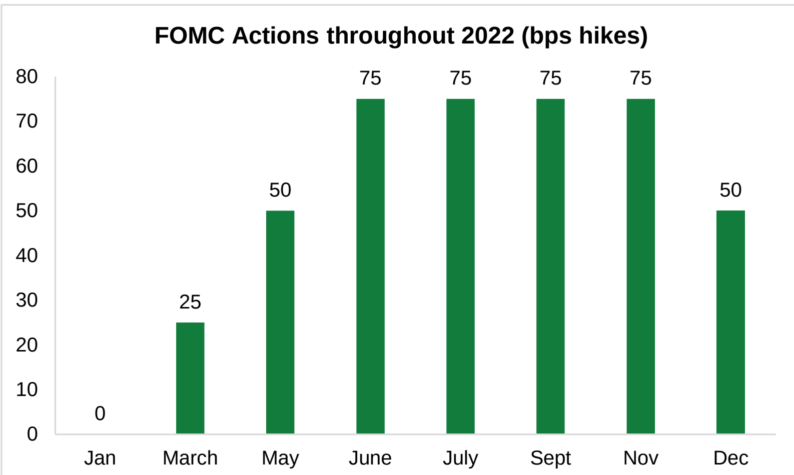
CPI – and PCE, the Fed's preferred inflation measure, moving from +6.0% Y/Y at the start of the year to a peak of +6.7% in September, ending the year at +5.0% – has come down from peak levels. However, there is still a long way to go to reach the Fed's 2% target. As the rhetoric from Fed officials became clearer that they would hold their course to ensure they stop inflation, the S&P 500 dropped from 4,796.56 to 3,839.50, -20.0%. Markets accepted higher rates for the foreseeable future and stocks re-rated accordingly.



Source: Bloomberg, SIFMA estimates
Note: While the CPI is commonly followed by market participants, the Fed uses the Personal Consumption Expenditures (PCE) price index to set monetary policy

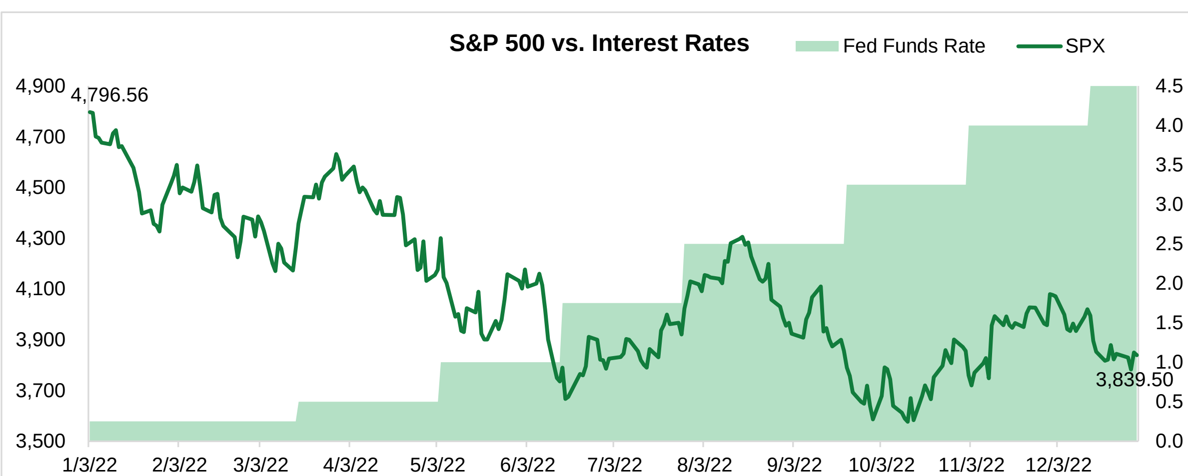
Market Performance vs. Rates

2022 was unique from a rising interest rate environment. Rate hikes used to have a slow and steady pattern. Additionally, we were coming off of a no/low rate environment for over a decade. Then, last year, the Fed raised rates at an unprecedented rate. Since the start of the year, the Fed raised rates seven times for a total of +425 bps in a single year. The upper bound of the Federal Funds rate ended the year at 4.50% (range 4.25%-4.50%). After raising the rate another 25 bps in January, the range currently sits at 4.50%-4.75%.



Source: Bloomberg

While there were many factors in play – inflation, Russia/Ukraine war, etc. – markets reacted accordingly to rising interest rates. The Fed Funds rate started the year in the 0.00-0.25 bps range in January, ending the year in the 4.25-4.50 range in December. The S&P 500 dropped from 4,796.56 to 3,839.50, -20.0%. Markets had to digest this aggressive monetary policy and begin to anticipate the end game, in terms of the final level and timing of interest rates. As rate increases became steadier, valuations – and therefore stock prices – rerated and the S&P 500 continued to decline.



Source: Bloomberg, SIFMA estimates

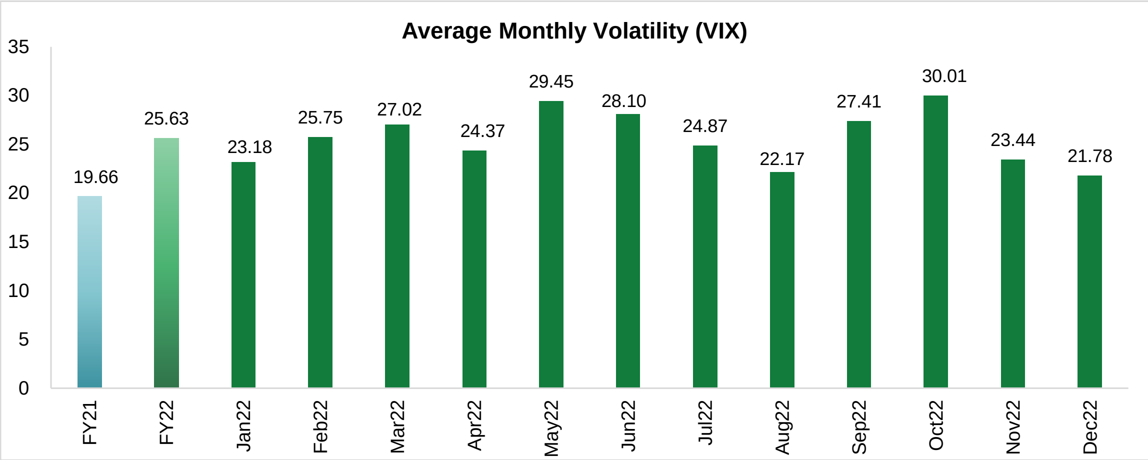
Note: The chart shows only the high-end of the Fed Funds rate range

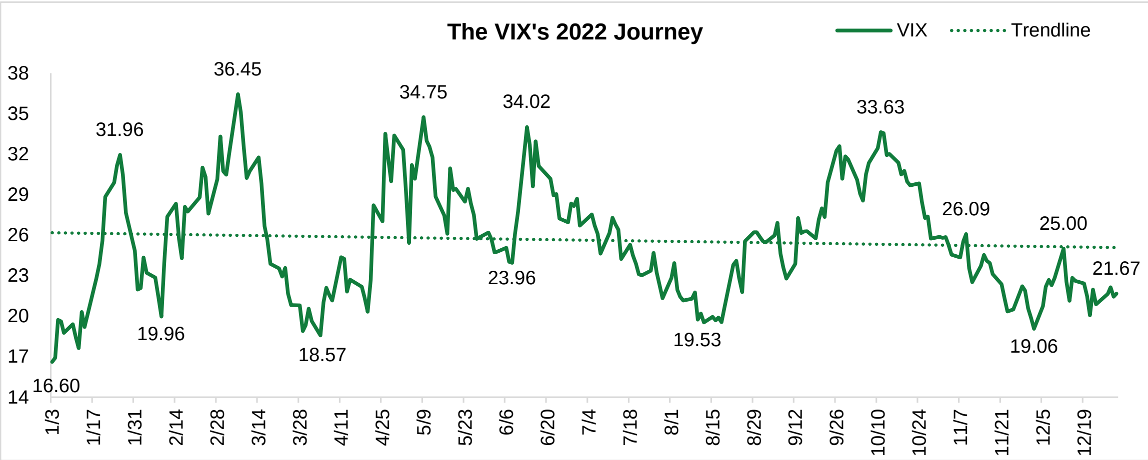
Volatility Metrics

Volatility remains elevated to historical levels – 15.39 in 2019, 14.37 on average for the three years prior to COVID – at 25.63 on average in 2022, +30.4% Y/Y. While the overall trendline for the VIX in 2022 was essentially flat, volatility saw many peaks and valleys throughout the year. To end the year, the VIX experienced its lowest month in December, at 21.78.

We highlight the following trends for 2022:

- Average 25.63, +30.4% Y/Y
- Peak 36.45 on March 7; trough 16.60 on January 3
- Monthly trends
    - Average monthly level 25.63
    - Highest month October at 30.01
    - Lowest month December at 21.78



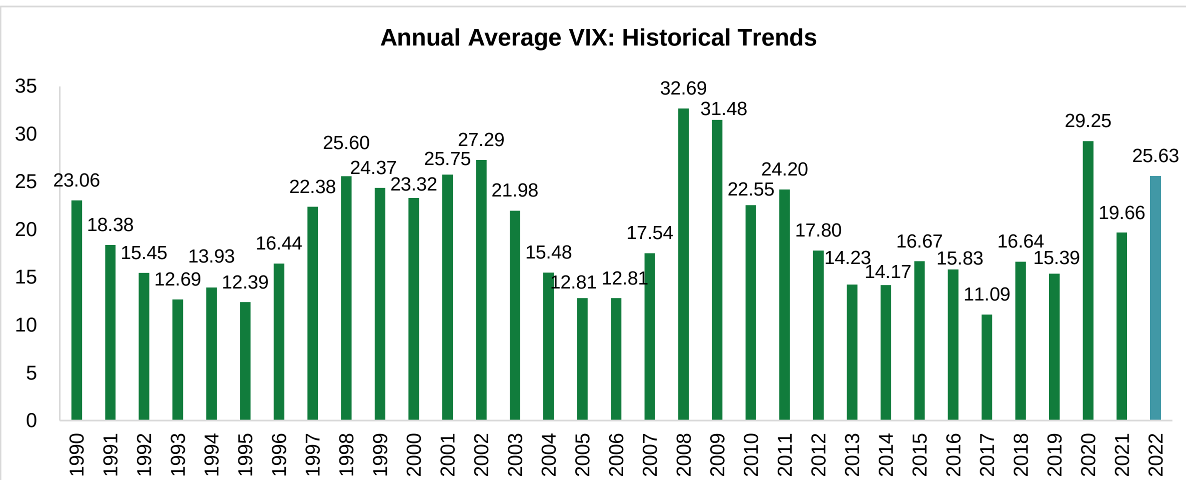


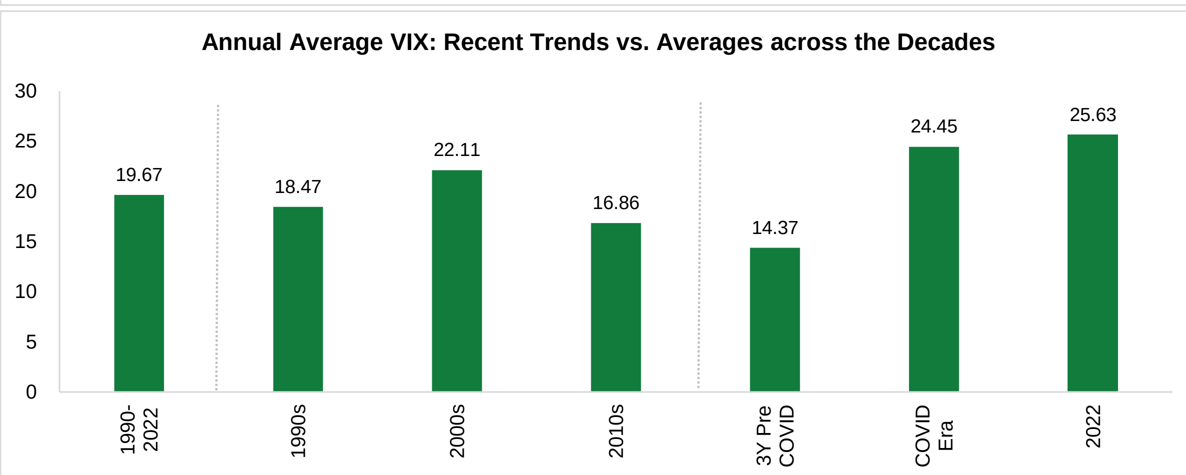
Source: Bloomberg, SIFMA estimates

Average VIX Trends

Next, we analyze the VIX time series back to 1990. 2022 ranked #6. #1 and #2 were the Global Financial Crisis years, 2008 and 2009 respectively. For the COVID era, 2020 ranked #3. Yet, 2021 dropped to #15, despite the January meme stock related spike.

The 2022 average VIX is elevated to every other view we analyzed across time periods. Looking across decades, the 2010s had come down from the 2000s average by 23.8%, with the decline becoming more pronounced in the second half of the decade (15.12 versus 18.59 in the first half). The three years prior to COVID maintained lower volatility levels, averaging 14.37. Then COVID caused a volatility spike, averaging 24.45 across 2020 and 2021. Yet, 2022 beat all of these averages at +30.3% to the full time series average and +4.8% to the COVID era average.

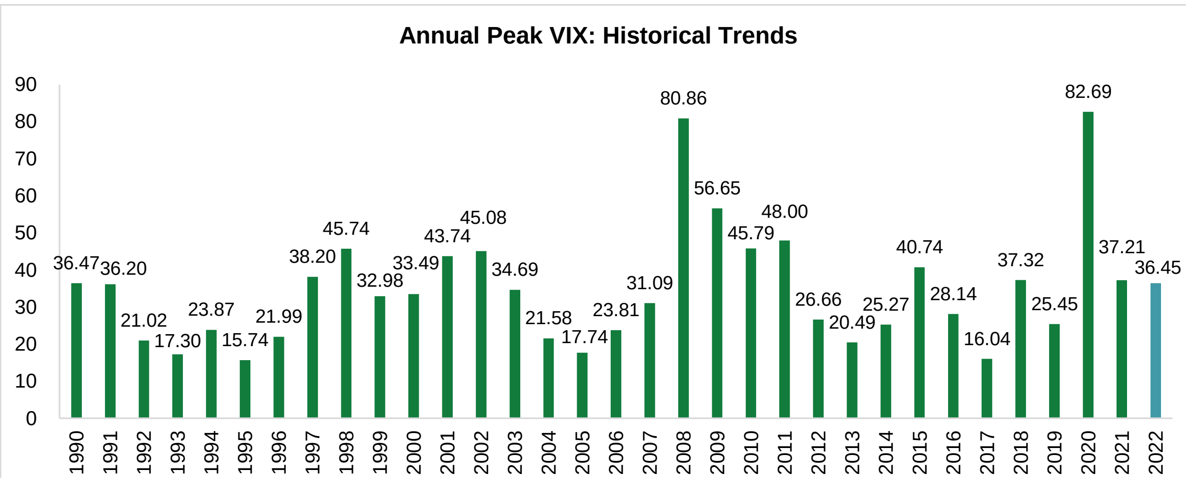


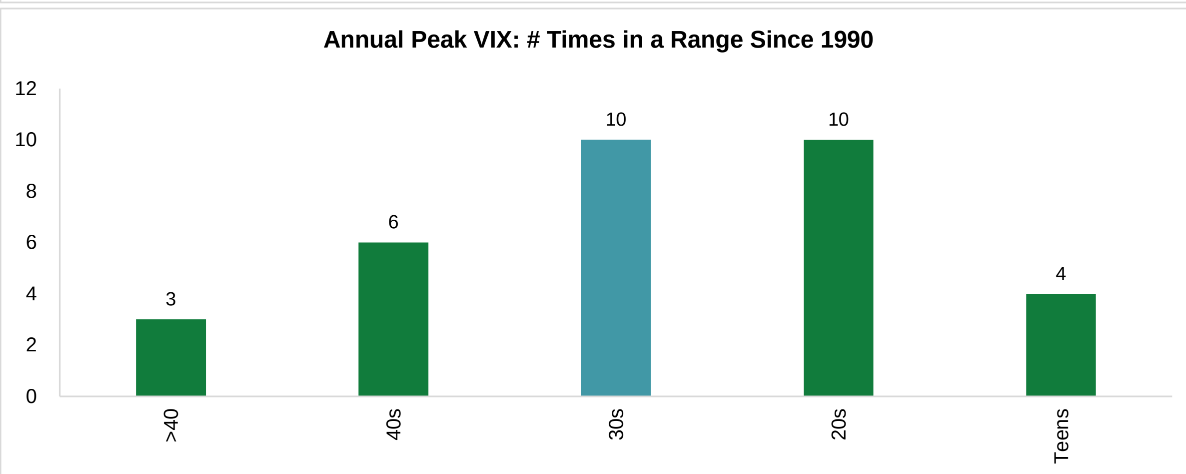


Source: Bloomberg, SIFMA estimates

Peak VIX Trends

Looking at peaks for the VIX since 1990, 2022 ranked #14 at 36.45. 2020 posted the #1 spot during the height of the COVID market turmoil, beating out the global financial crisis peak of 80.86 in 2008. Years where the annual peak VIX was in the 30s range, as in seen 2022, happened 10 times in the time series. This is now tied with the 20s range, which also occurred 10 times.





Source: Bloomberg, SIFMA estimates

Volatility Themes

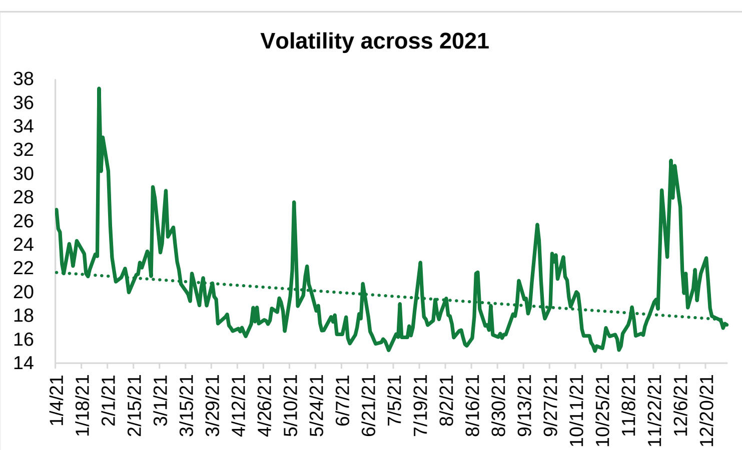
Searching for the New Normal

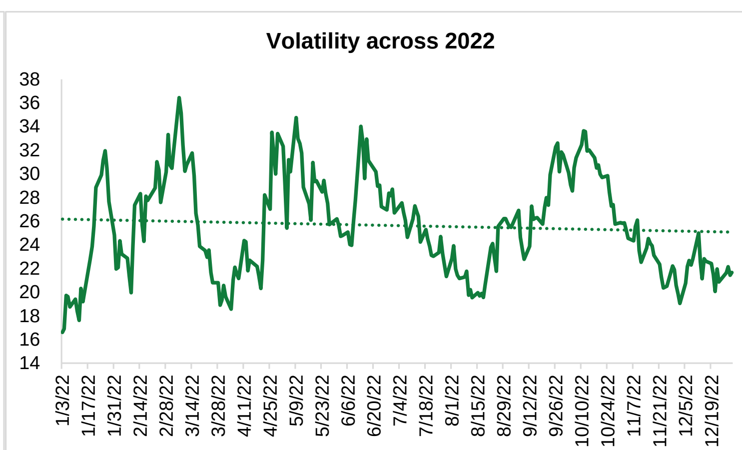
From a theme perspective, 2022 was not as exciting as 2021. In 2021, we started the year with the meme stock moment, where stocks like GameStop (ticker: GME) increased dramatically for no fundamental reason, i.e., traditional equity valuation metrics or industry fundamentals. GME stock price averaged $1.79 in 2020, increasing to $42.43 on average in 2021. It peaked at $86.88 that year. As such, the VIX chart showed a large spike at the beginning of 2021. Despite that excitement to start that year, the average VIX in 2021 was down versus the prior year, which included the CVOID market turmoil and highest daily VIX in history, as detailed above.

How does 2022 compare to the prior year? Well, despite not being as dramatic, the VIX increased over 30% in 2022. This had market participants wondering if the mid-20s is the new normal. We highlight the following:

- Annual average
    - 2021 = 19.66, -32.8% Y/Y
    - 2022 = 25.63, +30.4% Y/Y
- Annual peak
    - 2021 = 37.21, -55.0% Y/Y
    - 2022 = 36.45, -2.0% Y/Y
- Annual trough
    - 2021 = 15.01, +24.0% Y/Y
    - 2022 = 16.60, +10.6% Y/Y

Looking across the years, the average VIX increased in 2022, after 2021 saw a decline from the 2020 market turmoil year (average VIX 29.28). While 2022 experienced a lower peak than the prior year, it also saw a higher trough. And the differentials tell the story – 2022's peak was 2% lower but the trough, or volatility floor, was almost 11% higher. The new normal appears to be creeping up.



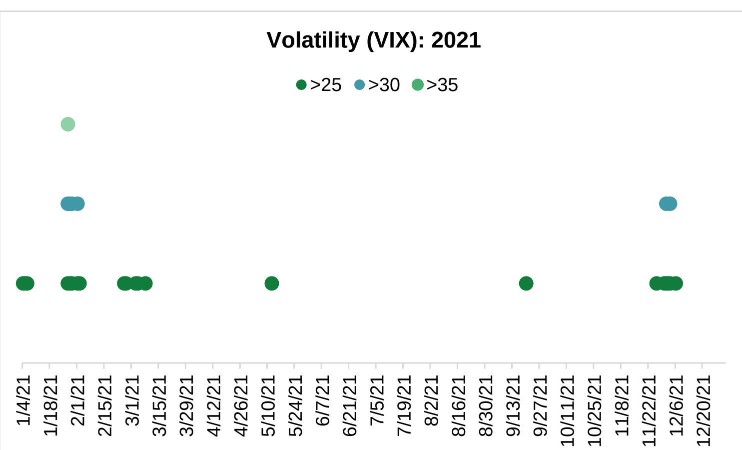


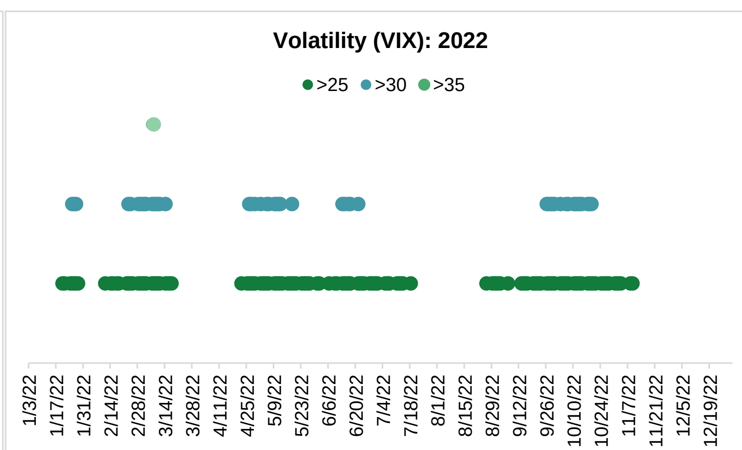
Source: Bloomberg, SIFMA estimates

Now markets are trying to determine if we will remain at higher levels than historical as the new normal. The three-year pre-COVID average VIX was 14.37. At 25.63 for 2022, the VIX was elevated by 78.3% to this historical level. The pattern of the VIX chart was also much more erratic in 2022. Whereas the 2021 chart showed a spike at the start and end of year points, it was relatively smooth in the middle. 2022 looked more like the stripes on Charlie Brown's tee shirt. However, the overall trendline of the slope of the 2022 VIX chart was essentially flat, implying a smoothing around the average level.

