



SIFMA Insights

February Market Metrics and Trends

A Look at Monthly Volatility and Equity and Listed Options Volumes

March 2022

Monthly Metrics

- Volatility (VIX): Monthly average 25.75; +11.1% M/M, +11.3% Y/Y
- S&P 500 (Price): Monthly average 4,435.98; -3.0% M/M, +14.2% Y/Y
- Equity ADV (billion shares): Monthly average 12.2; -1.7% M/M, -20.5% Y/Y
- Options ADV (million contracts): Monthly average 41.6; -5.0% M/M, -2.7% Y/Y

Monthly Highlight

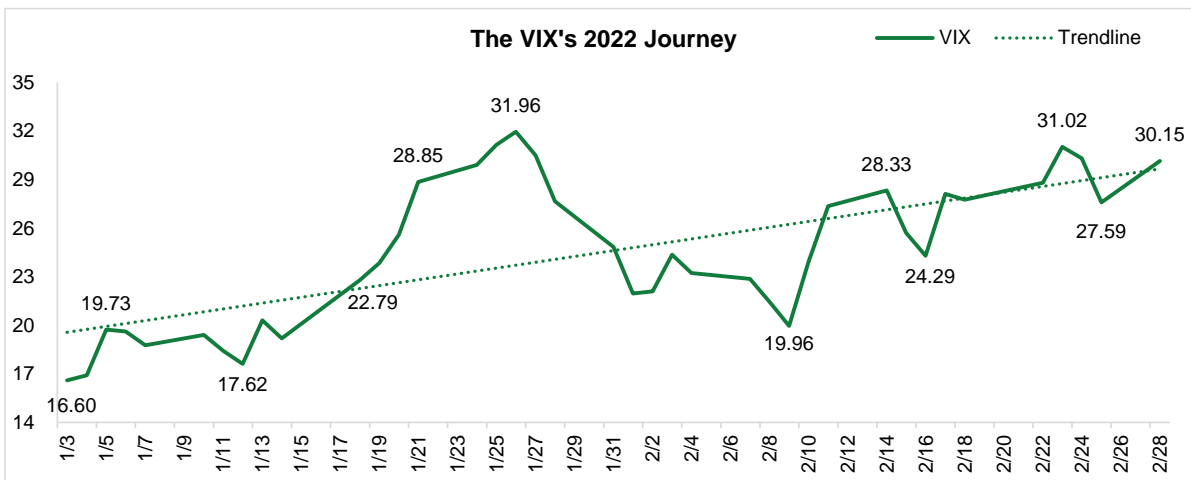
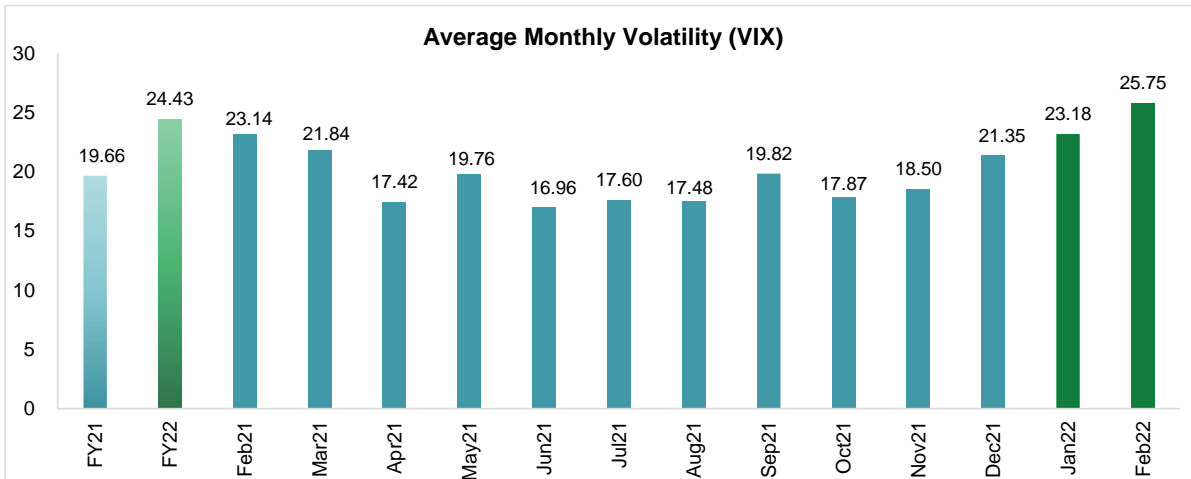
- With the growth in listed options volumes since 2019 (+124%), equity options as a percent of total grew 4.0 pps, to 94.2% YTD from 90.2% in 2019
- An interesting pattern appears when analyzing the percent increase in volumes from expiration Friday versus three days prior: February 2022 +39.4%, January 2022 +46.7%
- Pattern for equity volume growth not as pronounced (Feb '22 +6.8%, Jan +22.6%) as do not have to buy the underlying stock, but market participants attribute in part the significant growth in options trading to the growth in equity volumes

Monthly Market Metrics

In this section, we highlight the monthly market trends for volatility, price, and volumes.

Volatility (VIX)