Looking at the pattern of daily spikes in the VIX, 2022 experienced many more daily spikes than the prior year. In general, it remained higher for longer. 130 days with a daily VIX greater than 25.00 represents 51.8% of the year at these higher levels. Could a VIX in the mid-20s be the new normal? (Of note, our market structure survey indicates a VIX in the 20-25 range.) More to come on this as we move through 2023.

- Days above 25.00
    - 2021 = 21
    - 2022 = 130
    - 2022 had 6.2x more daily spikes at this level
- Days above 30.00
    - 2021 = 6
    - 2022 = 48
    - 2022 had 2.0x more daily spikes at this level
- Days above 35.00
    - 2021 = 1
    - 2022 = 2
    - 2022 had 8.0x more daily spikes at this level





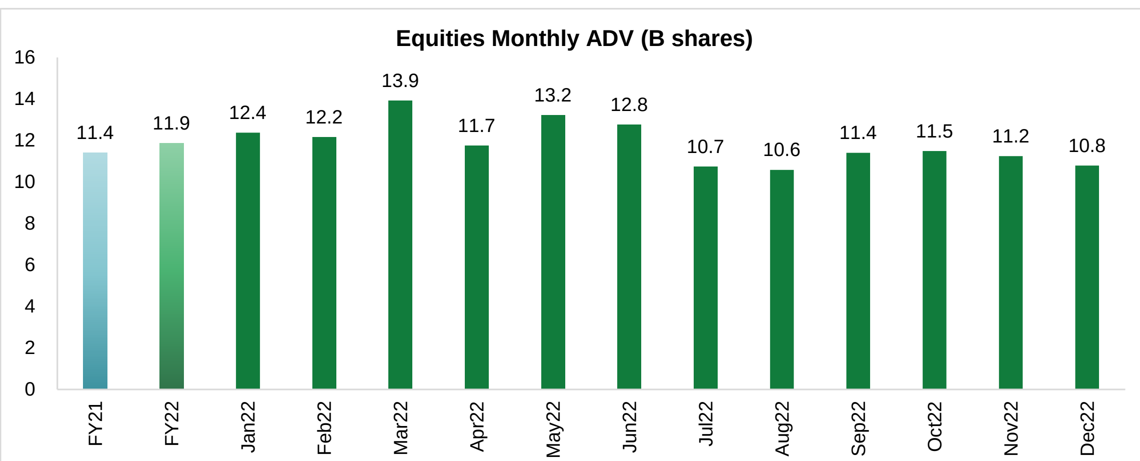
Source: Bloomberg, SIFMA estimates

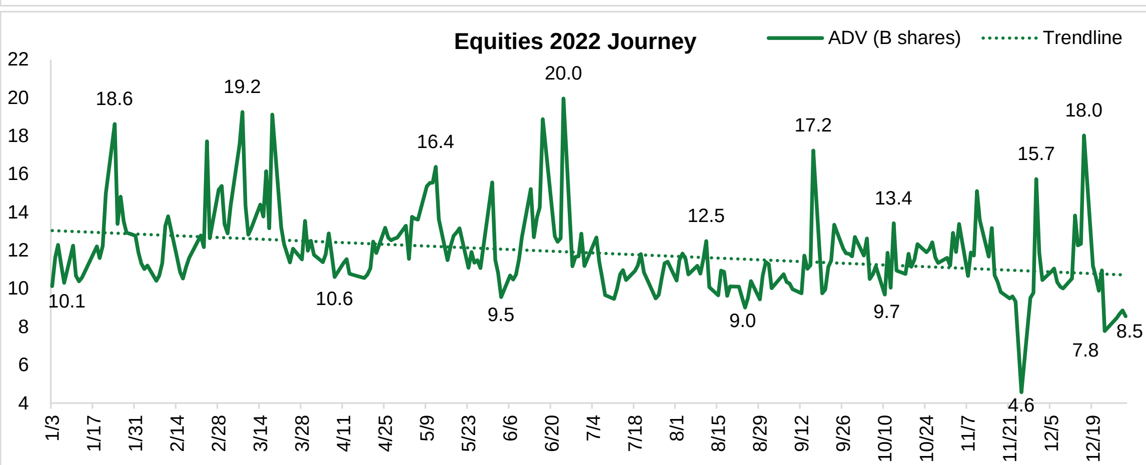
Equity Volumes Metrics

Equity volumes remain elevated to historical levels at 11.9 billion shares on average in 2022, +4.1% Y/Y. The overall trendline for equity volumes in 2021 was downward sloping. We saw some spikes throughout the year, but with very few sharp downward points.

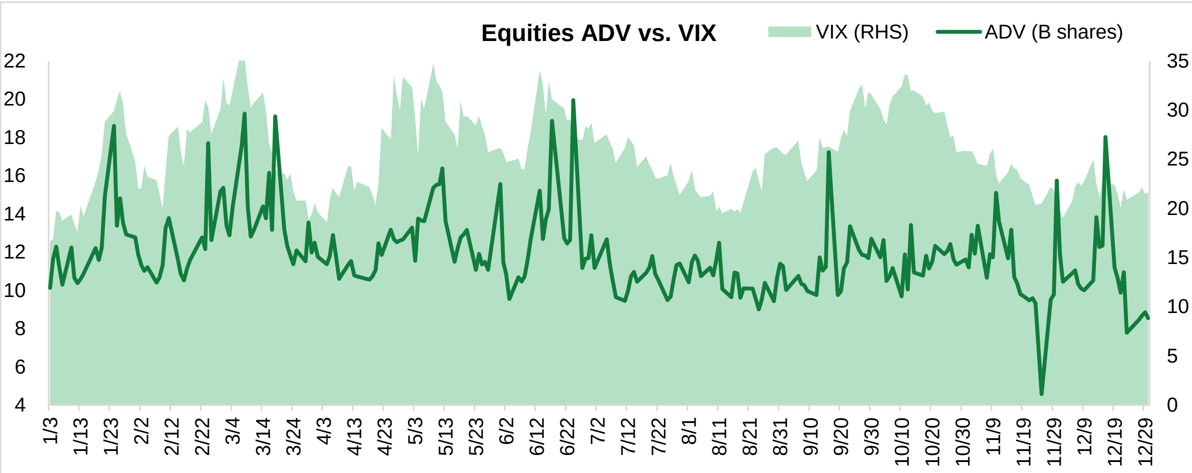
We highlight the following trends:

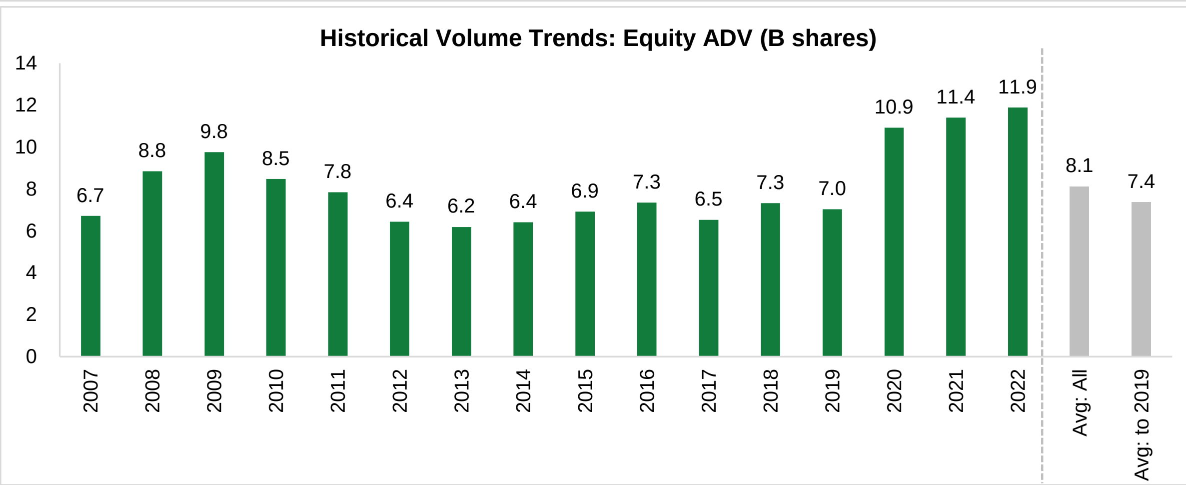
- 2022 average 11.9 billion shares
  - +4.1% Y/Y
  - Daily peak 20.0 billion shares on June 24
  - Daily trough 4.6 billion shares on November 25
- Average monthly level 11.9 billion shares
  - Monthly peak 10.6 billion shares in March
  - Monthly trough 13.9 billion shares in August





Source: Cboe Global Markets, SIFMA estimates





Source: Cboe Global Markets, Bloomberg, SIFMA estimates

Equity Volumes Themes

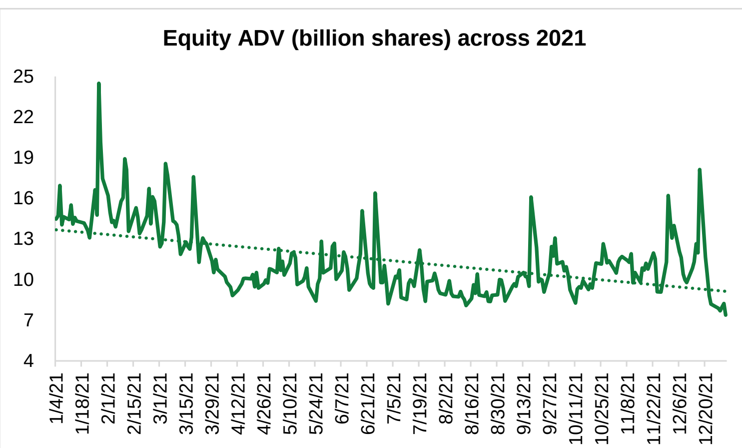
Also Searching for the New Normal

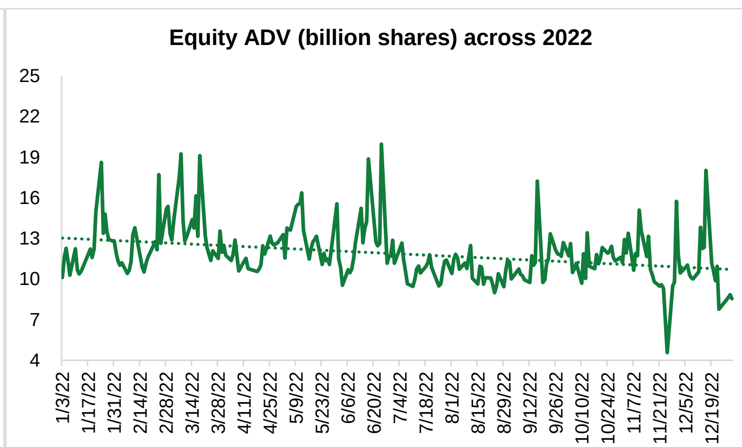
In line with the VIX, equity ADV saw a large spike at the beginning of 2021 during the meme stock moment, nearing almost 25 billion shares traded on January 27. After that, ADV trended down and smoothed out for the most part across that year. That said, average ADV increased overall in 2021 and again in 2022.

The pattern for equity ADV in the COVID era is now: +55.4% Y/Y in 2020; +4.4% Y/Y in 2021; and +4.1% Y/Y in 2022. We have seen increases in average volumes every year since COVID struck, albeit at slowing paces. It appears equity ADV could continue to climb if not at least remain at these elevated levels. How does 2022 compare to the prior year? We highlight the following:

- Annual average (billion shares)
    - 2021 = 11.4, +4.4% Y/Y
    - 2022 = 11.9, +4.1% Y/Y
- Annual peak (billion shares)
    - 2021 = 24.5, +26.5% Y/Y
    - 2022 = 20.0, -18.5% Y/Y
- Annual trough (billion shares)
    - 2021 = 7.4, +18.1% Y/Y
    - 2022 = 4.6, -38.2% Y/Y

Interestingly, while the growth rate for the annual averages were in line for the last two years, over 4%, the other markers have come down. Both the 2022 peak and trough were lower than the prior year. The ADV pattern is remaining more solidly in the 10-11 billion shares traded range.





Source: Cboe Global Markets, SIFMA estimates

Now markets are trying to determine if we will remain at higher levels than historical as the new normal. The three-year pre-COVID average equity ADV was 7.0 billion shares. At 11.9 billion shares in 2022, equity ADV was elevated by 70.6% to this historical level.

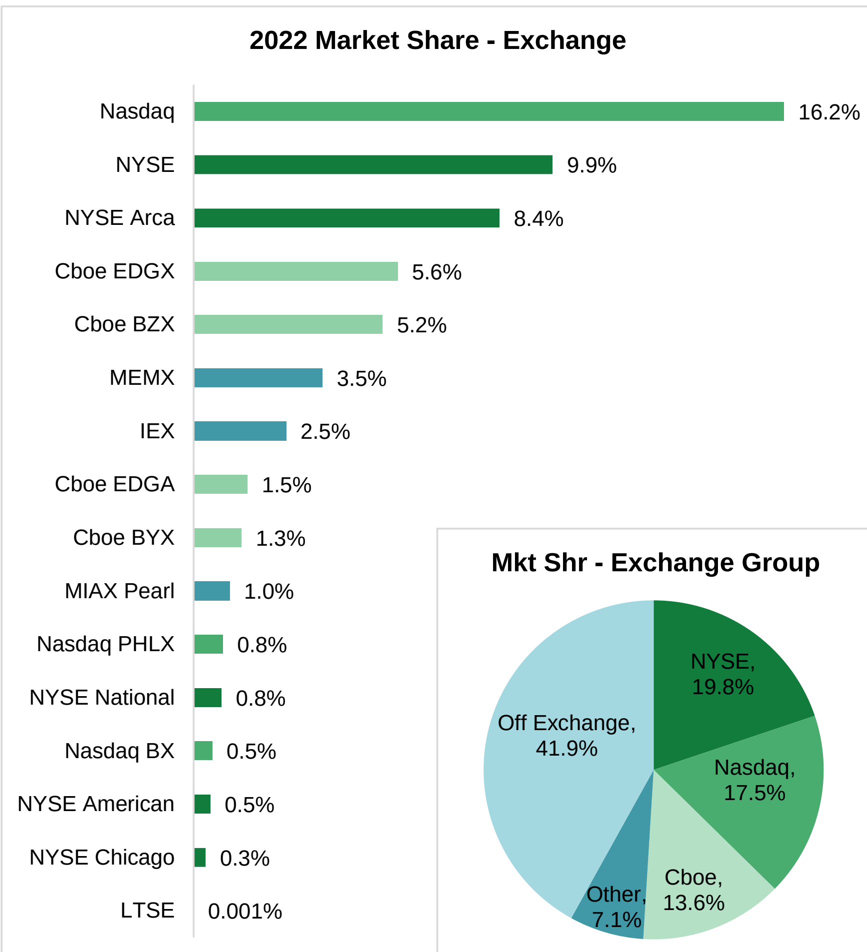
Looking at the patterns of daily spikes in equity ADV, 2022 experienced many more daily spikes than the prior year. In general, it remained higher for longer. 221 days with a daily volume greater than 10 billion shares represents 88.0% of the year at these higher levels. This was on top of the 2021 trend, with 63.1% of days trading over 10 billion shares. Could equity ADV in the 11-12 billion shares range – or at least steadfastly greater than 10 billion shares – be the new normal? (Of note, our market structure survey indicates 10-15 billion shares.) More to come on this as we move through 2023.

- Days above 10 billion shares
  - 2021 = 159
  - 2022 = 221
  - 2022 had 1.4x more daily spikes at this level
- Days above 15 billion shares
  - 2021 = 23
  - 2022 = 20
  - 2022 had 0.9x more daily spikes at this level

Source: Cboe Global Markets, SIFMA estimates

Exchange and Parent Group Market Share

Currently, there are sixteen U.S. equities exchanges, operating under seven parent companies. The Nasdaq stock exchange holds the top spot among individual exchanges, with a 16.2% market share. However, NYSE holds the top spot on aggregate, i.e. by total exchange group, with a cumulative 19.8% share across its five exchanges.



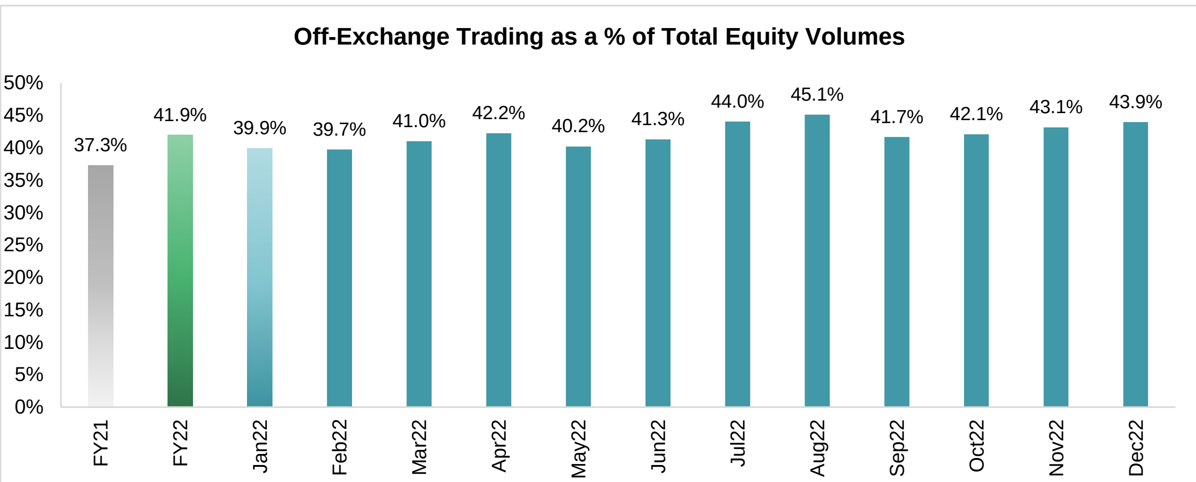
Source: Cboe Global Markets, SIFMA estimates
Note: Other = MEMX, IEX, MIAX Pearl, and LTSE

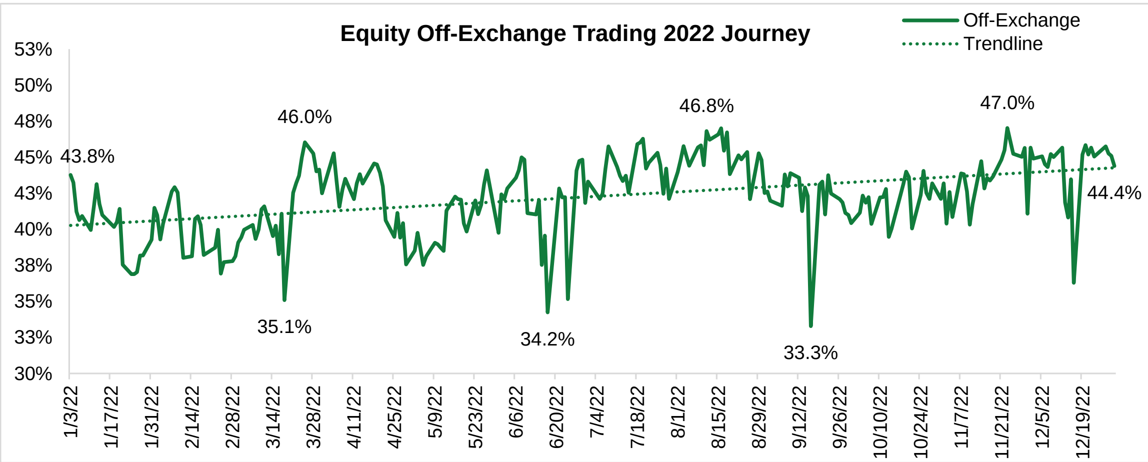
Off-Exchange Trading Metrics

Off-exchange trading as a percent of total equity volumes remained elevated to historical levels but down from last year at 41.9% on average in 2022, -1.7 pps Y/Y. The overall trendline for off-exchange volumes in 2022 was slightly upward sloping. We saw some spikes throughout the year come down below the annual average.

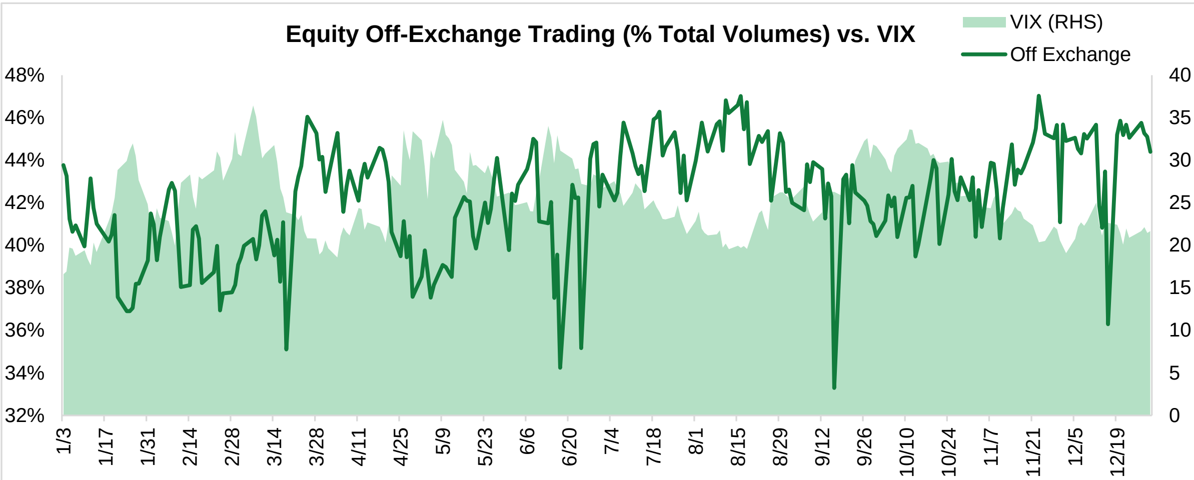
We highlight the following trends:

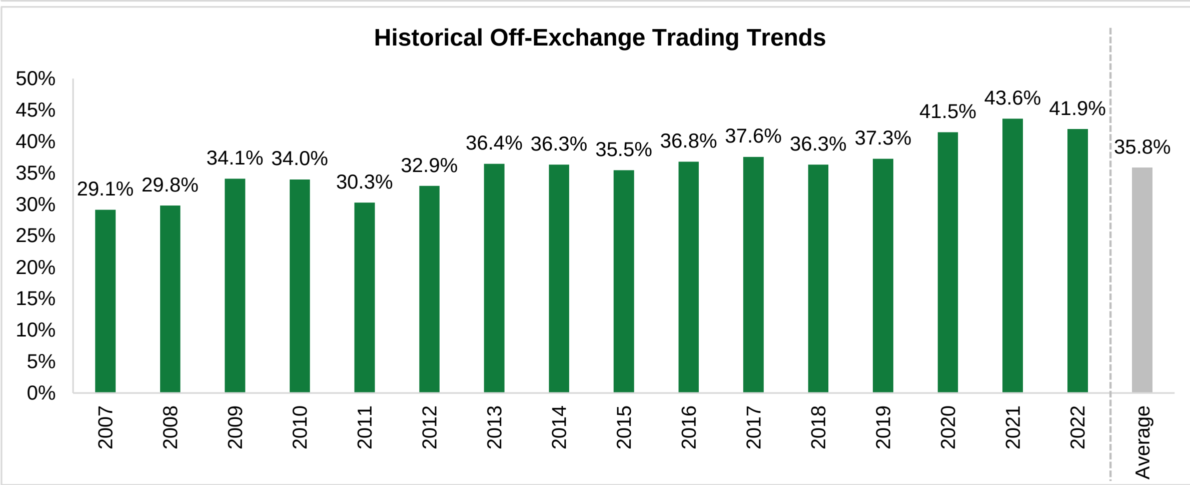
- 2022 average 41.9%
  - -1.7 pps Y/Y
  - Daily peak 47.0% on November 23
  - Daily trough 33.3% on September 16
- Average monthly level 42.0%
  - Monthly peak 45.1% in August
  - Monthly trough 39.7% in February





Source: Cboe Global Markets, SIFMA estimates





Source: Cboe Global Markets, Bloomberg, SIFMA estimates

Off-Exchange Trading Themes

The growth in off-exchange trading starting in 2020 has been attributed to retail investors. Based on our market structure survey, market participants estimate retail investors now represent 20%-30% of total equity volumes, up from 10% historically. Retail brokerages send this retail order flow to market makers, who then execute some of the orders off exchange and report the trade to the Trade Reporting Facilities (TRF). These executions are immediately reported to the tape to help facilitate price discovery. Retail brokers route flow based on who will provide the best execution quality, which includes price and/or size improvement for their clients' trades.

Most retail flow has generally been executed off exchange (the exception being limit orders which are sent to exchanges). As retail investor trading has grown as a percentage of overall volume, it is logical that off-exchange volume grew as well. While it is interesting to monitor off-exchange trading trends, we note that:

- All off-exchange trades are reported to the tape, contributing to overall market price transparency
- Reported off-exchange trading is not 100% retail – off exchange trading was 41.9% in 2022, much greater then the 20%-30% retail participation estimate from market participants[1]

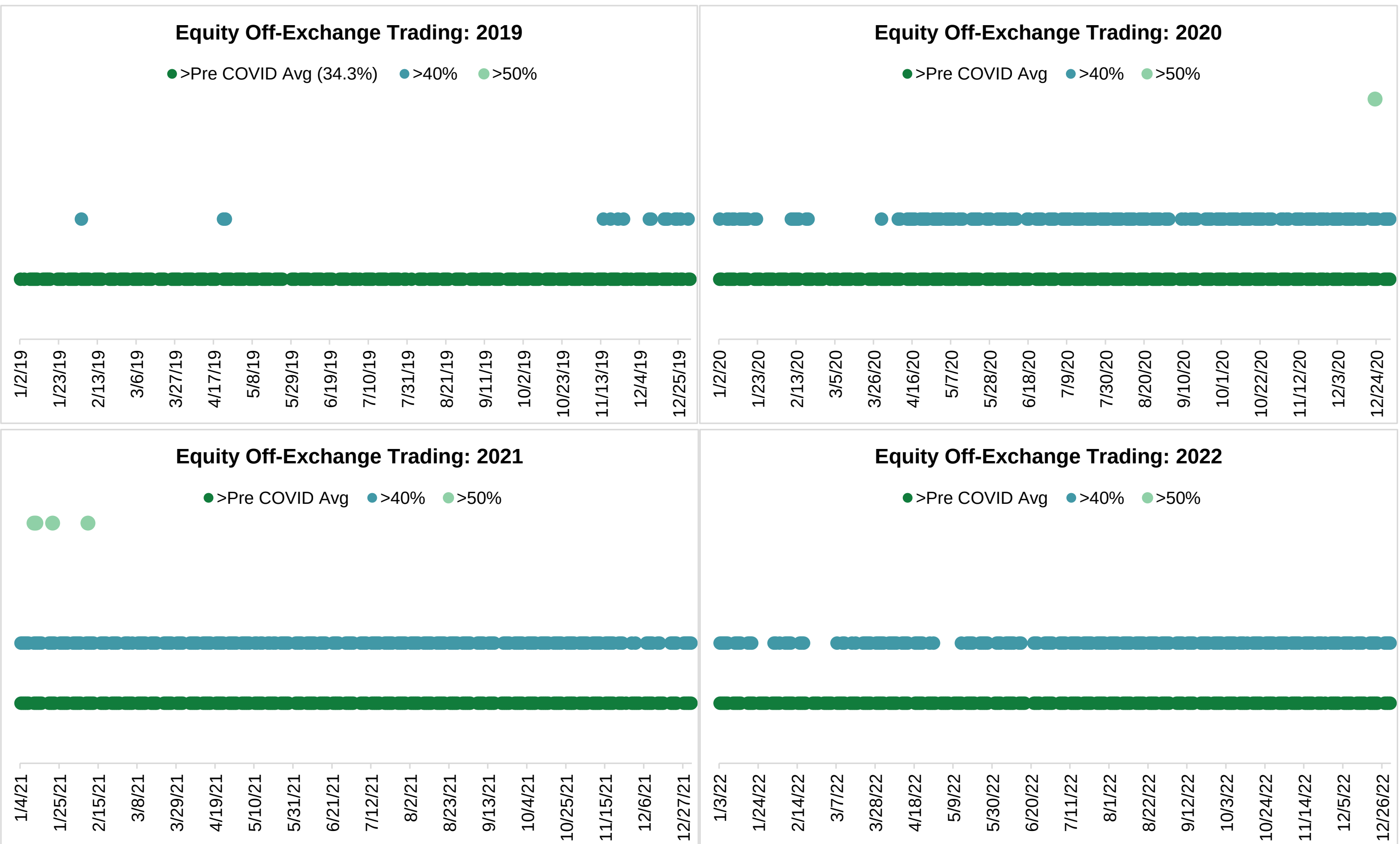
The percentage of off-exchange trading in any given time period is a function of market fundamentals at that time, such as retail participation (also includes volatility levels and other factors). This is shown in the data as we moved through the COVID era, from 2020 to 2022:

- 2019 = 37.3%; +0.9 pps Y/Y, +2.9% to the pre-COVID average (34.3% from 2007-2019)
- 2020 = 41.5%; +4.2 pps Y/Y, +7.1% to the pre-COVID average
- 2021 = 43.6%; +2.2 pps Y/Y, +9.3% to the pre-COVID average
- 2022 = 41.9%; -1.7 pps Y/Y, +7.6% to the pre-COVID average

Retail participation began to increase in 2019 after retail brokers reduced commissions to $0 per trade. Then we saw the COVID era increase in retail investing, coupled with the meme stock movement in early 2021. Next came 2022. As macro factors turned against stocks – rising interest rates, inflation, looming recession – retail investors backed away from single stock trading. Retail trading is highly correlated to market momentum, which was in a downward trajectory in 2022 (S&P 500 -4.1% Y/Y).

[1] Also includes block (trade size 10,000+ shares) and other institutional trades, including bank capital commitment as part of institutional trades

The pattern discussed above is shown in the charts below. As noted, even 2019 saw off-exchange trading levels elevated to the historical average (dark green dots), but with very few days above 40% (dark blue dots), mostly after the $0 commissions came into play in the fall. 2020 saw an increase – and shift to steady state – of days greater than 40% after COVID struck, with one day over 50% (light green dots). 2021 was solidly over 40%, with four days greater than 50% in the early part of the year. However, 2022 broke the steady state trend, with many gaps in the 40% line and zero days over 50%.



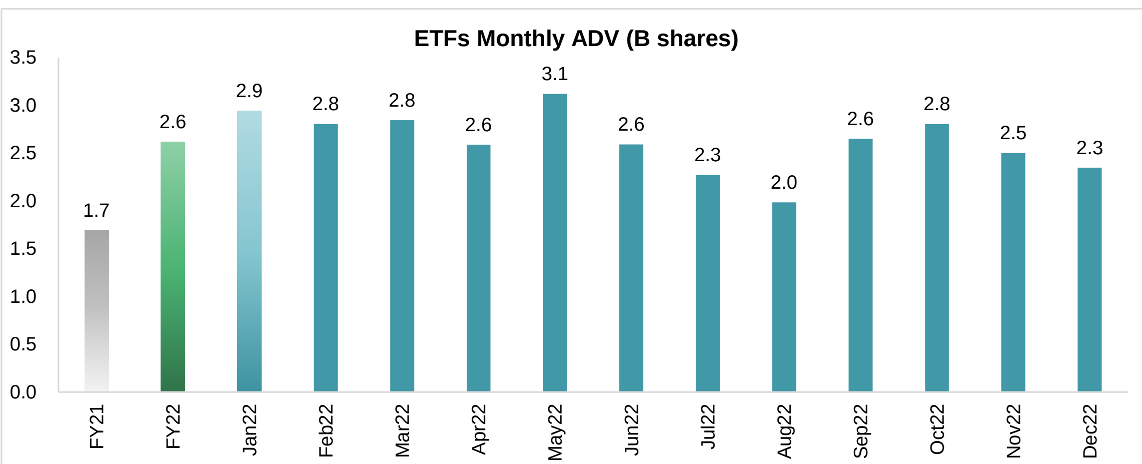
Source: Cboe Global Markets, Bloomberg, SIFMA estimates

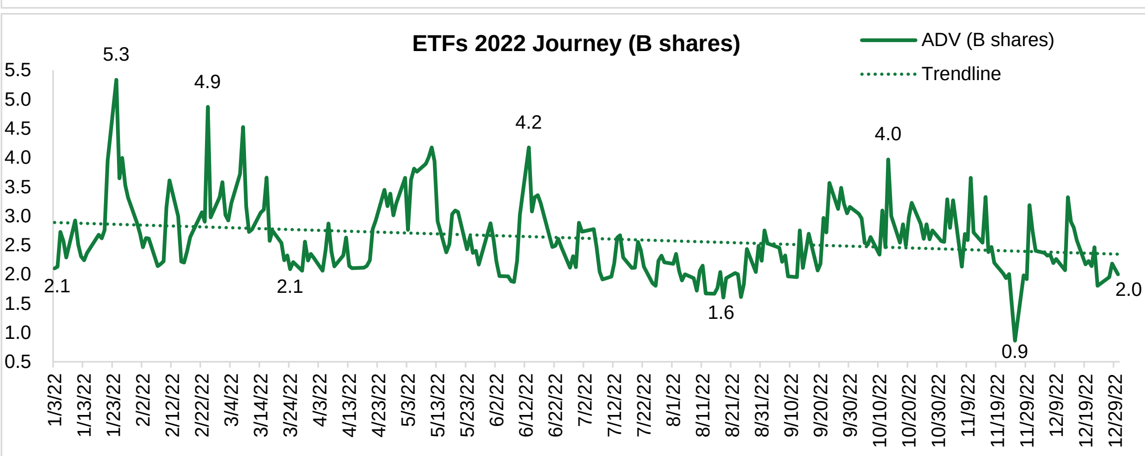
ETF Volumes Metrics

2022 was a good year for ETFs (and all index products). ETF volumes expanded to 2.6 billion shares on average, +54.6% Y/Y. The overall trendline for ETF volumes in 2022 was slightly downward sloping, with a few spikes in the first half of the year, ending the year with a smoother trend line and slightly down to the start of the year: 2.1 billion shares on January 3 versus 2.0 billion shares on December 30. ETFs as a percent of total equity market volumes was 22.0% in 2022 versus around 19% on average pre COVID.

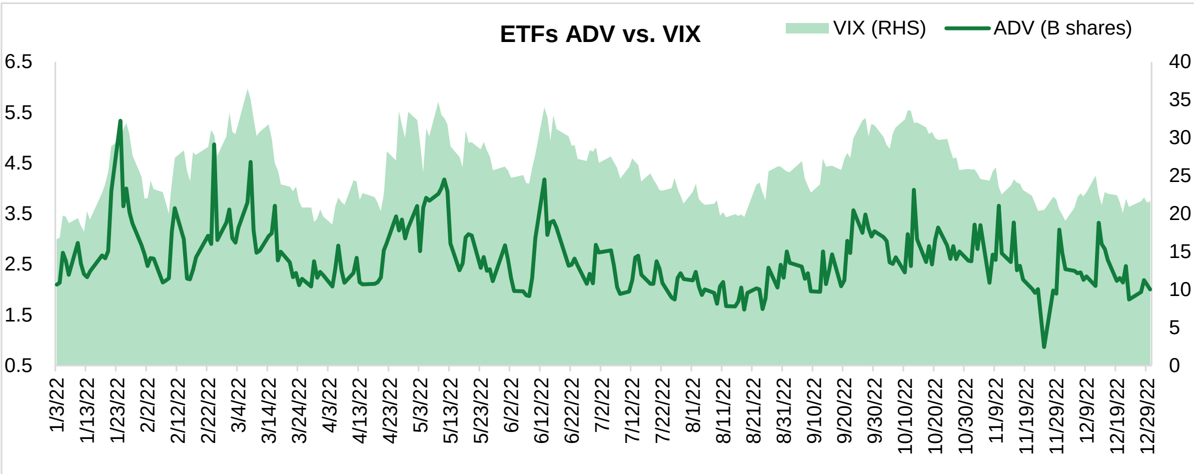
We highlight the following trends:

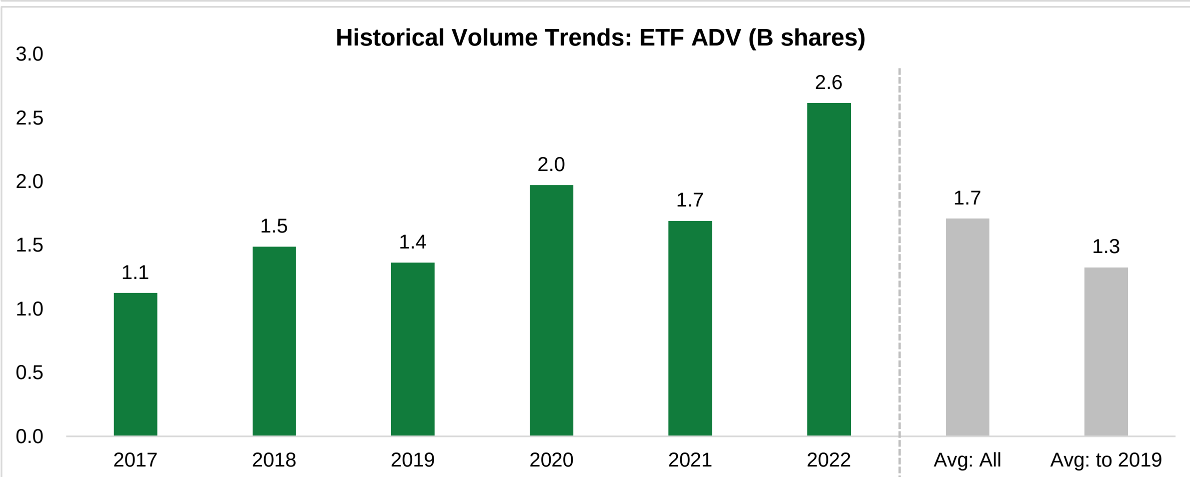
- 2022 average 2.6 billion shares
  - +54.6% Y/Y
  - Daily peak 5.3 billion shares on January 24
  - Daily trough 0.9 billion shares on November 25
- Average monthly level 2.6 billion shares
  - Monthly peak 3.1 billion shares in May
  - Monthly trough 2.0 billion shares in August





Source: Cboe Global Markets, SIFMA estimates





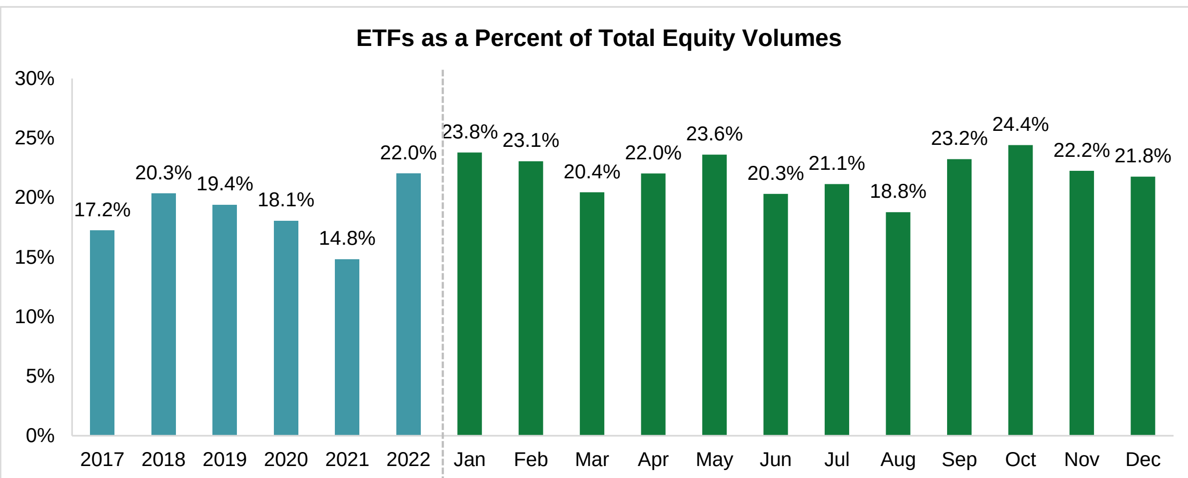
Source: Cboe Global Markets, Bloomberg, SIFMA estimates

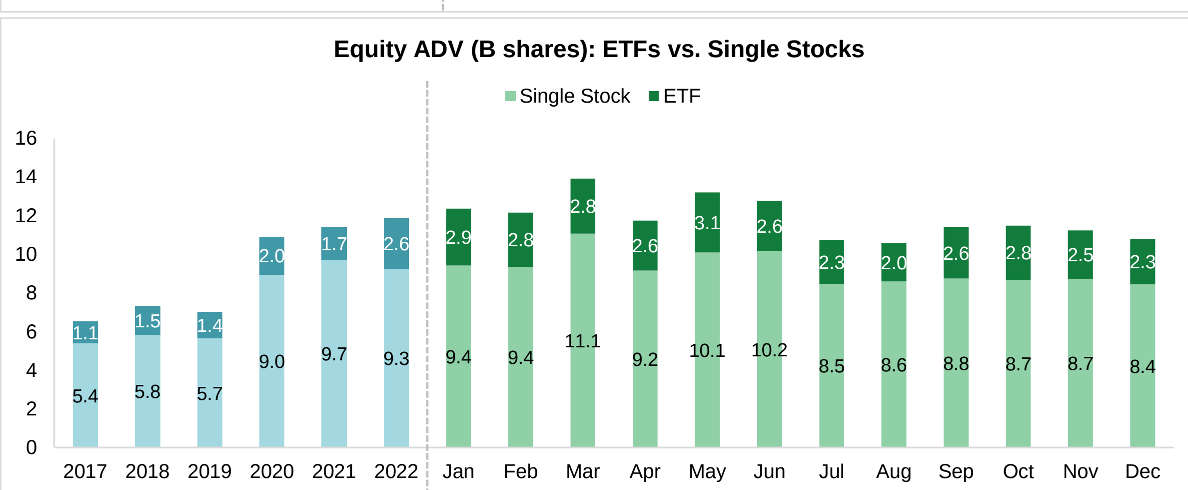
ETF Volumes Themes

ETFs as a Percent of Total Equities

ETF shares trade on the U.S. equity markets in the secondary market, as do the underlying stocks used to create equity ETFs. On average in 2022, ETF volume was 2.6 billion shares versus 9.3 billion shares for single stock equites, or 22.0% of total equity volumes. We highlight the following ETF trends:

- 22.0% of total equities volume in 2022; +7.2 pps Y/Y and +3.0 pps to the pre-COVID average of 19.0%
- Monthly average 22.1%; peaked in October at 24.4%, troughed in August at 18.8%
- ETFs volumes +54.6% Y/Y, versus
    - Single stock -4.7%
    - Total equities +4.1%



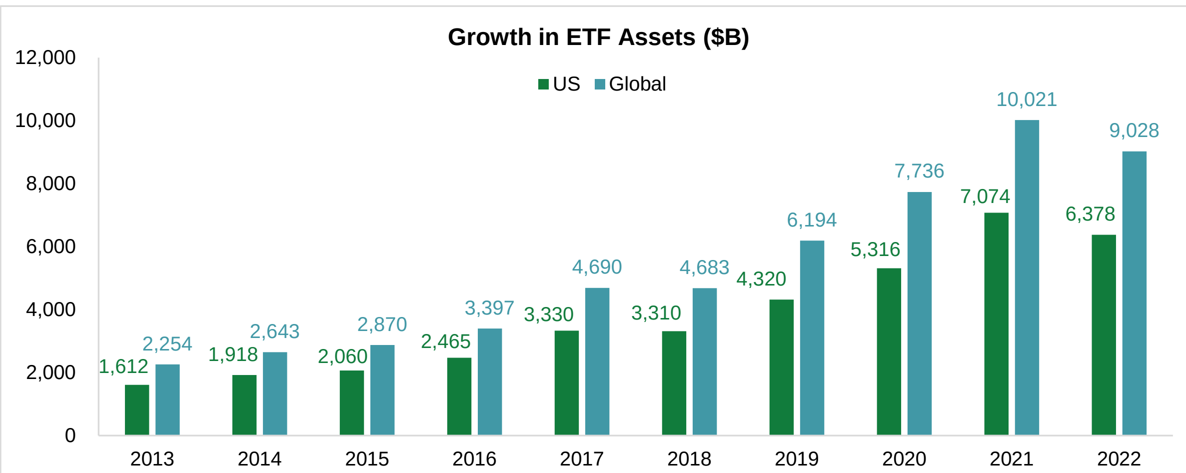


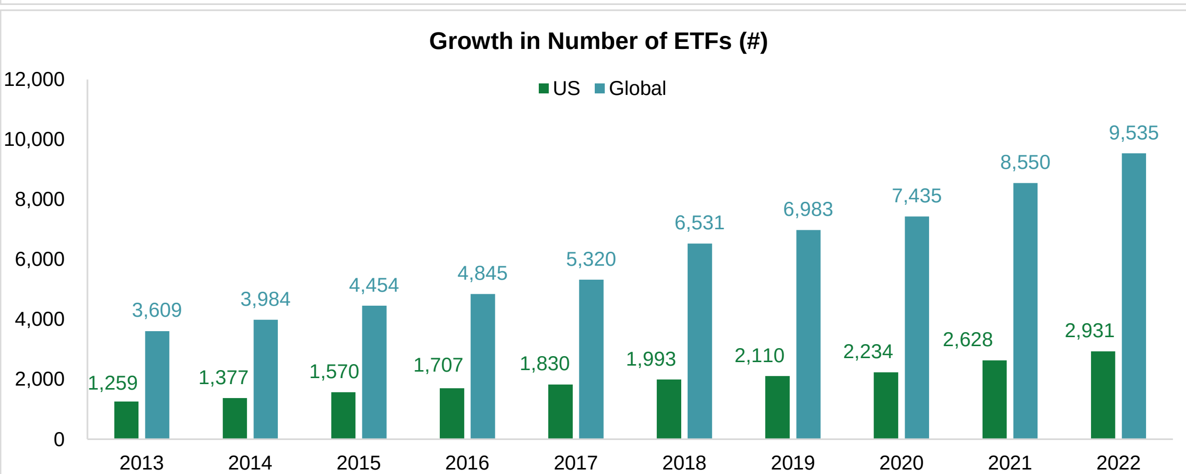
Source: Cboe Global Markets, SIFMA estimates

ETF Landscape

According to ETFGI research, the global ETF industry gathered $856.2 billion in net inflows in 2022, the second highest level of annual net inflows behind the $1.3 trillion in 2021 (-33.6% Y/Y). Net inflows of $69.4 billion during December marked the 43rd month of consecutive net inflows. The U.S. ETF industry saw net inflows of $607.2 billion in 2022, the second highest on record after $919.8 billion in 2021 (-34.0% Y/Y). We highlight the following trends on ETF assets and number of funds:

- US ETF assets $6.4 trillion; -9.8% Y/Y, +14.0% 5-year CAGR (US 70.6% of total global)
- US # ETFs 2,931; +11.5% Y/Y, +8.0% 5-year CAGR (US 30.7% of total global)
- Global ETF assets $9.0 trillion; -9.9% Y/Y, +14.0% 5-year CAGR
- Global # ETFs 9,477; +11.5% Y/Y, +7.9% 5-year CAGR





Source: ETFGI

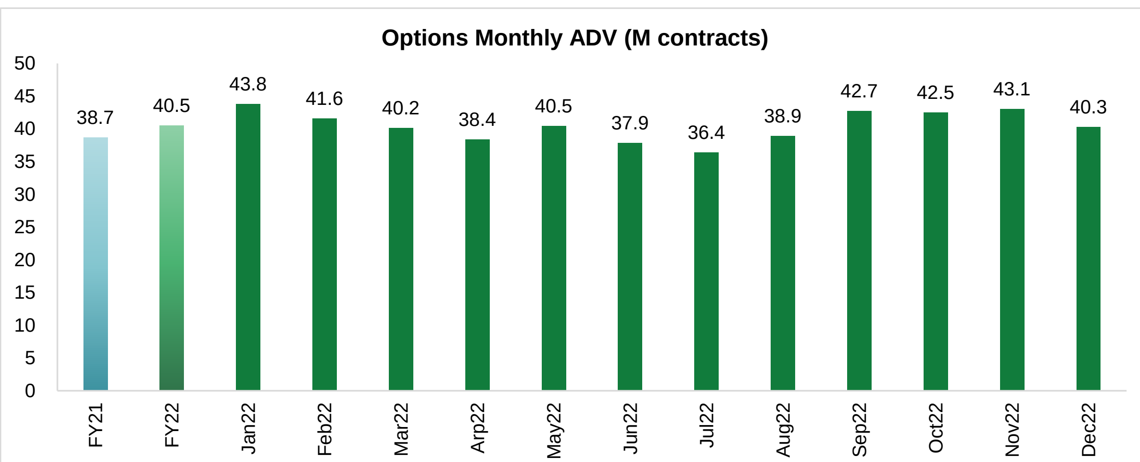
Listed Options Volumes Metrics

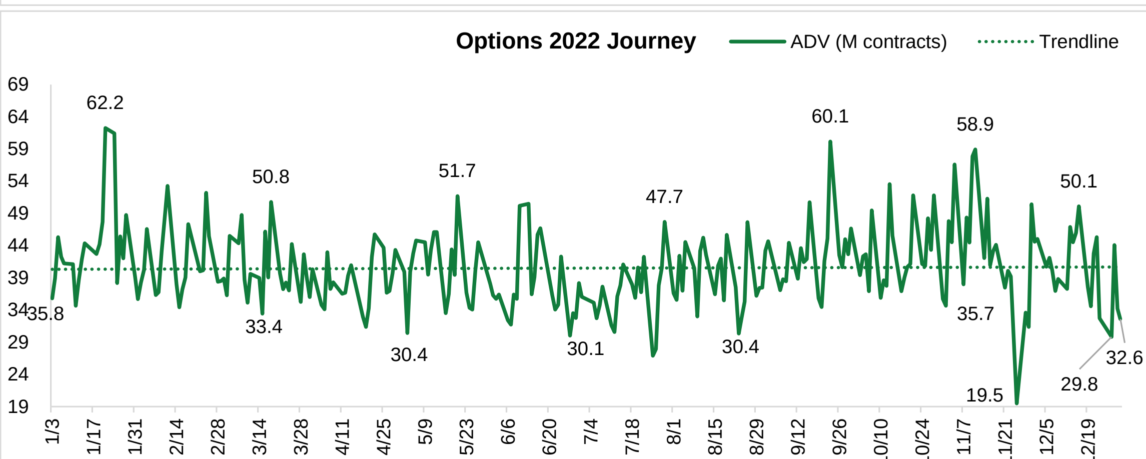
Multi-listed options volumes continued to climb, ending 2022 at 40.5 million contracts on average, +4.8% Y/Y. The overall trendline for options volumes in 2021 was essentially flat. Markets saw nineteen days last year where volumes were greater than 50 million contracts and three days where volumes topped 60 million contracts.

We highlight the following trends:

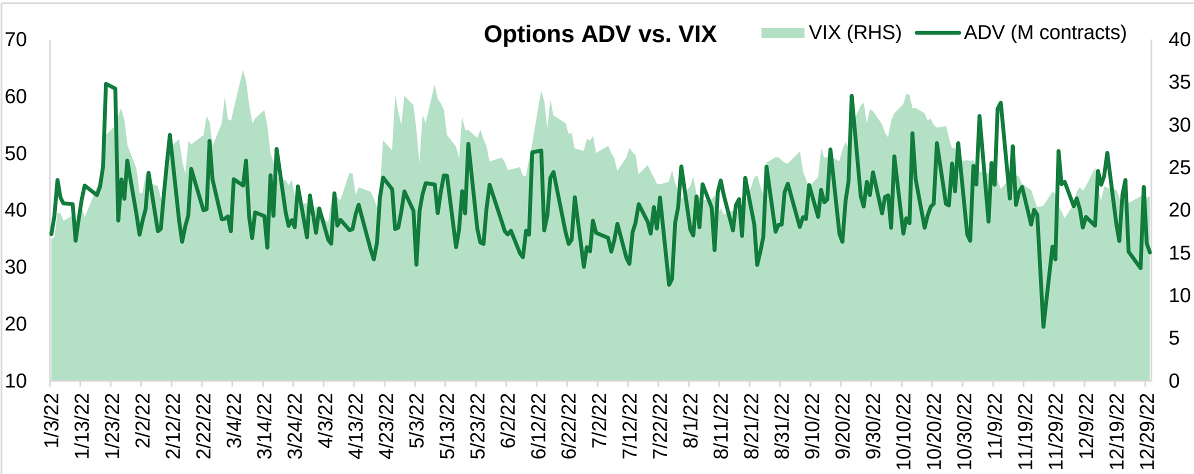
Total Options

- 2022 average 40.5 million contracts
  - +4.8% Y/Y
  - Daily peak 62.2 million contracts on January 21
  - Daily trough 19.5 million contracts on November 25
- Average monthly level 40.5 million contracts
  - Monthly peak 43.8 million contracts in January
  - Monthly trough 36.4 million contracts in July

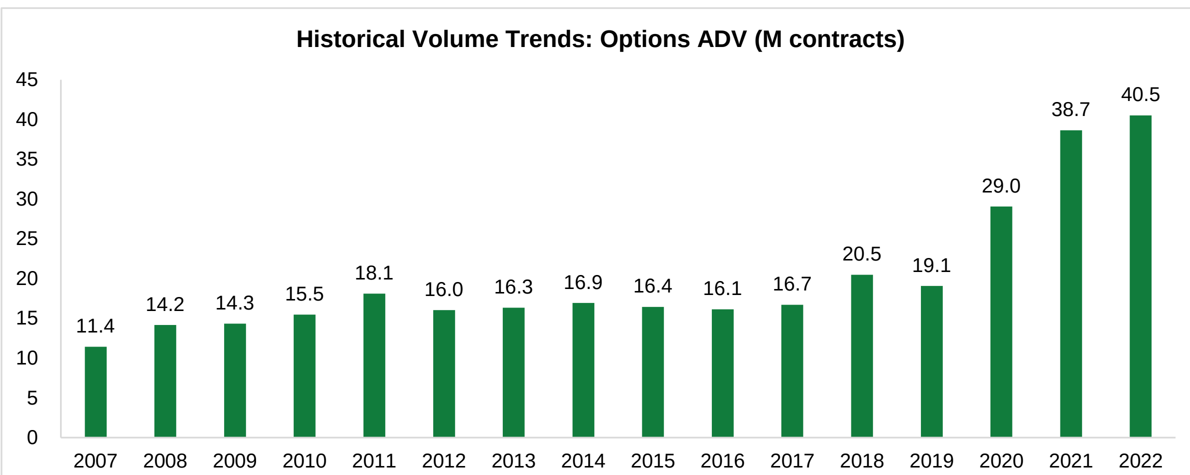




Source: Cboe Global Markets, SIFMA estimates



Source: Cboe Global Markets, Bloomberg, SIFMA estimates

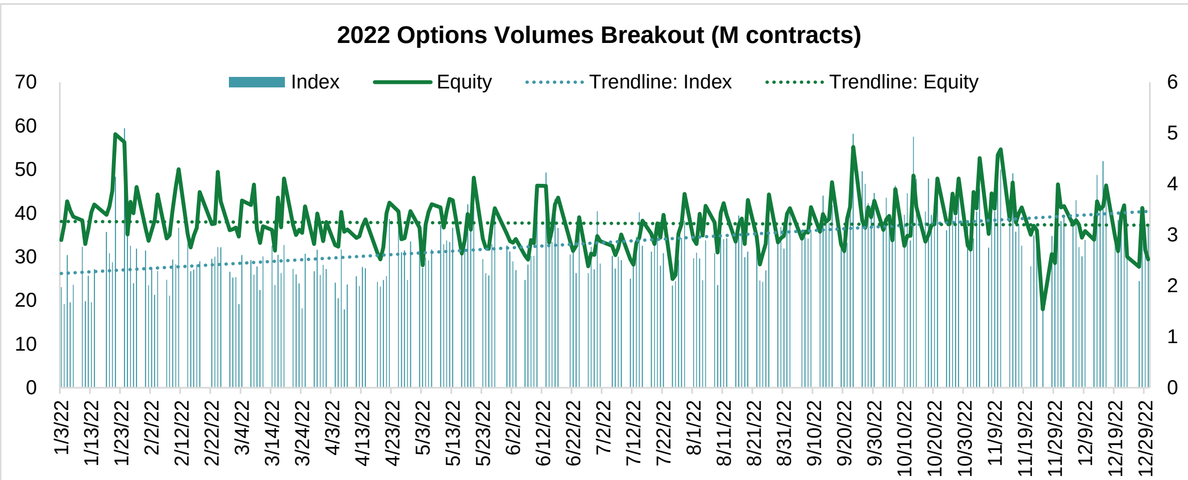


Source: Options Clearing Corporation, SIFMA estimates

Note: Data varies slightly from precious charts given different sources

Options Breakout

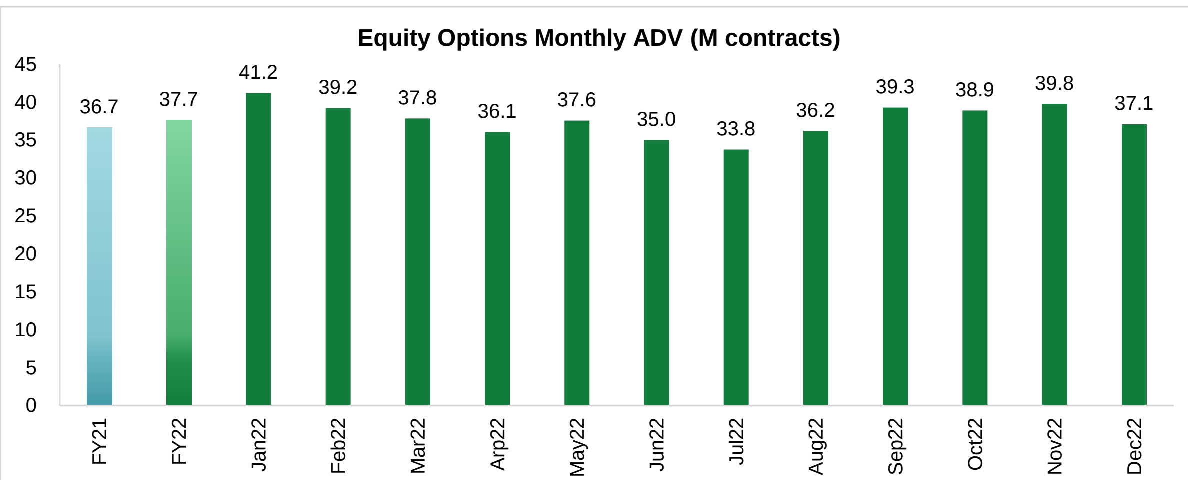
On average for 2022, the total multi-listed options trading volumes breakout was: equity 92.9% and index 7.1%. Equity options ADV peaked at 96.0% and troughed at 89.5%. For index options volumes, the peak was 10.5% and trough 4.0%.

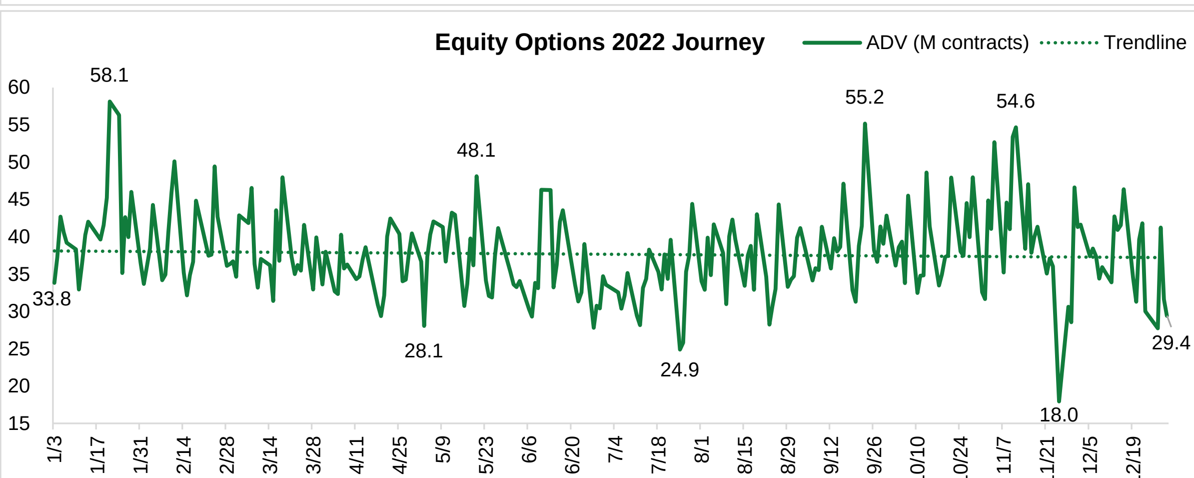


Source: Cboe Global Markets, SIFMA estimates

Equity Options

- 2022 average 37.7 million contracts
  - +2.7% Y/Y
  - Daily peak 58.1 million contracts on January 21
  - Daily trough 18.0 million contracts on November 25
- Average monthly level 37.7 million contracts
  - Monthly peak 41.2 million contracts in January
  - Monthly trough 33.8 million contracts in July

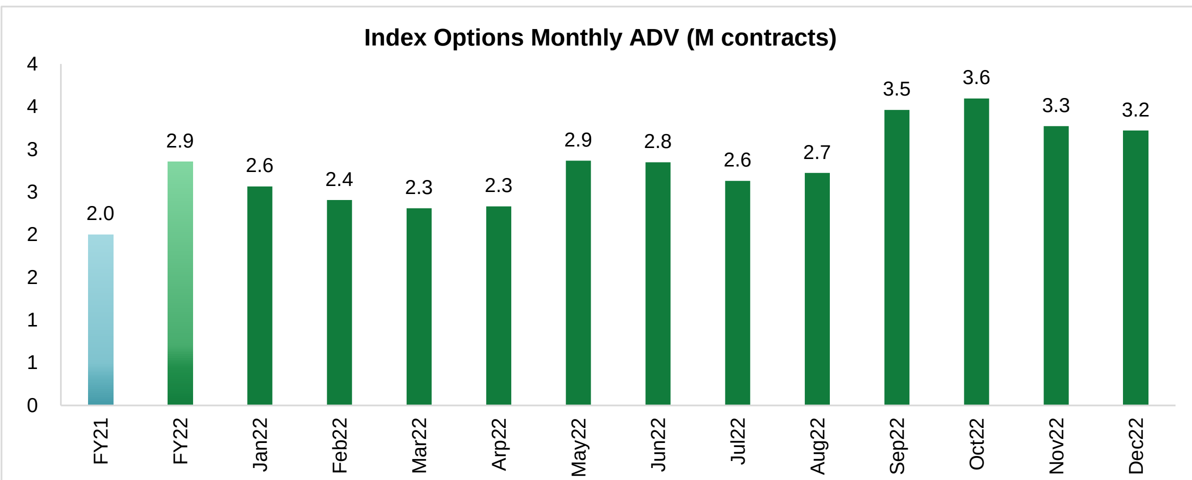


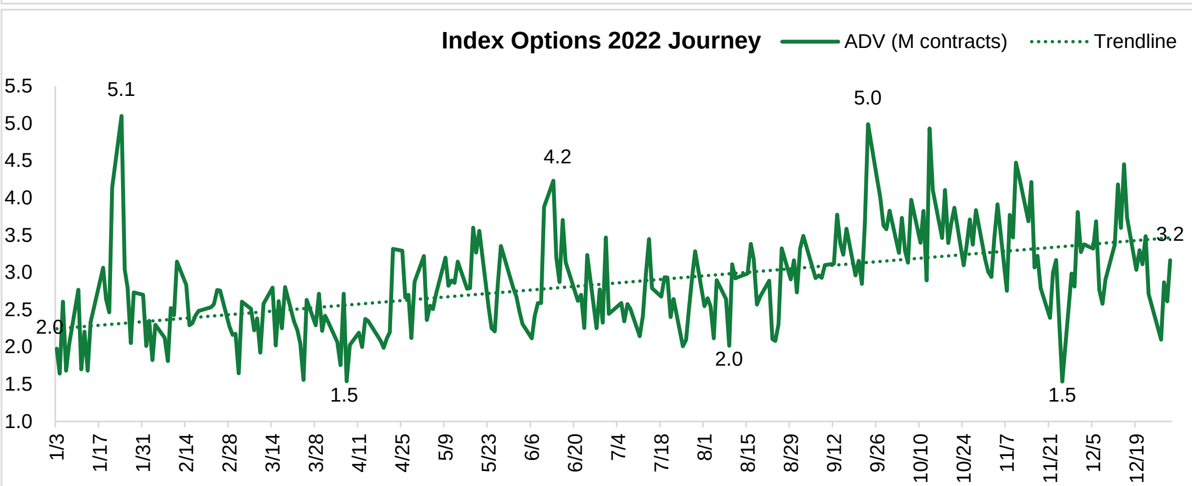


Source: Cboe Global Markets, SIFMA estimates

Index Options

- 2022 average 2.9 million contracts
    - +42.5% Y/Y
    - Daily peak 5.1 million contracts on January 24
    - Daily trough 1.5 million contracts on November 25
- Average monthly level 2.9 million contracts
    - Monthly peak 3.6 million contracts in October
    - Monthly trough 2.3 million contracts in March and April





Source: Cboe Global Markets, SIFMA estimates

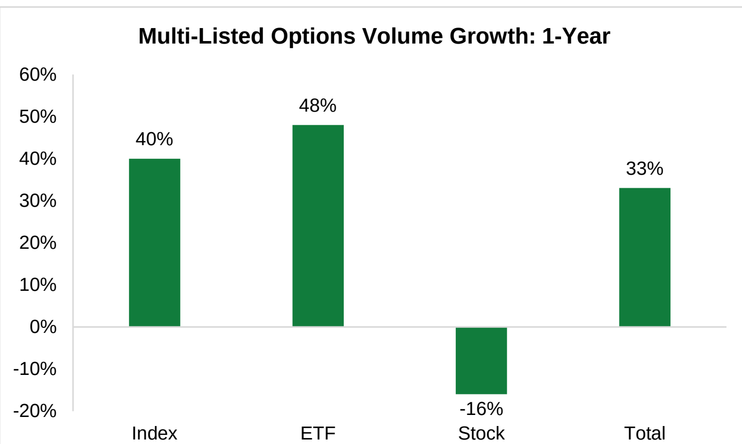
Listed Options Volumes Themes

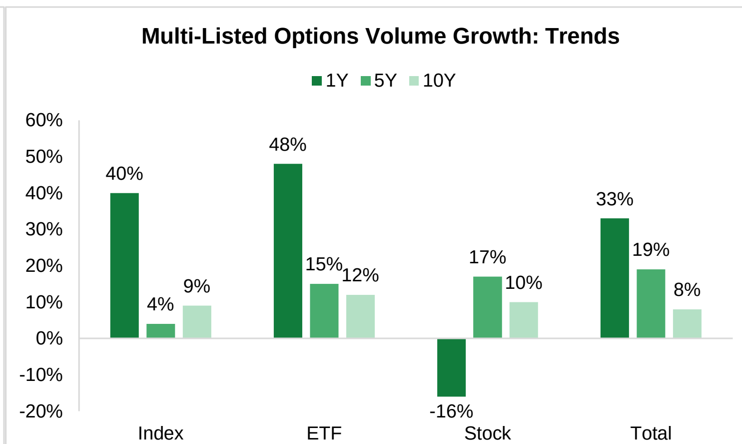
The Growth in Index Options

It was interesting to see the shift in interest last year to different options products, from single stock to index and ETF options. In terms of one year growth rates, while index and ETFs were up 40% and 48% respectively (through November), single stock options were actually down 16%. It was the index and ETF products driving total options growth, +33%. This was a shift from the single stock option growth we have seen since COVID and the meme stock period.

We highlight the following trends:

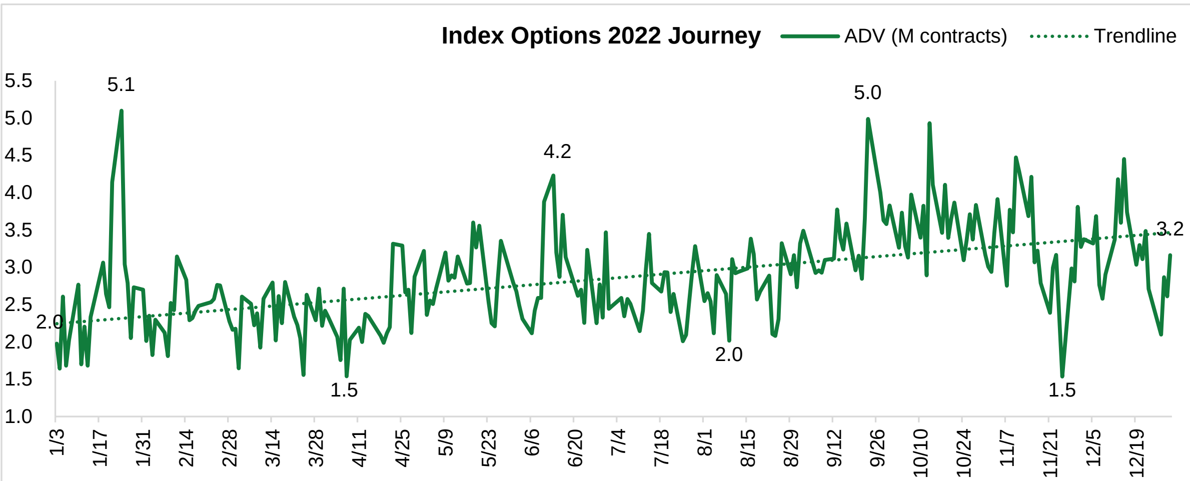
- Index: 1-year growth rate 40%; 10.0x the 5-year growth rate and 4.4x the 10-year growth rate
- ETF: 1-year growth rate 48%; 3.2x the 5-year growth rate and 4.0x the 10-year growth rate
- Stock: 1-year growth rate -16%; a reversal from the +17% and +10% 5-year and 10-year growth rates
- Total: 1-year growth rate 33%; 1.7x the 5-year growth rate and 4.1x the 10-year growth rate





Source: Henry Schwartz, Vice President, Global Client Engagement Cboe Global Markets, "Options Industry Update" (through November 2022)

Looking further at index product volume growth, the slope of the line was sharply upward sloping. After starting the year at 2.0 million contracts, index options closed the year at 3.2 million contracts, +60.5%. We saw fourteen days where volumes reached 4.0 million contracts or above and two days where volumes surpassed 5.0 million contracts.



Source: Cboe Global Markets, SIFMA estimates

While total options volumes continued to grow, average trade size continued to decline, from 25.4 in April 2010 to 7.8 at the end of October 2022, -69.4%. While the trend had been in place for years, you saw a significant turn starting after the industry went to $0 commissions in the fall of 2019 and continuing through the COVID and meme periods. This was an indication of the growing number of retail investors in the options markets. Further evidence of the growth in retail was shown in volumes breakouts by trade size. The volume has shifted to smaller trade sizes with the 1 to 10 lots increasing, albeit this has come off some as retail trading is correlated with market direction.

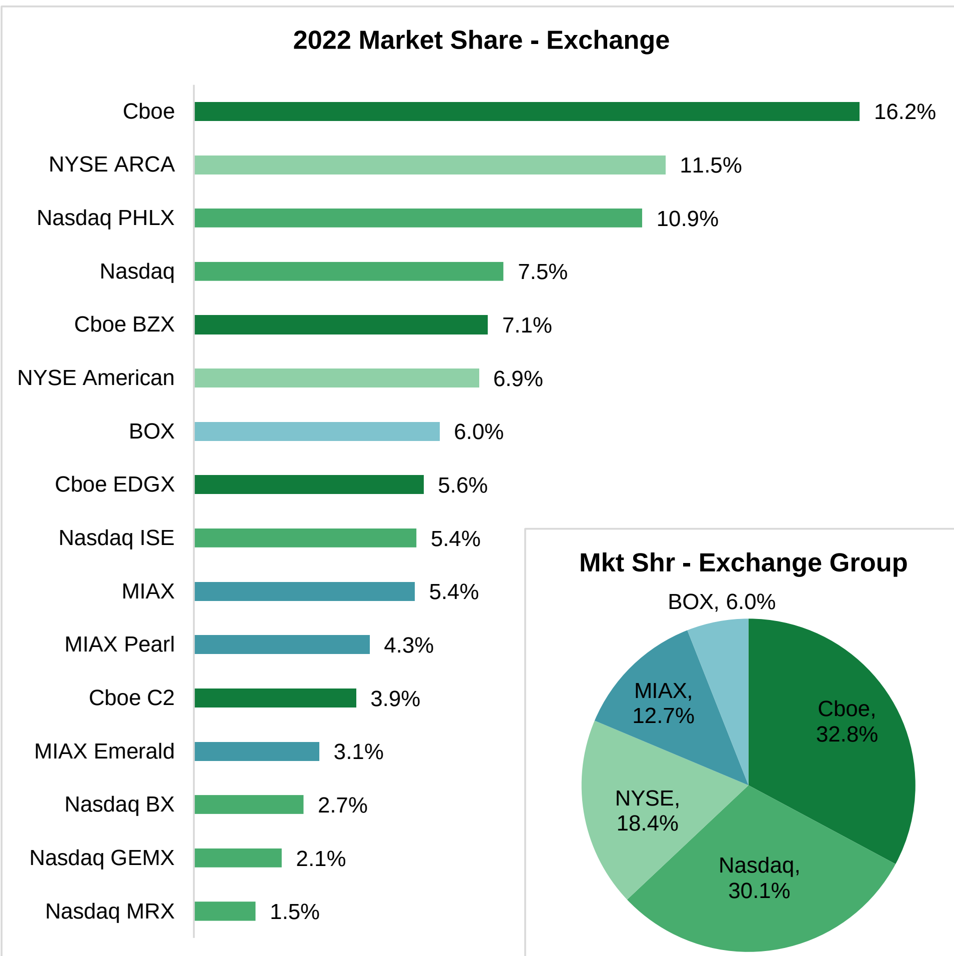
The entrance of retail investors has been a main contributor to options volumes growth. Another contributor is the growth in trading of zero days to expiration (ODTE) options. Volumes were averaging around 1.5 million contracts per day for these products last year. Market participants indicated that this was driven by retail, but institutions are starting to incorporate the strategies of short-dated options.

The shift in flow to index from single stock was in lockstep with the macro environment. As investors continued to look to trade geopolitical and macro themes, they used index products. Also, in a down market environment, correlations increase, making index options more efficient. Market participants expect this trend and therefore index options volumes to carry into 2023.

A signal for when this trend could reverse is when we see the IPO market return. This in turn typically peaks investor interest in single stock options.

Exchange and Parent Group Market Share

Currently, there are sixteen U.S. multi-listed options exchanges, operating under five parent companies. The Cboe exchange holds the top spot among individual exchanges, with a 16.2% market share. Cboe also holds the top spot on aggregate, i.e. total by exchange group, with a cumulative 32.8% share across its four exchanges.

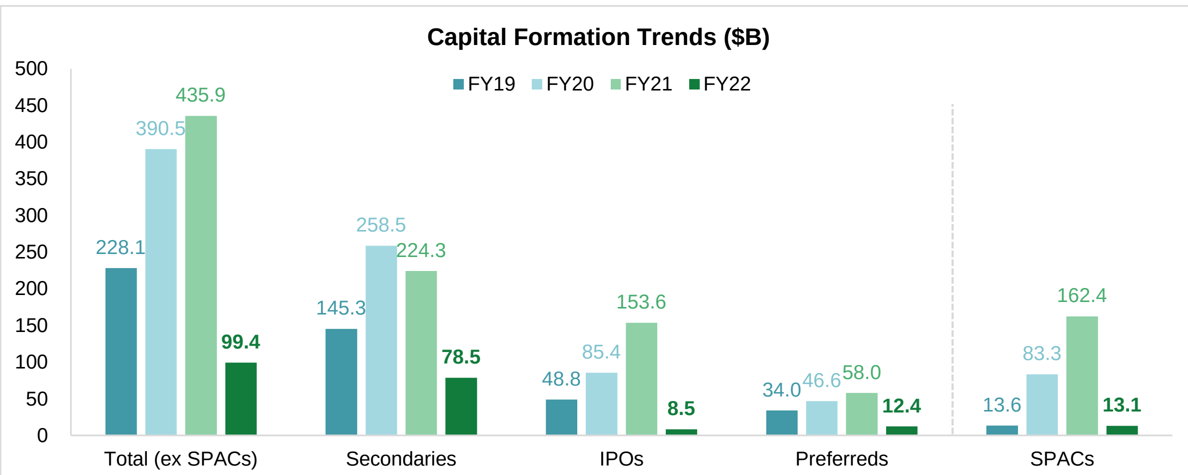


Source: Cboe, SIFMA estimates

Capital Formation Metrics

The long-running 0% interest rate environment allowed all assets to increase in value, even risk assets of all types. In equities, IPOs exploded – issuance was up +75% from 2020 versus 2019, and then another +80% from 2021 versus 2020. IPOs totaled $85.4 billion in 2020 and $153.6 billion in 2021, +86% and +234% to the three-year pre-COVID average of $46.0 billion.

What a difference a year makes. Last year we saw a complete reversal, with some capital markets businesses down around 90%. Markets are transitioning as we move away from 0% interest rates and financial assets revalue accordingly. The end game remains uncertain, with market participants wondering what should be the intrinsic value of many assets. As such, IPOs closed out the year at $8.5 billion in deal value, versus $153.6 billion last year, -94.4%. SPACs have all but disappeared at $13.1 billion versus $162.4 last year, -91.9%.

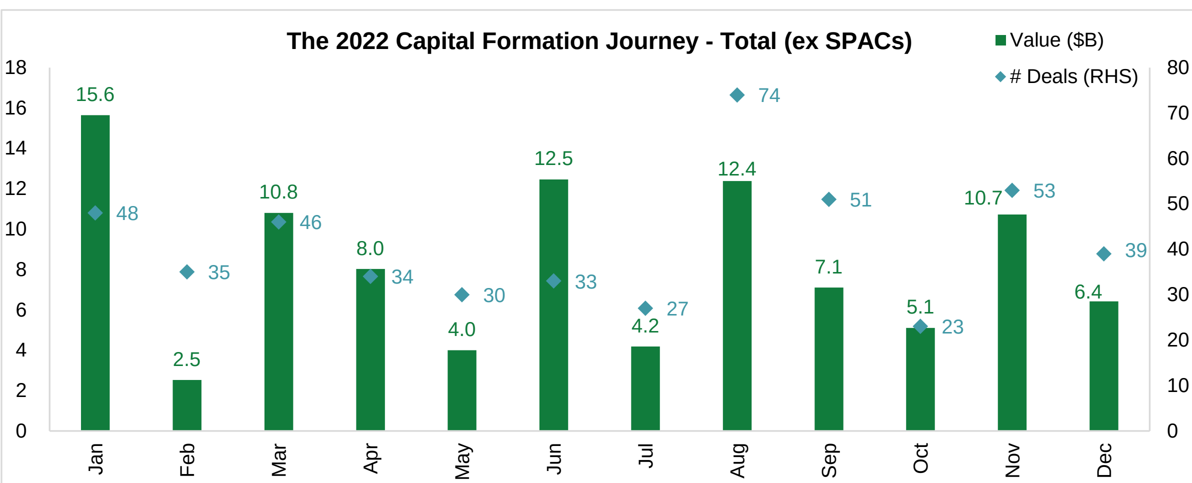


Source: Dealogic
Note: Total, secondaries, IPOs, and preferreds include rank eligible deals and exclude BDCs, SPACs, ETFs, CLEFs and rights offers. SPAC value not included in the total value

We highlight the following trends seen across the year:

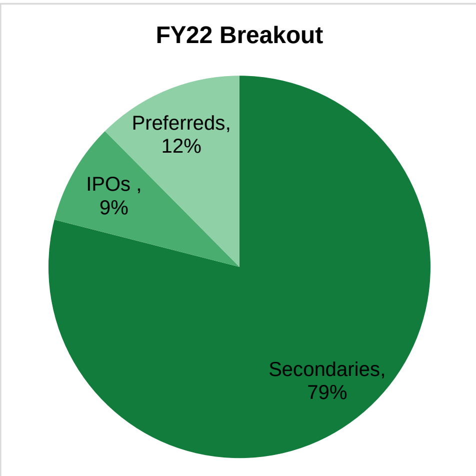
Total Issuance

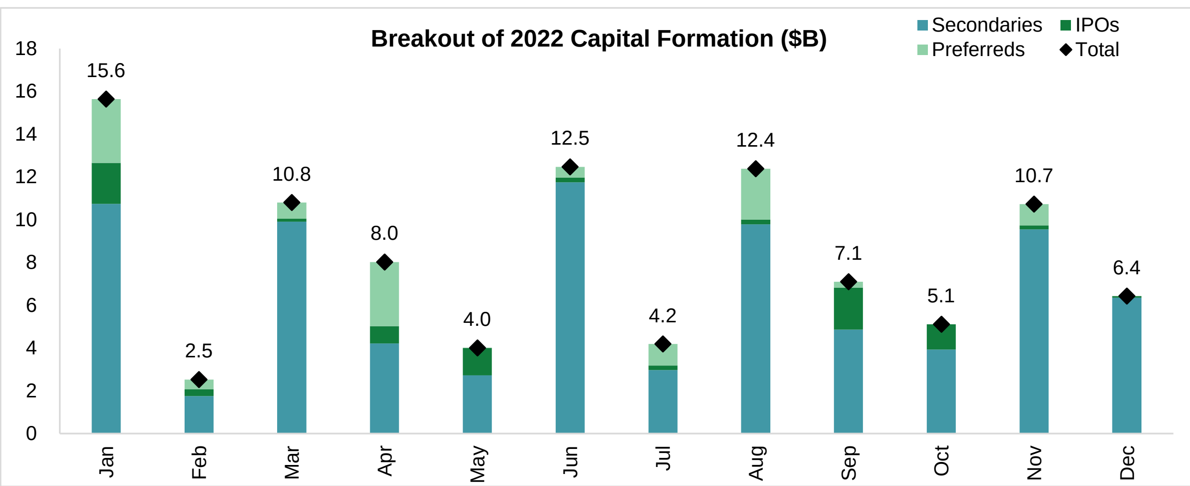
- 2022 total deal value $99.4 billion, -77.2% Y/Y
- Monthly deal value trends
    - Average monthly level $8.3 billion
    - Highest month $15.6 billion in January
    - Lowest month $2.5 billion in February
- 2022 total number of deals 493, -64.7% Y/Y
- Monthly number of deals trends
    - Average monthly level 41
    - Highest month 74 in August
    - Lowest month 23 in October



Source: Dealogic
Note: Includes rank eligible deals; excludes BDCs, SPACs, ETFs, CLEFs and rights offers

- Breakout of total capital formation (% of total issuance)
  - Secondaries 79%; versus 51% LY, +28 pps
  - Preferreds 12%; versus 13% LY, -1 pps
  - IPOs 9%; versus 35% LY, -27 pps

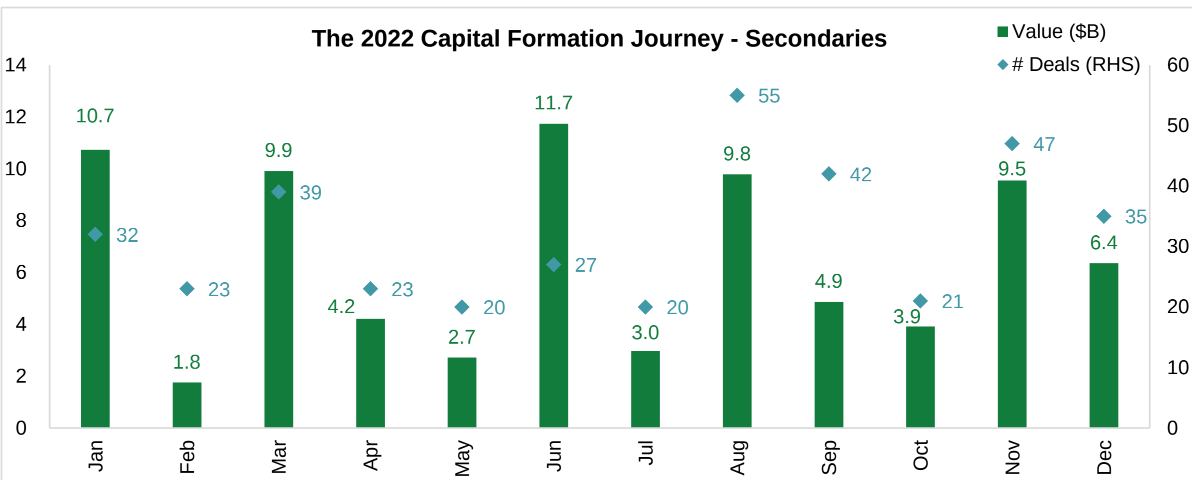




Source: Dealogic
Note: Total, secondaries, IPOs, and preferreds include rank eligible deals and exclude BDCs, SPACs, ETFs, CLEFs and rights offers

Secondary Issuance

- 2022 total deal value $78.5 billion, -65.0% Y/Y
- Monthly deal value trends
    - Average monthly level $6.5 billion
    - Highest month $11.7 billion in June
    - Lowest month $1.8 billion in February
- 2022 total number of deals 384, -57.3% Y/Y
- Monthly number of deals trends
    - Average monthly level 32
    - Highest month 55 in August
    - Lowest month 20 in May and July

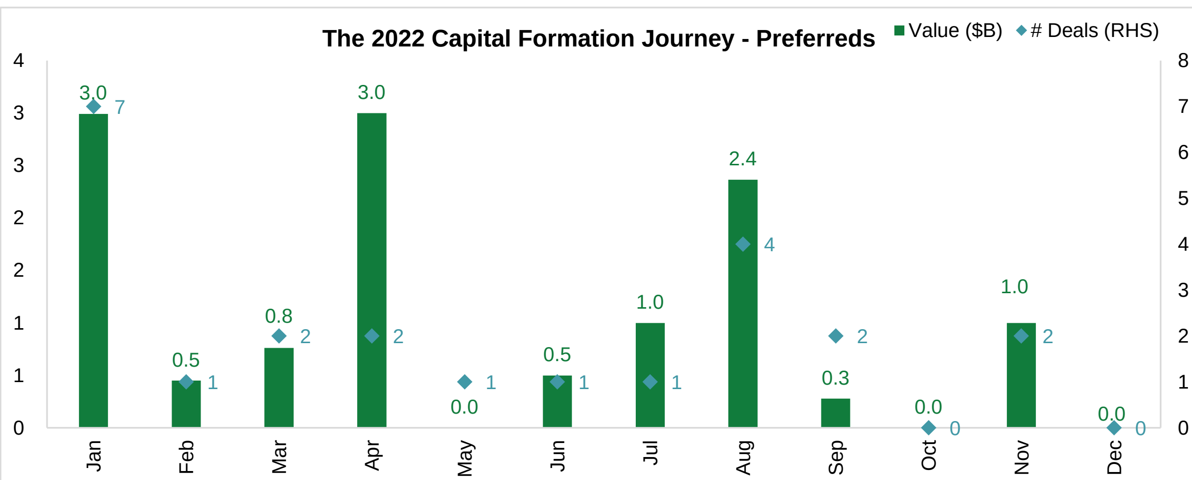


Source: Dealogic

Note: Includes rank eligible deals; excludes BDCs, SPACs, ETFs, CLEFs and rights offers

Preferreds Issuance

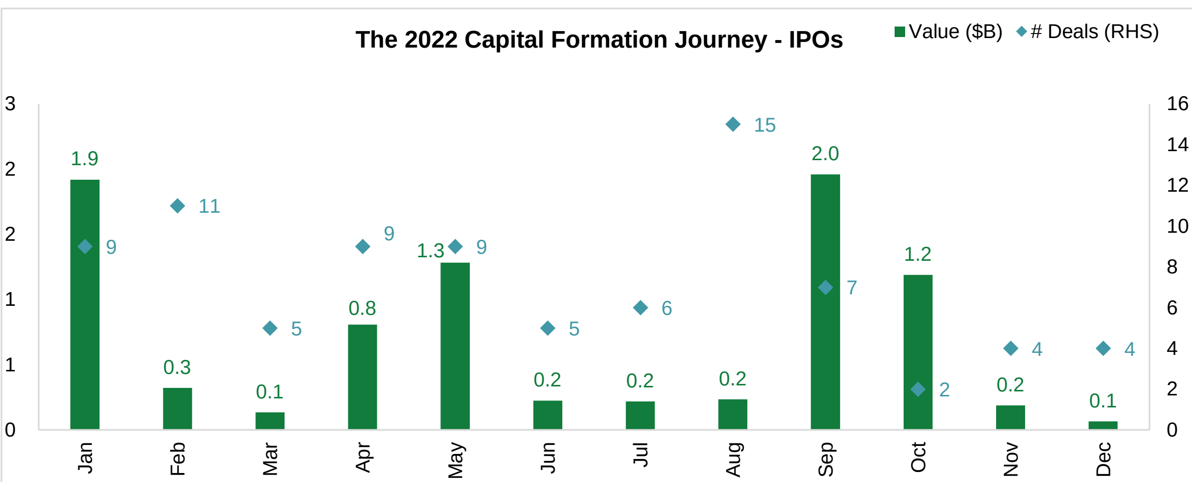
- 2022 total deal value $12.4 billion, -78.7% Y/Y
- Monthly deal value trends
  - Average monthly level $1.0 billion
  - Highest month $3.0 billion in April and January
  - Lowest month $0.0 billion in May, October, and December
- 2022 total number of deals 23, -77.5% Y/Y
- Monthly number of deals trends
  - Average monthly level 2
  - Highest month 7 in January
  - Lowest month 0 in October and December



Source: Dealogic
Note: Includes rank eligible deals; excludes BDCs, SPACs, ETFs, CLEFs and rights offers

IPO Issuance

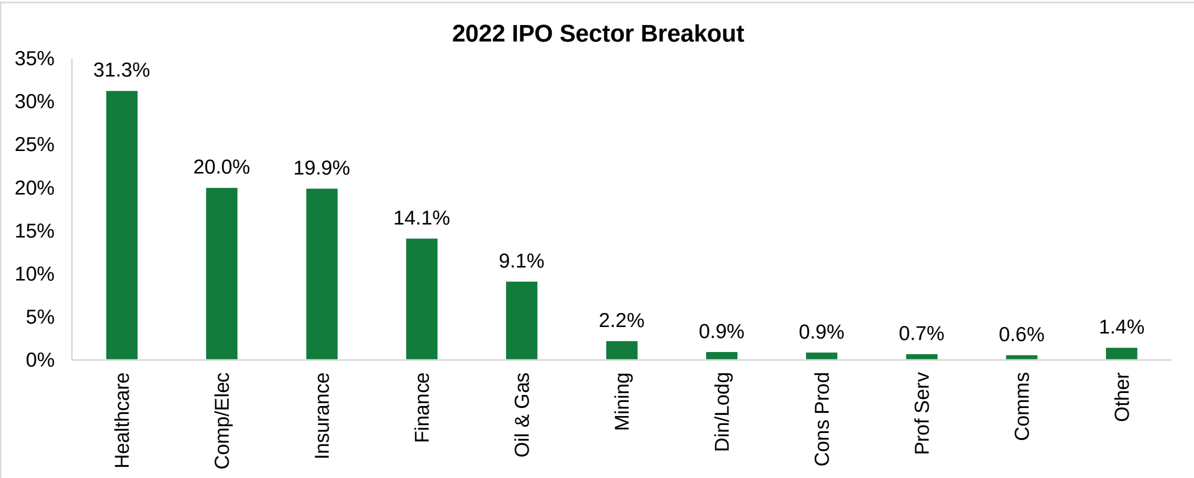
- 2022 total deal value $8.5 billion, -94.4% Y/Y
- Monthly deal value trends
  - Average monthly level $0.7 billion
  - Highest month $2.0 billion in September
  - Lowest month $0.1 billion in March and December
- 2022 total number of deals 86, -78.1% Y/Y
- Monthly number of deals trends
  - Average monthly level 7
  - Highest month 15 in August
  - Lowest month 2 in October



Source: Dealogic, SIFMA estimates
Note: Includes rank eligible deals; excludes BDCs, SPACs, ETFs, CLEFs and rights offers

Looking at the breakout of issuance by sector, we note:

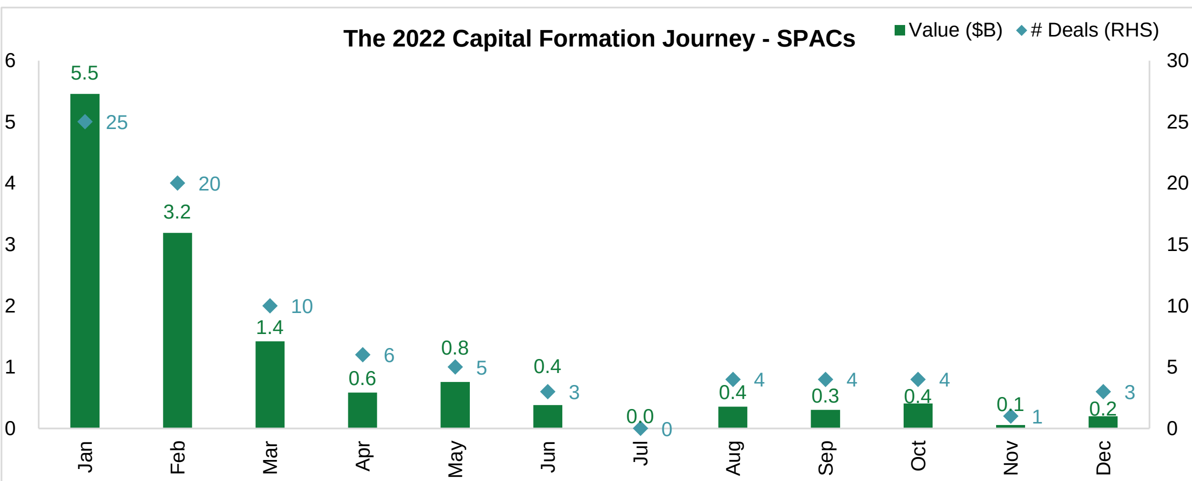
- Healthcare on top at 31.3%
- Followed by a near tie with computers & electronics at 20.0% and insurance at 19.9%
- Then came finance at 14.1%



Source: Dealogic, SIFMA estimates
Note: Includes rank eligible deals; excludes BDCs, SPACs, ETFs, CLEFs and rights offers. Comp/Elec = computers & electronics; cons prod = consumer products; prof serv = professional services; din/lodg = dining & lodging; Comms = telecommunications; other = Auto/Truck 0.4%, Food & Beverage 0.3%, Machinery 0.2%, Construction/Building 0.2%, Agribusiness 0.2%, Real Estate/Property 0.2%, Retail 0.1%

SPAC Issuance

- 2022 total deal value $13.1 billion, -91.9% Y/Y
- Monthly deal value trends
    - Average monthly level $1.1 billion
    - Highest month $5.5 billion in January
    - Lowest month $0.0 billion in July
- 2022 total number of deals 85, -86.1% Y/Y
- Monthly number of deals trends
    - Average monthly level 7
    - Highest month 25 in January
    - Lowest month 0 in July



Source: Dealogic
Note: Includes rank eligible BCC/SPAC deals; SPAC totals are separate from the IPO/secondaries/total capital formation figures discussed above

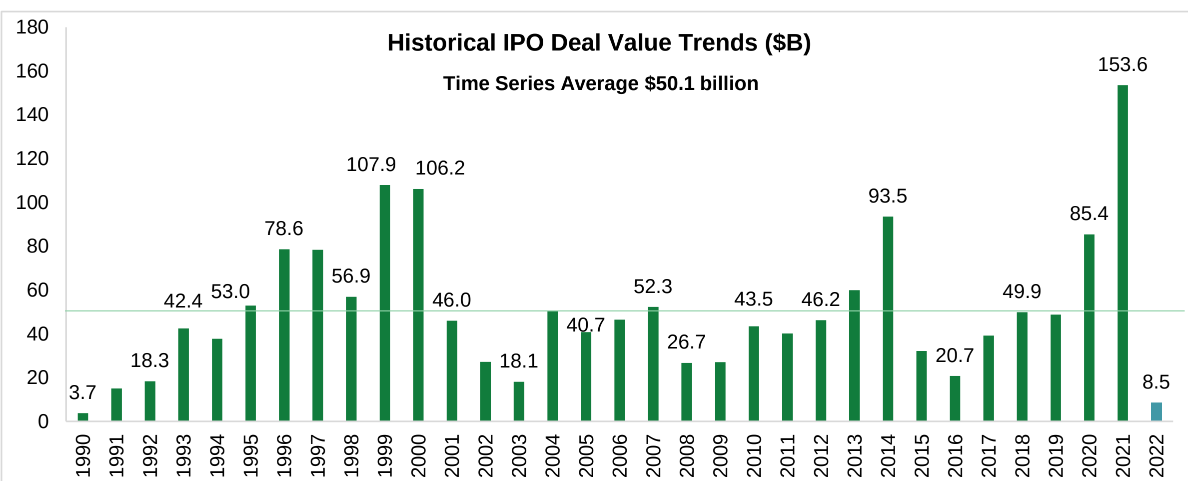
Capital Formation Themes

The Decline in IPOs

As we said earlier, what a difference a year makes. In last year's market structure compendium in this section, we had written, "With two solid years of issuance, could we be seeing the rebirth of capital formation?" The 2020 and 2021 deal value totals – $85.4 billion and $153.6 billion respectively, referred to here as the COVID era – jumped to levels not seen since the 1999/2000 and 2014 periods. The average annual IPO deal value going back to 1990 was $50.1 billion. Looking at how these three peak time periods related to this long-term average, we note:

- COVID era $239.0 billion in aggregate, 1.8x the long-term average
- 2014 $93.5 billion, 1.9x the long-term average
- 1999/2000 $214.1 billion in aggregate, 4.3x the long-term average

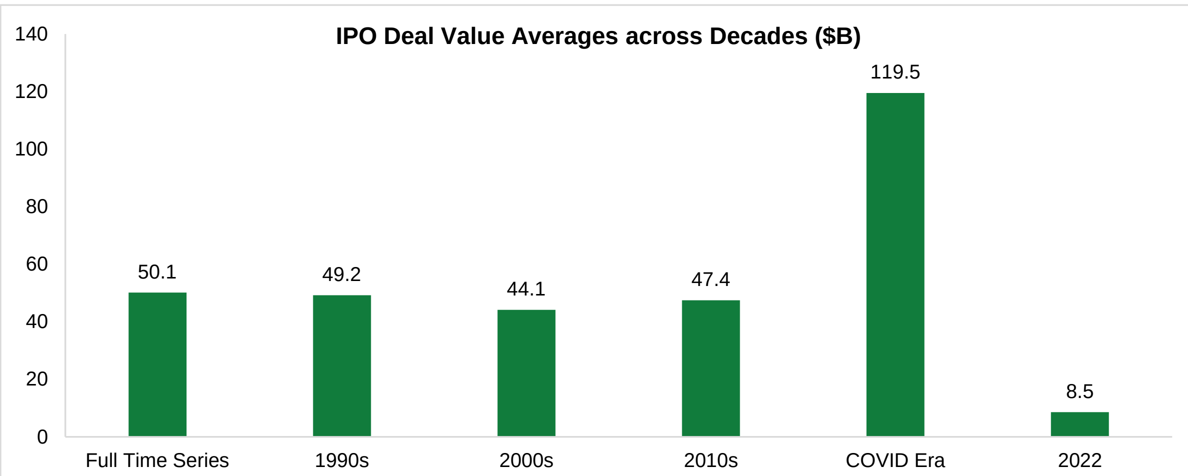
In general, market sentiment in 1999/2000 could be compared more closely to the COVID era, as both were technology fueled time periods. In 2014, there was an increase in IPOs after the JOBS Act[2] was passed. While fundamentally, technology was the theme for the 1999/2000 period, the 2014 era posted higher issuance in the technology sector, mainly because the JOBS Act targeted startups and the technology sector creates many of these small firms. From the issuance angle, 2014 was more like the COVID era. The technology sector represented 28.8% in the 1999/2000 period, 43.3% in 2014, and 47.2% in the COVID era.



Source: Dealogic
Note: Includes rank eligible deals; excludes BDCs, SPACs, ETFs, CLEFs and rights offers

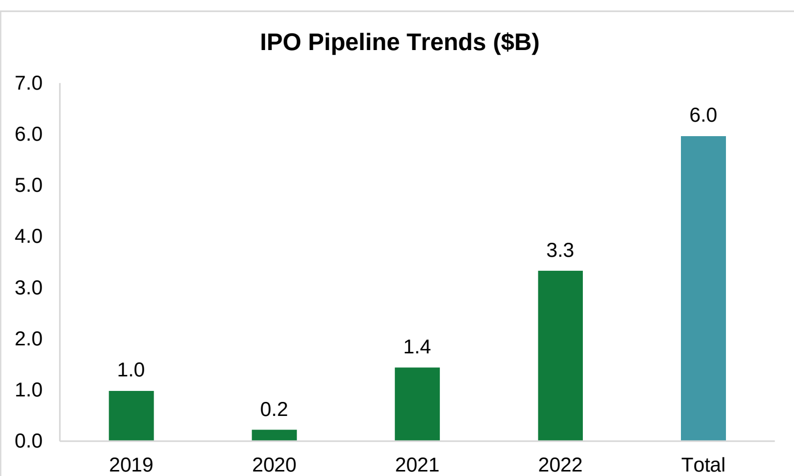
[2] Jumpstart Our Business Startups = U.S. legislation signed into law in 2012 loosening SEC regulations on small businesses by lowering reporting and disclosure requirements for companies with revenues less than $1B and allowing the advertising of securities offerings. It also allowed greater access to crowdfunding and expanded the number of companies that can offer stock without going through SEC registration

It looks like in last year's report, we spoke too soon about the direction of the IPO cycle. 2022 was a rough year for IPOs. We highlight – or should we say lowlight – how the 2022 deal value of $8.5 billion compared to average historical levels across the decades. 2022 was -83.0% to the full time series average of $50.1 billion and -92.9% to the COVID Era average of $119.5 billion.



Source: Dealogic, SIFMA estimates
Note: Includes rank eligible deals; excludes BDCs, SPACs, ETFs, CLEFs and rights offers. COVID era = 2020, 2021

Going forward, I would not worry about going out and buying shades – the future does not look that bright. Looking at the IPO pipeline – deals announced but not yet closed – the 2022 total was $3.3 billion. Best case scenario, summing all of the deals announced but not closed since 2019, there is $6.0 billion sitting in the pipeline, at least on paper.



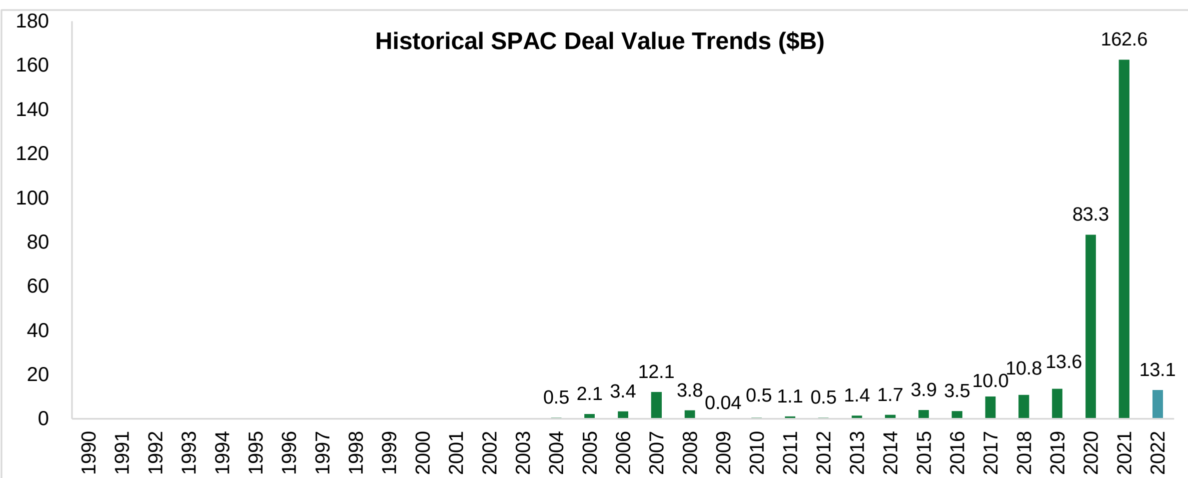
Source: Dealogic, SIFMA estimates
Note: Includes rank eligible deals; excludes BDCs, SPACs, ETFs, CLEFs and rights offers

The Death of SPACs

While the product has been around for decades, the SPAC deal value was historically very low, averaging:

- $0.02 billion from 1990-2003; 7 years with zero deals
- $2.0 billion from 2004-2006
- $12.1 billion in the 2007 spike
- $1.8 billion from 2008-2016
- $11.5 billion during the second spike in the time series, from 2017-2019 (three years prior to COVID average)
- $2.3 billion from 1990-2019 (full pre-COVID time series)

Then we saw an explosion of SPACs during the COVID era. SPAC deal value during the COVID era, 2020-2021, averaged $123.0 billion. This average was 53.3x the full 1990-2019 average and 10.7x the three years prior to COVID average. On an annual basis, the Y/Y change in 2020 was +513.1%, and then another +95.1% in 2021. The numbers were quite astonishing to watch. However, the party came to a stop in 2022, as deal value dropped to $13.1 billion, -91.9% Y/Y. We estimate that there were around $20 billion in SPACs announced in 2021 that never closed.

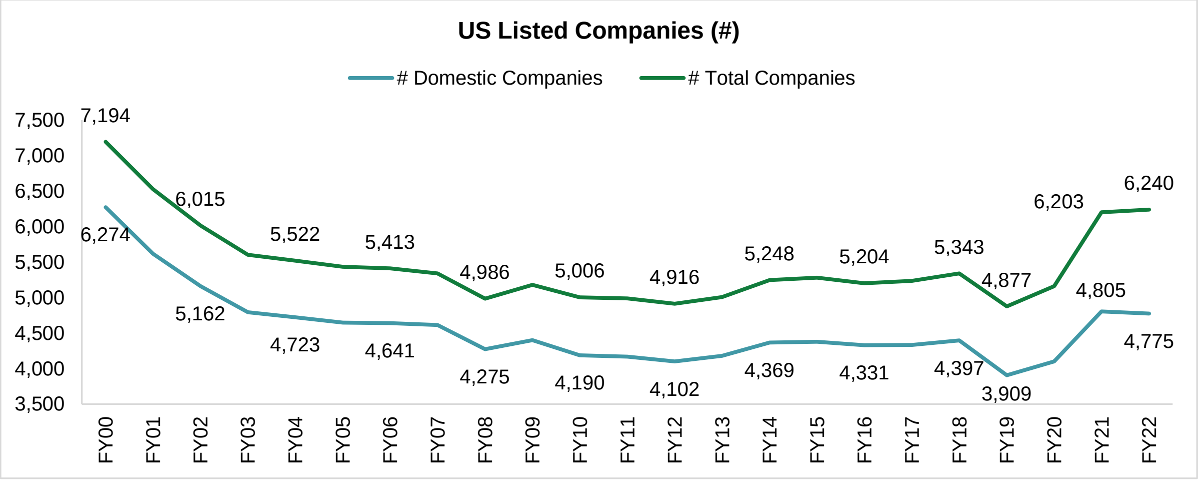


Source: Dealogic

A Look at the Number of Listed Companies

Despite the decline in IPOs in 2022, the number of listed companies grew slightly last year:

- Total listed operating companies 6,240
  - Y/Y +0.6%
  - Down 13.3% from the 2000 peak
  - Up 27.9% from the 2019 trough
- Total domestic listed operating companies 4,775
  - Y/Y -0.6%
  - Down 23.9% from the 2000 peak
  - Up 22.2% from the 2019 trough



Source: World Federation of Exchanges

Note: FY22 is preliminary

Looking to 2023: Market Structure Surveys

As market participants continue to search for the new normal, we thought it would be interesting to survey our equity markets and listed options trading committees, as well as representatives of U.S. equity and multi-listed options exchanges. We questioned survey respondents about where they saw 2023 market metrics heading, as well as their views on retail investor participation.

This section analyzes those results.

Comparing Current and Prior Survey Results

Before we dive into the results from this year's survey in detail, we compare survey results from the current and prior surveys. Below we recap survey respondents' estimates for various market metrics and retail participation:

In general, survey respondents' expectations for both the VIX and equity ADV have increased since the last survey, with few people expecting a return to historical levels for either. Expectations for off-exchange trading showed no change in expectations, with this range elevated to historical levels.

Volatility & Volumes	2023 Survey (current)	2022 Survey
What do you expect to be the new normal for:		
--VIX (price)	20-25 range (53.7% of responses)	High teens-low 20s (49.0% of responses)
--Equity ADV (billion shares)	10-15 range (63.4% of responses)	~10 (74.0% of responses)
--Off-exchange trading (% total equity volumes)	40%-45% range (48.8% of responses)	Low 40% range (51.9% of responses)
-- Listed options ADV (million contracts)	30-40 range (51.2% of responses)	Mid-high 30s (52.1% of responses)
Do you expect a return to historical levels for:		
--VIX (<20)	7.3% of responses	8.2% of responses
--Equity ADV (<10B shares)	31.7% of responses	10.0% of responses
--Off-exchange trading (35%-40%)	46.3% of responses	11.5% of responses
-- Listed Options ADV (<20M contracts)	7.3% of responses	4.2% of responses

Source: SIFMA market structure survey

As we stated earlier in this report, what a difference a year makes. The majority of survey respondents expect markets to decline somewhat further as we move through the year, whereas last year respondents were mixed between expanding at a slower pace and declining somewhat. The top risks this year to both the upside and downside were: inflation, monetary policy, and geopolitical events. While inflation and monetary policy were listed last year, positioning shifted across surveys, and geopolitical was a new entrant to the top three.

Markets	2023 Survey (current)	2022 Survey
Do you expect markets (S&P 500) to?	Decline somewhat further (51.2% of responses)	Continue to expand but at a slower pace & decline somewhat (both 38.0% of responses)
Top risks to markets on the upside?	Inflation, monetary policy, geopolitical	Fed policy (rates, getting it right), COVID under control (endemic), managing inflation
Top risks to markets on the downside?	Inflation, monetary policy, geopolitical	Runaway inflation, Fed policy (rates, getting it wrong), market regulation (unintended consequences)

Source: SIFMA market structure survey

In equities, there was no change in responses. In options, respondents' estimates for participation dropped about 10 pps, as projected in last year's survey (respondents replied the level would drop going forward). There were no changes in the top three responses for why retail participation grew. As to maintaining retail participation, while the three factors were the same, the positioning changed with positive investing experience now on top.

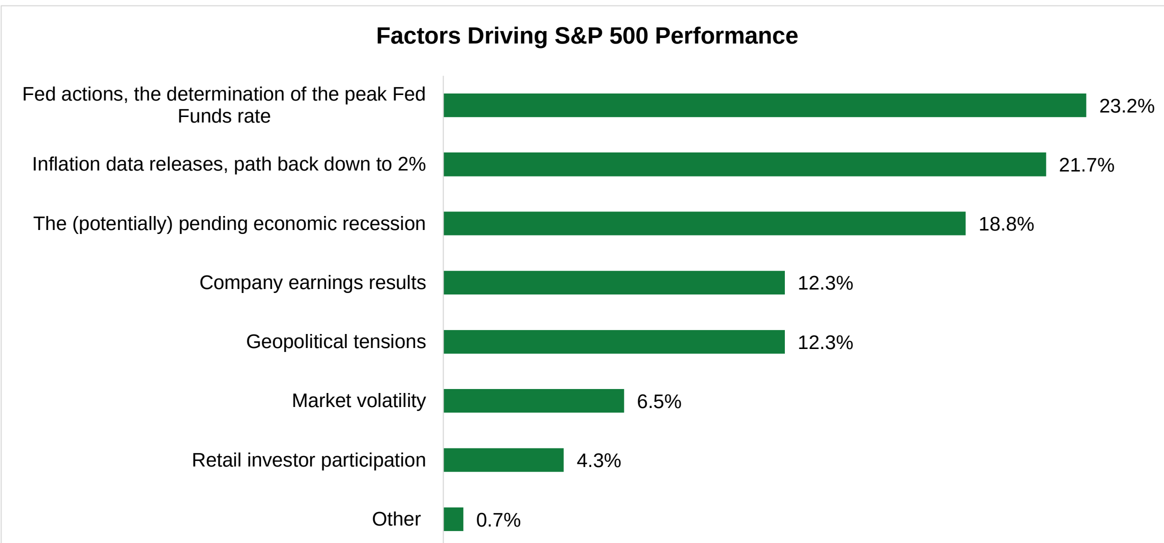
Retail Investor Participation	2023 Survey (current)	2022 Survey
For equities:		
Last year, what percent of volumes were retail trades?	20-30% (61.5% of responses)	20-30% (58.3% responses)
Looking forward, how do you expect this to change?	Decrease somewhat (50.0% of responses)	Decrease somewhat (43.8% responses)
For listed options:		
Last year, what percent of volumes were retail trades?	20-30% (48.6% of responses)	30-40% (48.9% responses)
Looking forward, how do you expect this to change?	Remain about the same (35.9% of responses)	Decrease somewhat (36.7% responses)
In general:		
What factors contributed most to the increase in retail trading?	$0 commissions, technology/access to platforms, continued work from home	$0 commissions, technology/access to platforms, continued work from home
What factors are most important to maintaining retail participation?	Positive investing experience, maintaining $0 commissions, upward momentum in markets	Maintaining $0 commissions, positive investing experience, continued upward momentum in markets

Source: SIFMA market structure survey

Market Themes Survey Results

Survey Questions: Which factors do you believe are having the greatest impact on driving the performance of equity markets, in terms of the price of the S&P 500? (check all that apply)

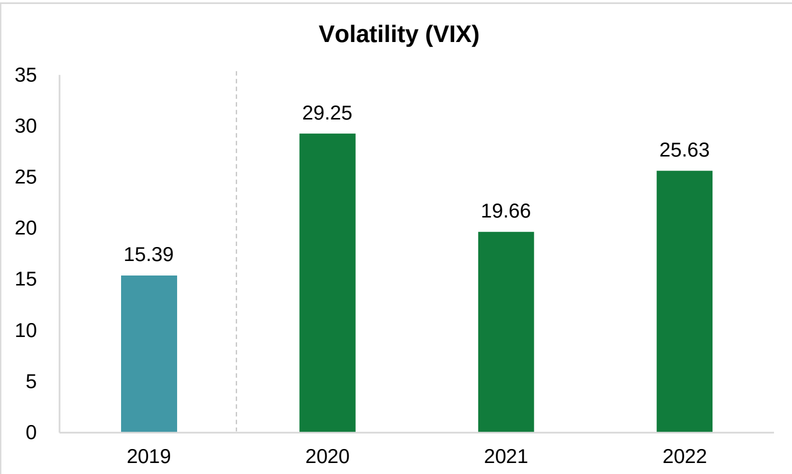
Majority Says? 23.2% responded Fed actions, i.e. the determination of the peak Fed Funds rate. Another 21.7% responded inflation data releases, as market participants monitor the path back down to 2%. Closing out the top three responses, 18.8% replied the (potentially) pending economic recession.



Source: SIFMA market structure survey

Volatility Survey Results

A Historical Comparison:

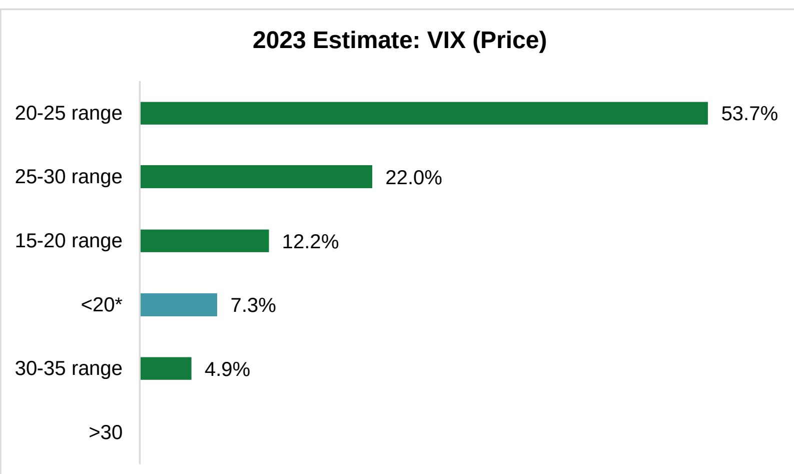


Source: Bloomberg, SIFMA estimates

Survey Question: What do you expect to be the new normal in 2023 for the VIX?

Majority Says? The majority of respondents, 53.7%, expect the VIX to remain in the 20-25 range. Depending on what the actual number is in this range, this would represent a 30.0%-62.4% increase to historical levels.

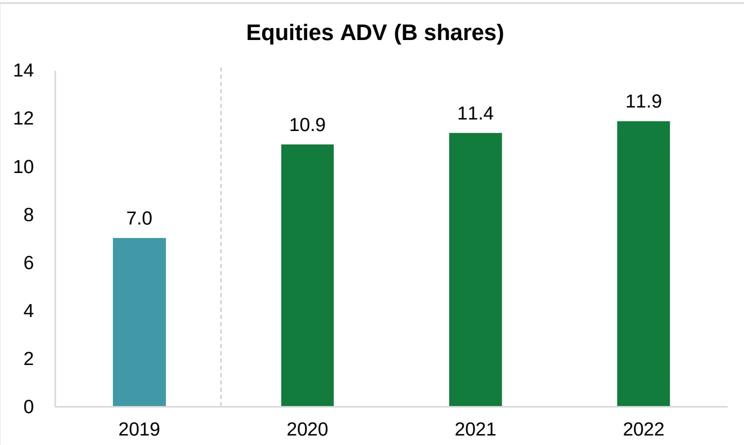
Return to Historical Levels? Very few respondents (7.3%) expect a return to historical levels.

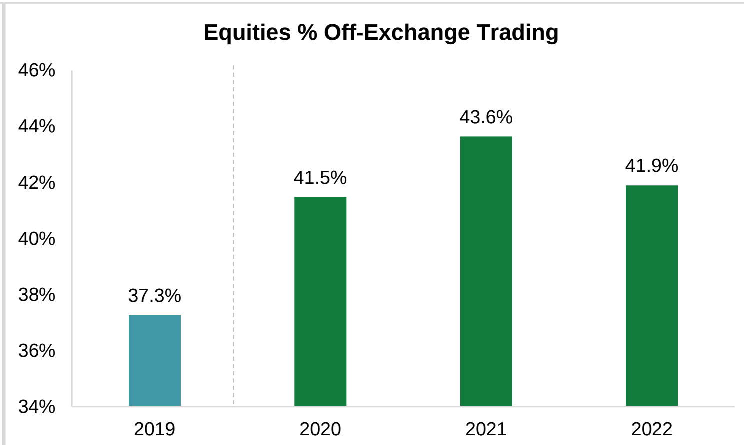


Source: SIFMA market structure survey (* = historical average)

Equity Volumes (ADV) Survey Results

A Historical Comparison:





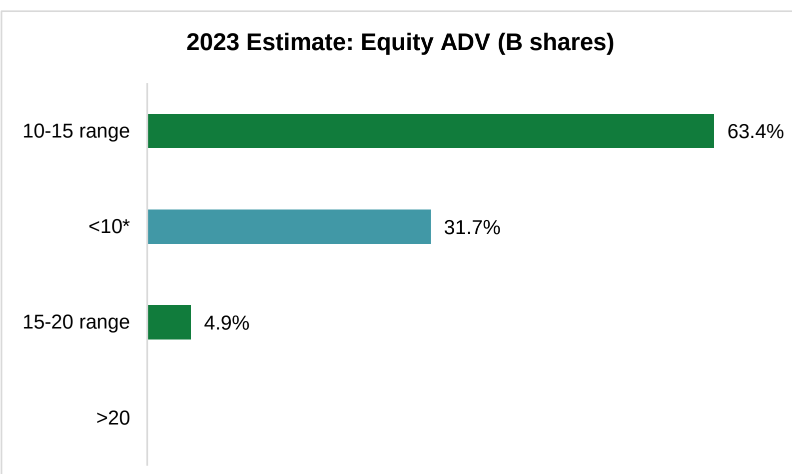
Source: Bloomberg, SIFMA estimates

Survey Question: What do you expect to be the new normal in 2022 for: (A) equity ADV? (B) off-exchange trading?

Equity ADV

Majority Says? The majority of respondents expect equities ADV to remain in the 10-15 billion shares level (63.4% of respondents). This would represent a 42.9%-114.33% increase to historical levels.

Return to Historical Levels? 31.7% of respondents expect a return to historical levels.

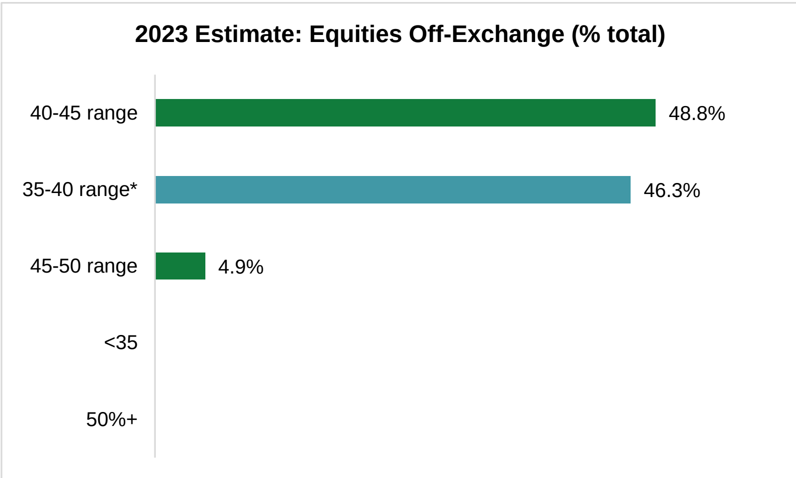


Source: SIFMA market structure survey (* = 2019 average)

Off-Exchange Trading

Majority Says? 48.8% of respondents expect off-exchange trading to be in the low to mid 40 percent range, with 4.9% expecting a more elevated mid to high 40 percent range.

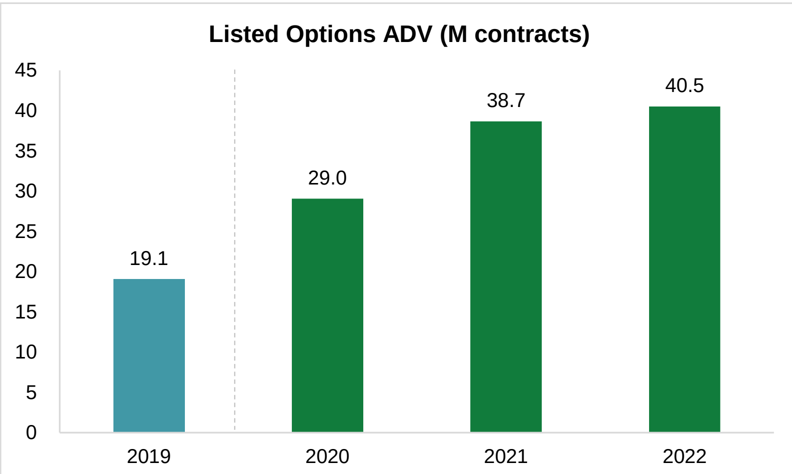
Return to Historical Levels? 46.3% of respondents expect a return to historical levels.



Source: SIFMA market structure survey (* = 2019 average)

Listed Options Volumes (ADV) Survey Results

<u>A Historical Comparison</u>:

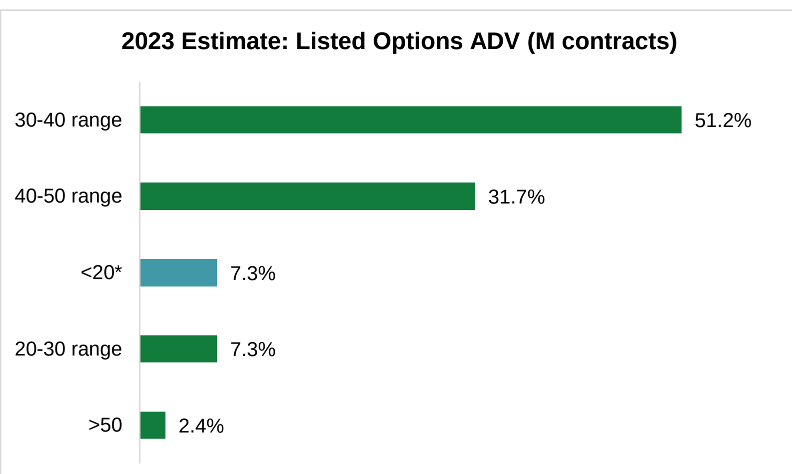


Source: Bloomberg, SIFMA estimates

<u>Survey Question</u>: What do you expect to be the new normal in 2022 for total listed options ADV?

<u>Majority Says</u>? Estimates have increased for this year, with 51.2% of respondents now expecting listed options ADV to be in the 30-40 million range going forward. This represents a 57.1%-109.4% increase to historical levels (<20 million contracts).

<u>Return to Historical Levels</u>? 7.3% of respondents expect a return to historical levels.



Source: SIFMA market structure survey (* = 2019 average)

Market Performance Survey Results

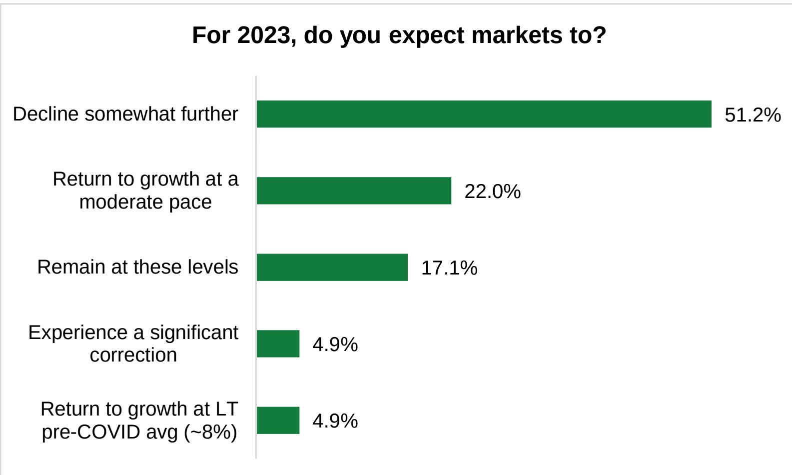
For simplicity's sake, we asked respondents about markets as a whole, not by specific index. This means the responses include all sectors (technology, consumer discretionary, etc.), all company sizes (small, mid and large cap) and all regions of company operations (domestic versus international exposure).

A Historical Comparison:

Source: Bloomberg, SIFMA estimates

Survey Question: For 2023, do you expect markets to? (Respondents were asked to use the S&P 500 as the proxy for markets.)

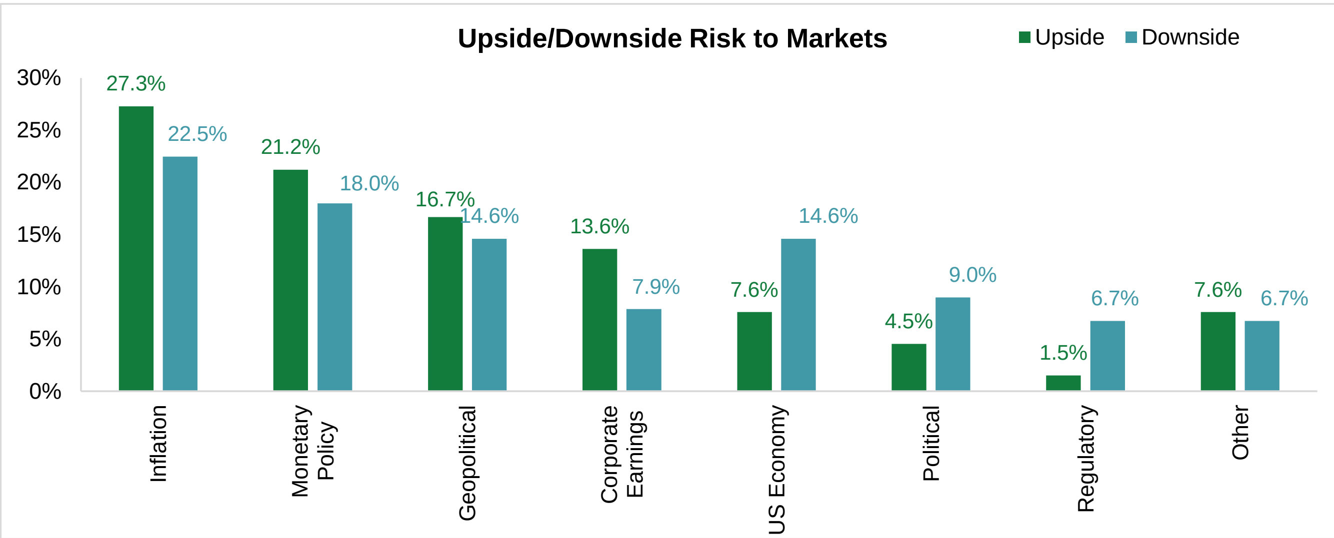
Majority Says? In this year's survey, majority of respondents expect the markets to decline somewhat further at 51.2%. Another 22.0% of respondents expect markets to return to growth at a moderate pace and 17.1% expect markets to remain at current levels.



Source: SIFMA market structure survey

Survey Question: What do you see as the top three risks to markets in 2023 on the: (A) Upside? (B) Downside?

Majority Says?



Source: SIFMA market structure survey

Upside: It is of no surprise that inflation came in on top for both the upside and downside, at 27.3% of responses for the upside. Markets continue to watch inflation data for both declining levels in prices and the corresponding peak in interest rates. Monetary policy and how the Fed handles interest rate actions – hike, pause, cut – came in second at 21.2% of responses. Finishing out the top three were geopolitical events (16.7% of responses), with the Russia/Ukraine war and China in focus.

Downside: On the downside, inflation came in at 22.5% of responses. This time markets are monitoring a reversal, or increase, in inflation data which could impact Fed actions on interest rates. Monetary policy and how the Fed handles interest rate moves also reached the second spot for the downside (18.0% of responses). Here, market participants indicated they are watching for the Fed getting it wrong on rates or acting overly aggressively. The final category in the top three was also geopolitical events, at 14.6% of responses, again with the Russia/Ukraine war and China in focus.

	Upside		Downside	
	Rank	Comments	Rank	Comments
Inflation	#1	Declines dramatically, reaches peak so Fed cuts rates, moderates/rolls off faster than expected, subsides/reduces/tapers, stabilizes, stagflation, easing supply side factors (China reopening/easing restrictions, supply chain improvements, oil stabilizes at a lower price level), inflation environment in general	#1	Sticky/persistent, increases/reverses back up, supply side factors (higher oil price, Europe energy prices, energy issues in general), demand side factors (consumer demand), inflation and interest rates, inflation environment in general
Monetary Policy	#2	Early/dovish Fed pivot, end of rate hikes/rate hikes in general, cuts rates/cut after inflation peak, pause, lower bond yields, the Fed and interest rates in general	#2	Rate hikes, Fed actions/getting it wrong/over aggressiveness, poor policy, rates higher for longer, threat of higher interest rates due to inflation risk, the Fed and interest rates in general
Geopolitical	#3	China, Russia/Ukraine war, easing geopolitical concerns, general geopolitics	#3	China, China/Taiwan, Russia/Ukraine war, prolonged war, unrest, world events/issues/tensions in general
Corporate Earnings	#4	Good, higher than anticipated, strong/surprisingly strong earnings, earnings results in general	#6	Earnings and profit recession, massacre, shortfalls, profits, earnings results in general
US Economy	#5	Corporate hiring, employment strong with prices lower, no recession or soft landing, recession in general	#3	Earnings and profit recession, housing collapse, recession/hard landing, global recession spillover effects, employment collapse/softening, consumer spending down, continued slowdown of US industries
Political	#6	Stability, “replacing DC”, political events in general	#5	Government debt, DC, “woke agenda”, “dysfunctional government”, political events/environment/activity in general
Regulatory	#7	Regulatory slowdown	#7	SEC rulemaking/creating unintended consequences, regulatory change, retail distrust of the SEC changes, market regulation in general
Other		Continued COVID mitigation worldwide, COVID threat subsides globally, crypto market issues, healthy syndicate calendar, illiquidity – particularly in UST		Cyberattack, increased volatility leading to recession, illiquidity - particularly in UST, market sentiment, continued global health pandemics, lack of liquidity

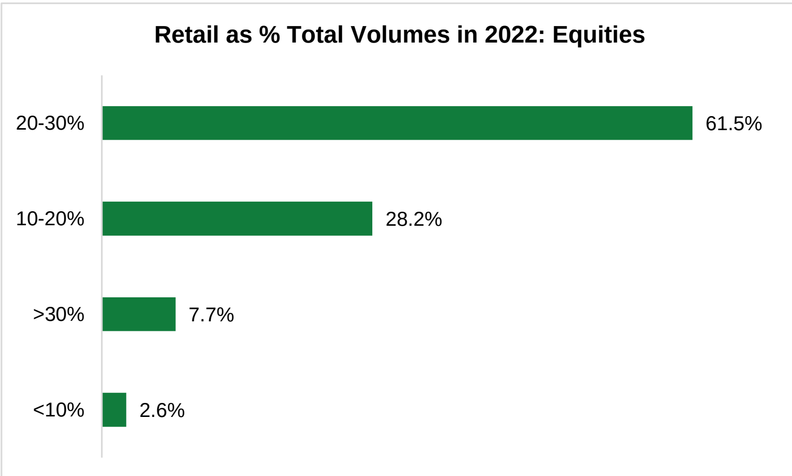
Source: SIFMA market structure survey

Retail Investor Participation Survey Results

Equities

Survey Question: What percentage of total 2022 equities volumes do you estimate were retail trades?

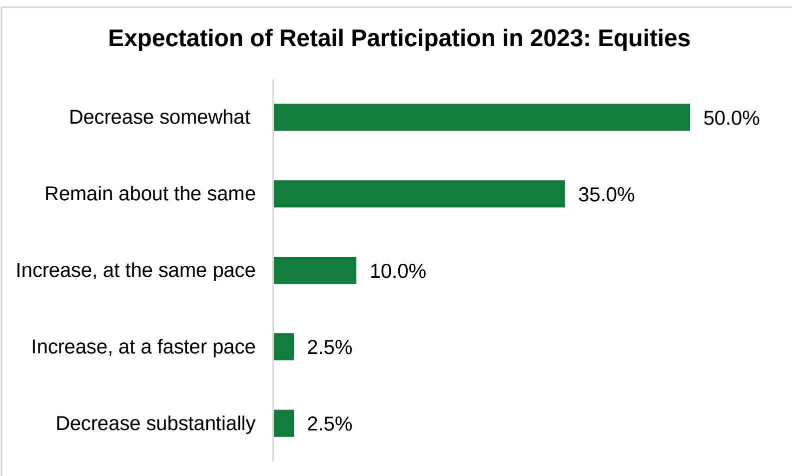
Majority Says? Respondents estimated retail investors represented 20-30% of total equity volumes last year (61.5%). The next largest group estimate this number is 10-20% (28.2% of respondents).



Source: SIFMA market structure survey

Survey Question: In 2023, how do you expect the percentage of retail participation in equities to change?

Majority Says? 50.0% of respondents expect the level of retail participation in equities to decrease somewhat in 2023. However, 35.0% expect the level to remain about the same.

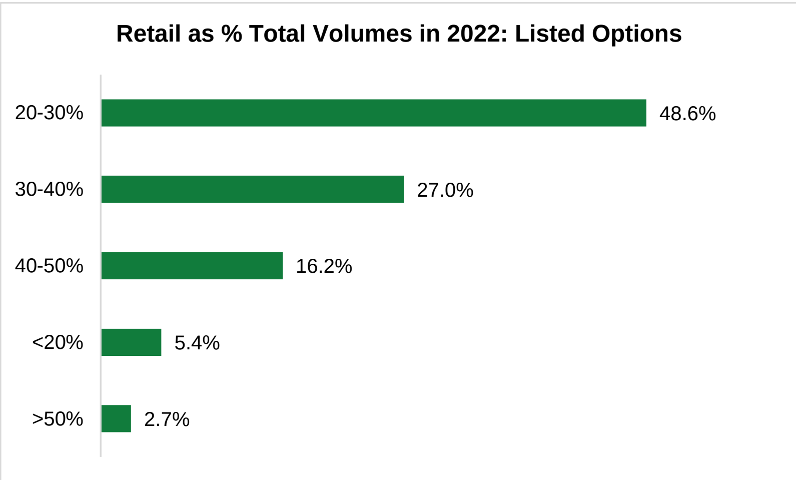


Source: SIFMA market structure survey

Listed Options

Survey Question: What percentage of total 2022 listed options volumes do you estimate were retail trades?

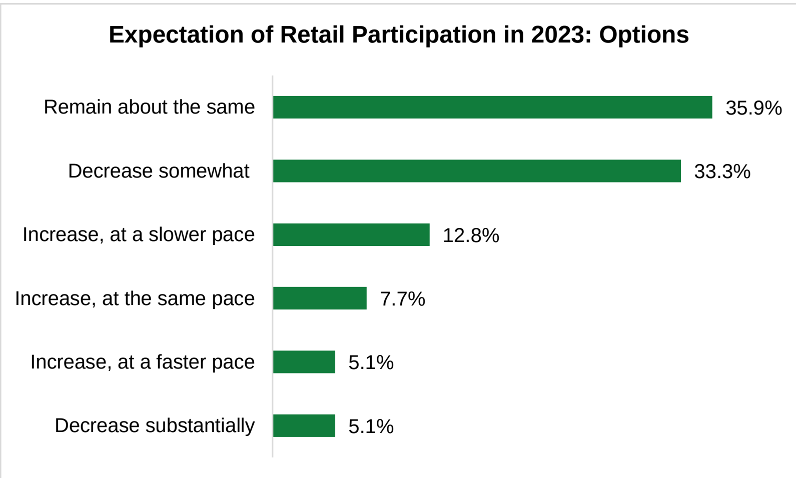
Majority Says? 48.6% of respondents estimated the level of retail participation in listed options at 20-30%, followed by 27.0% of respondents estimating 30-40%.



Source: SIFMA market structure survey

Survey Question: In 2023, how do you expect the percentage of retail participation in listed options to change?

Majority Says? The top response was that the level of retail participation would remain about the same (35.9%). However, 33.3% expect the level to decrease somewhat.

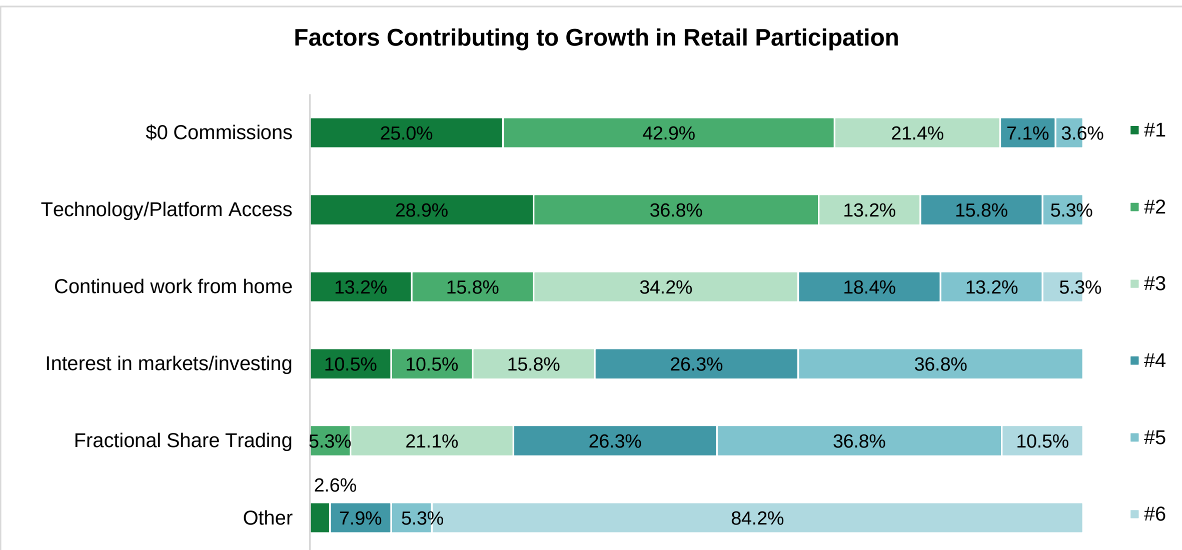


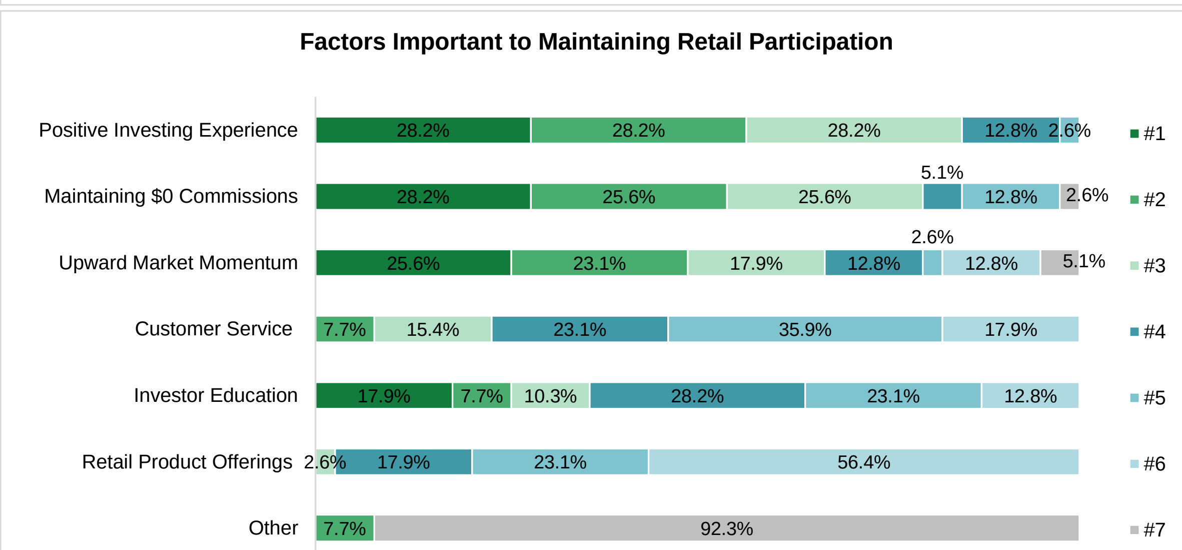
Source: SIFMA market structure survey
Note: Options = multi-listed options

General Factors

Survey Questions: Which factors do you believe contributed most to the increase in retail investor participation in 2022? What do you think is most important to maintaining retail investor participation?

Majority Says? Remaining at the top, $0 commissions is still seen as the key factor for growth in retail investor participation. Technology/platform access remains the second most important factor. In other words, retail investors like the ease of access and affordability of trading. For maintaining participation, a positive investing experience came in on top, followed by maintaining $0 commissions. We note that the cost and the technology come into play in maintaining the positive experience. This is why firms continually improve technology to enhance the investor experience (as well as provide investor education and good customer support).





Source: SIFMA market structure survey

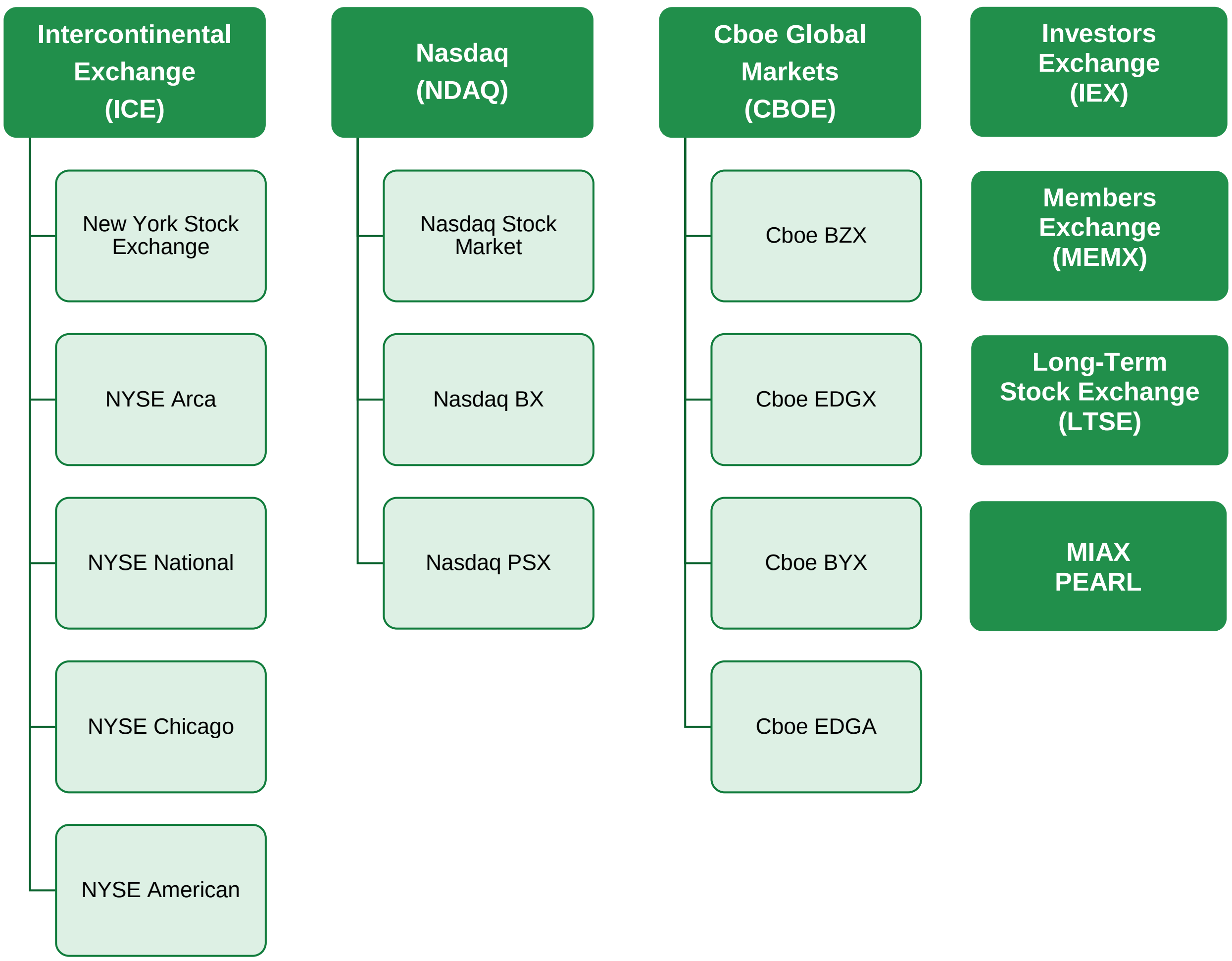
Note: Other, Growth = financial independence, zero interest rates, investor education, market gains. Other, Maintaining = low interest rates, favorable retail market structure, profitability

Final Thoughts from Survey Respondents

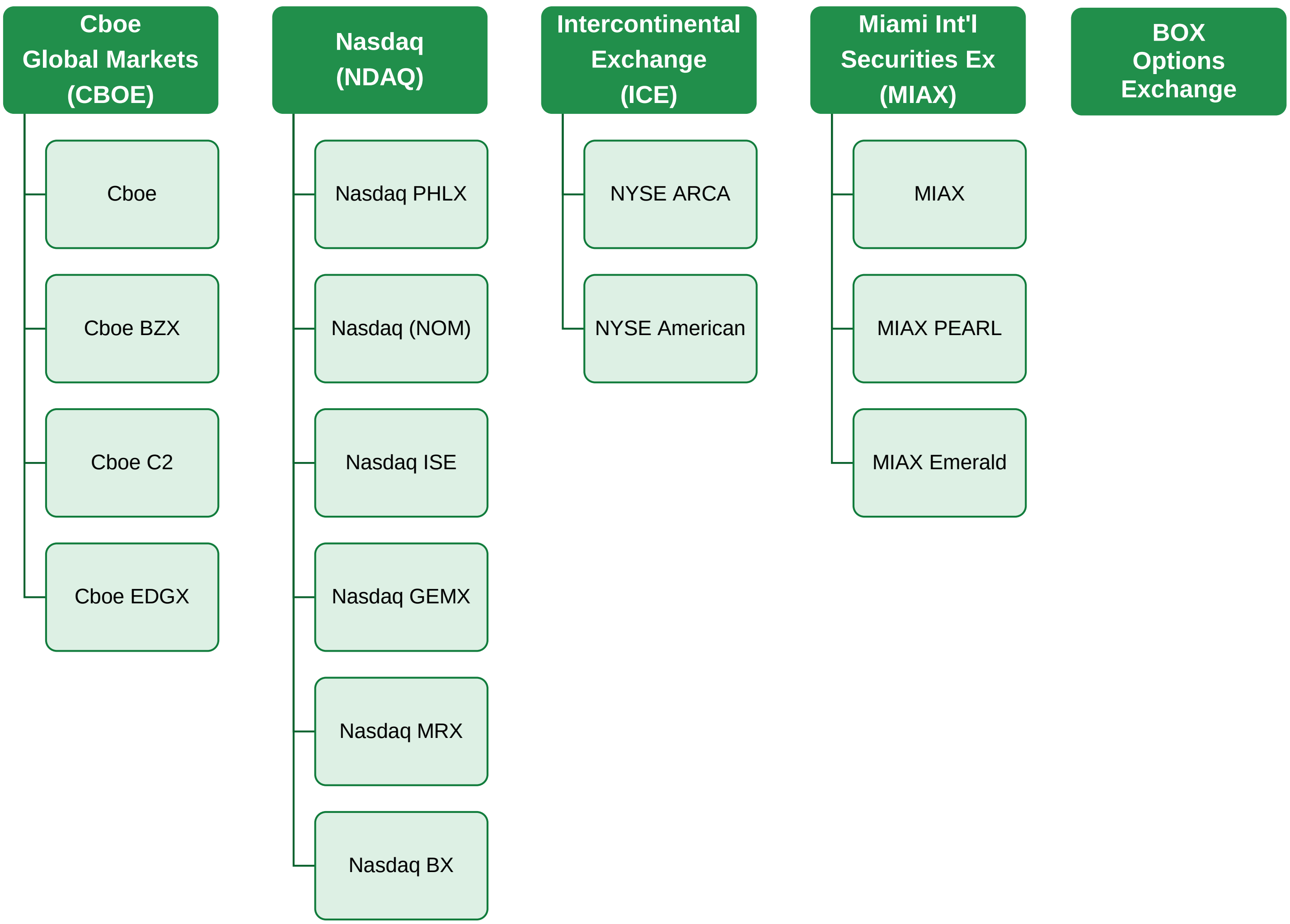
At the end of the survey, we asked respondents to provide any final thoughts they have on markets and retail investor participation:

- Market performance will be under pressure and grind lower throughout 2023, resulting in both less institutional trading and retail participation.
- In listed options, it is hard to find the actual percent of retail participation as trade/order size is used. With institutional investors using algorithms, it is hard to grasp what is an actual retail trade.
- Given recent proposed regulatory changes, maintaining a market structure which is beneficial to retail investors must continue to be the primary focus.
- Successful investment experience, i.e. increase in asset values, may be the driver for investors going forward.

Appendix: US Equity Exchange Landscape



Appendix: US Multi-Listed Options Exchange Landscape



Appendix: Market Index Definitions

- **Dow Jones Industrial Average (DJIA)**: A price weighted index that tracks 30 large, publicly-owned companies trading on U.S. exchanges. It has historically been a widely-watched benchmark index for U.S. blue-chip stocks.

- **S&P 500**: A market capitalization weighted index of the 505 largest U.S. publicly traded companies. The index is regarded as the best gauge of large-cap U.S. equities.

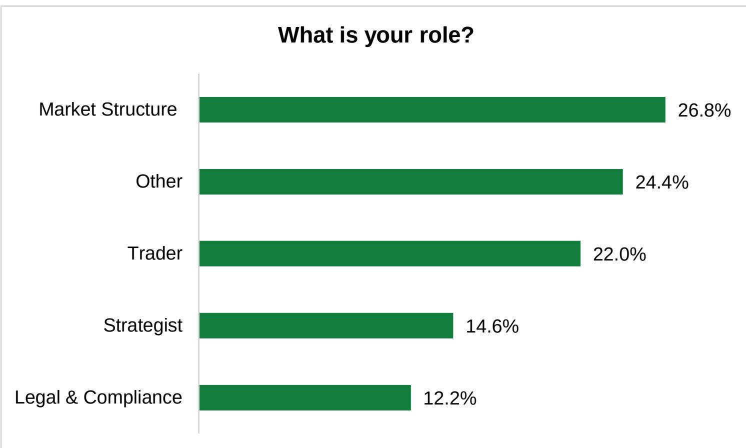
- **Nasdaq Composite (Nasdaq)**: A market capitalization weighted index made up of the 3,668 equities listed on the Nasdaq stock exchange. Its composition is over 50% technology (this percentage has come down over the years), followed by consumer services, health care and financials.

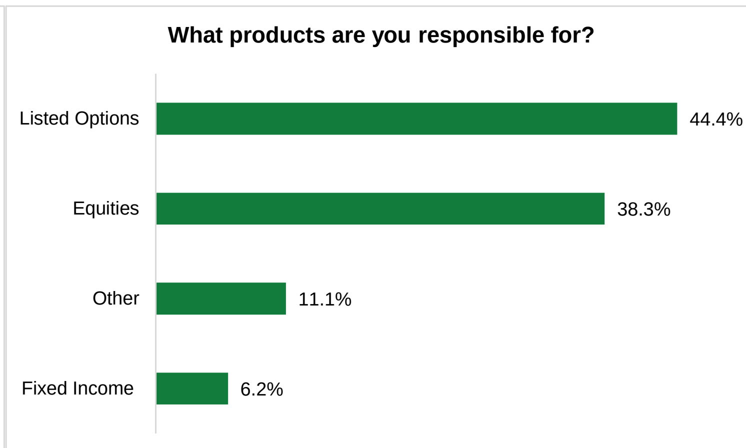
- **Russell 2000**: A market capitalization weighted index representing 10% (the bottom two-thirds aggregate market cap) of the Russell 3000 index, a larger index of 3,000 publicly traded companies that represents 97% of the investable U.S. stock market. The index is regarded as a gauge of small cap, U.S. centric companies.

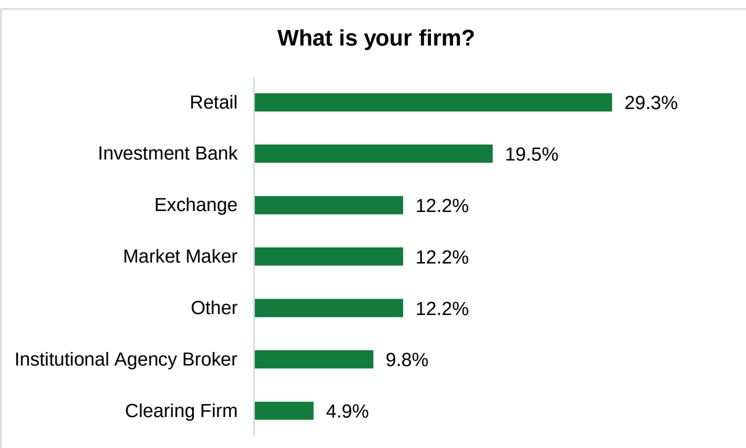
- **CBOE Volatility Index (VIX)**: A real-time market index that represents the market's expectation of 30-day forward looking volatility, as derived from the price inputs of S&P 500 index options. It measures market risk and investor sentiment (fear, stress) and is often called the fear index

Appendix: Market Structure Survey Structure

This survey was populated between January 5 to 26. We had 46 respondents from 27 unique firms, with some firms filing individual business unit responses while other firms chose to respond with one survey on behalf of all divisions. The group of firms represented depicts key market participants in equities and listed options: investment banks, market makers, retail trading firms, exchanges, etc.







Source: SIFMA market structure survey
Note: Other, role = management, strategic sourcing, executive, trading/strategist, CEO, market data, trading operations, regulatory supervision. Other, firm = trade association, interdealer broker, broker-dealer, market maker/alternative trading system/clearing/etc.

Appendix: Terms to Know

FINRA	Financial Industry Regulatory Authority
SEC	Securities and Exchange Commission
ADV	Average Daily Trading Volume
ATS	Alternative Trading System
Best Ex	Best Execution
CAT	Consolidated Audit Trail
Dark Pool	Private trading venues, not accessible by the public
EMS	Equity Market Structure
MM	Market Maker
NMS	National Market System
OPR	Order Protection Rule
OPRA	Options Price Reporting Authority
PFOF	Payment For Order Flow
Reg NMS	Regulation National Market System
SIP	Security Information Processor
SRO	Self Regulatory Organization
Tick Size	Minimum price movement of a security

Bid	An offer made to buy a security
Ask, Offer	The price a seller is willing to accept for a security
Spread	The difference between the bid and ask price prices for a security, an indicator of supply (ask) and demand (bid)
NBBO	National Best Bid and Offer
Locked Market	A market is locked if the bid price equals the ask price
Crossed Market	A bid is entered higher than the offer or an offer is entered lower than the bid
Opening Cross	To determine the opening price of a stock, accumulating all buy and sell interest a few minutes before the market open
Closing Cross	To determine the closing price of a stock, accumulating all buy and sell interest a few minutes before the market close

Order Types	
AON	All or none; an order to buy or sell a stock that must be executed in its entirety, or not executed at all
Block	Trades with at least 10,000 shares in the order
Day	Order is good only for that trading day, else cancelled
FOK	Fill or kill; must be filled immediately and in its entirety or not at all
Limit	An order to buy or sell a security at a specific price or better
Market	An order to buy or sell a security immediately; guarantees execution but not the execution price
Stop	(or stop-loss) An order to buy or sell a stock once the price of the stock reaches the specified price, known as the stop price

Call	The right to buy the underlying security, on or before expiration
Put	The right to sell the underlying security, on or before expiration
Holder	The buyer of the contract
Writer	The seller of the contract
American	Option may be exercised on any trading day on or before expiration
European	Option may only be exercised on expiration
Exercise	To put into effect the right specified in a contract
Underlying	The instrument on which the options contract is based; the asset/security being bought or sold upon exercise notification
Expiration	The set date at which the options contract ends, or ceases to exist, or the last day it can be traded
Stock Price	The price at which the underlying stock is trading, fluctuates continuously
Strike Price	The set price at which the options contract is exercised, or acted upon
Premium	The price the option contract trades at, or the purchase price, which fluctuates constantly
Time Decay	The time value portion of an option's premium decreases as time passes; the longer the option's life, the greater the probability the option will move in the money
Intrinsic Value	The in-the-money portion of an option's premium
Time Value	(Extrinsic value) The option premium (price) of the option minus intrinsic value; assigned by external factors (passage of time, volatility, interest rates, dividends, etc.)
In-the-Money	For a call option, when the stock price is greater than the strike price; reversed for put options
At-the Money	Stock price is identical to the strike price; the option has no intrinsic value
Out-of-the-Money	For a call option, when the stock price is less than the strike price; reversed for put options

IPO	Initial Public Offering; private company raises capital buy offering its common stock to the public for the first time in the primary markets
SPAC	Special Purpose Acquisition Company; blank check shell corporation designed to take companies public without going through the traditional IPO process
Bought Deal	Underwriter purchases a company's entire IPO issue and resells it to the investing public; underwriter bears the entire risk of selling the stock issue
Best Effort Deal	Underwriter does not necessarily purchase IPO shares and only guarantees the issuer it will make a best effort attempt to sell the shares to investors at the best price possible; issuer can be stuck with unsold shares
Secondary	(Follow-on) Issuance of shares to investors by a public company already listed on an exchange
Direct Listing	(Direct placement, direct public offering) Existing private company shareholders sell their shares directly to the public without underwriters. Often used by startups or smaller companies as a lower cost alternative to a traditional IPO. Risks include, among others, no support/guarantee for the share sale and no stock price stabilization after the share listing.

Underwriting	Guarantee payment in case of damage or financial loss and accept the financial risk for liability arising from such guarantee in a financial transaction or deal
Underwriter	Investment bank administering the public issuance of securities; determines the initial offering price of the security, buys them from the issuer and sells them to investors.
Bookrunner	The main underwriter or lead manager in the deal, responsible for tracking interest in purchasing the IPO in order to help determine demand and price (can have a joint bookrunner)
Lead Left Bookrunner	Investment bank chosen by the issuer to lead the deal (identified on the offering document cover as the upper left hand bank listed)
Syndicate	Investment banks underwriting and selling all or part of an IPO
Arranger	The lead bank in the syndicate for a debt issuance deal

Pitch	Sales presentation by an investment bank to the issuer, marketing the firm’s services and products to win the mandate
Mandate	The issuing company selects the investment banks to underwrite its offering
Engagement Letter	Agreement between the issuer and underwriters clarifying: terms, fees, responsibilities, expense reimbursement, confidentiality, indemnity, etc.
Letter of Intent	Investment banks’ commitment to the issuer to underwrite the IPO
Underwriting Agreement	Issued after the securities are priced, underwriters become contractually bound to purchase the issue from the issuer at a specific price
Registration Statement	Split into the prospectus and private filings, or information for the SEC to review but not distributed to the public, it provides investors adequate information to perform their own due diligence prior to investing
The Prospectus	Public document issued to all investors listing: financial statements, management backgrounds, insider holdings, ongoing legal issues, IPO information and the ticker to be used once listed
Red Herring Document	An initial prospectus with company details, but not inclusive of the effective date of offering price

Roadshow	Investment bankers take issuing companies to meet institutional investors to interest them in buying the security they are bringing to market.
Non-Deal Roadshow	Research analysts and sales personnel take public companies to meet institutional investors to interest them in buying a stock or update existing investors on the status of the business and current trends.
Pricing	Underwriters and the issuer will determine the offer price, the price the shares will be sold to the public and the number of shares to be sold, based on demand gauged during the road show and market factors
Stabilization	Occurs for a short period of time after the IPO if order imbalances exist, i.e. the buy and sell orders do not match; underwriters will purchase shares at the offering price or below to move the stock price and rectify the imbalance
Quiet Period	(Cooling off period) The SEC mandates a quiet period on research recommendations, lasting 10 days (formerly 25 days) after the IPO

Reg S-K	Regulation which prescribes reporting requirements for SEC filings for public companies
Reg S-X	Regulation which lays out the specific form and content of financial reports, specifically the financial statements of public companies
Form S-1	Registration statement for U.S. companies (described above)
Form F-1	Registration statement for foreign issuers of certain securities, for which no other specialized form exists or is authorized
Form 10-Q	Quarterly report on the financial condition and state of the business (discussion of risks, legal proceedings, etc.), mandated by the SEC
Form 10-K	More detailed annual version of the 10Q, mandated by the SEC
Form 8-K	Current report to announce major events shareholders should know about (changes to business & operations, financial statements, etc.)
Greenshoe	Allows underwriters to sell more shares than originally planned by the company and then buy them back at the original IPO price if the demand for the deal is higher than expected, i.e. an over-allotment option
Tombstone	An announcement that securities are available for sale. (Also a plaque awarded to celebrate the completion of a transaction or deal)
EGC	Emerging Growth Company

Y/Y	Year-over-Year
Q/Q	Quarter-over-Quarter
M/M	Month-over-Month
YTD	Year-to-Date
QTD	Quarter-to-Date
MTD	Month-to-Date
CAGR	Compound Annual Growth Rate
BPS	Basis Points
PPS	Percentage Points
RHS	Right hand side (of chart)
M	Million units
B	Billion units

Appendix: SIFMA Insights Research Reports

Monthly Market Metrics and Trends: www.sifma.org/insights-market-metrics-and-trends

- Statistics on volatility and equity and listed options volumes
- Also highlights an interesting market trend

SIFMA Insights Market Structure Primers: www.sifma.org/primers

- Capital Markets Primer Part I: Global Markets & Financial Institutions
- Capital Markets Primer Part II: Primary, Secondary & Post-Trade Markets
- Global Equity Markets Primer
- Electronic Trading
- US Capital Formation & Listings Exchanges
- US Equity
- US Multi-Listed Options
- US ETF
- US Fixed Income
- SOFR: The Transition from LIBOR
- The Evolution of the Fintech Narrative

SIFMA Insights Equity Market Structure Analysis Series:

- Analyzing the Meaning Behind the Level of Off-Exchange Trading
- Analyzing the Meaning Behind the Level of Off-Exchange Trading Part II
- Why Market Structure and Liquidity Matter

Conference Debriefs

- Insights from market participants into top-of-mind topics

SIFMA Insights: www.sifma.org/insights

- Pre-Conference Survey Comparison (2022)
- Market Structure Thoughts
- Market Structure Compendium (2022)
- Inflation 101
- Market Structure Survey (2021): Volatility, Volumes, Market Levels & Retail Investor Participation
- SPACs versus IPOs
- A Look Back at 2020 Market Structure Themes
- US Capital Formation’s 2020 Journey

- Market Structure Download: Post-Election Update
- Market Performance Around US Presidential Elections
- Market Volatility Around US Presidential Elections
- Market Structure Download
- A Deeper Look at US Listed Options Volumes
- The Cboe Trading Floor Reopened – Revisiting Volume Data
- NYSE Goes All Electronic – What Does It Mean?
- The NYSE Trading Floor Reopened – Revisiting Market Share Data
- COVID-19 Related Market Turmoil Recap: Part I (Equities, ETFs, Listed Options & Capital Formation)
- COVID-19 Related Market Turmoil Recap: Part II (Fixed Income and Structured Products)
- 2020, the Year of the SPAC
- The 2020 Market Madness
- The VIX's Wild Ride
- The 10th Anniversary of the Flash Crash
- DTCC's Important Role in US Capital Markets
- COVID-19 Related Market Turmoil Recap: Part II (Fixed Income and Structured Products)

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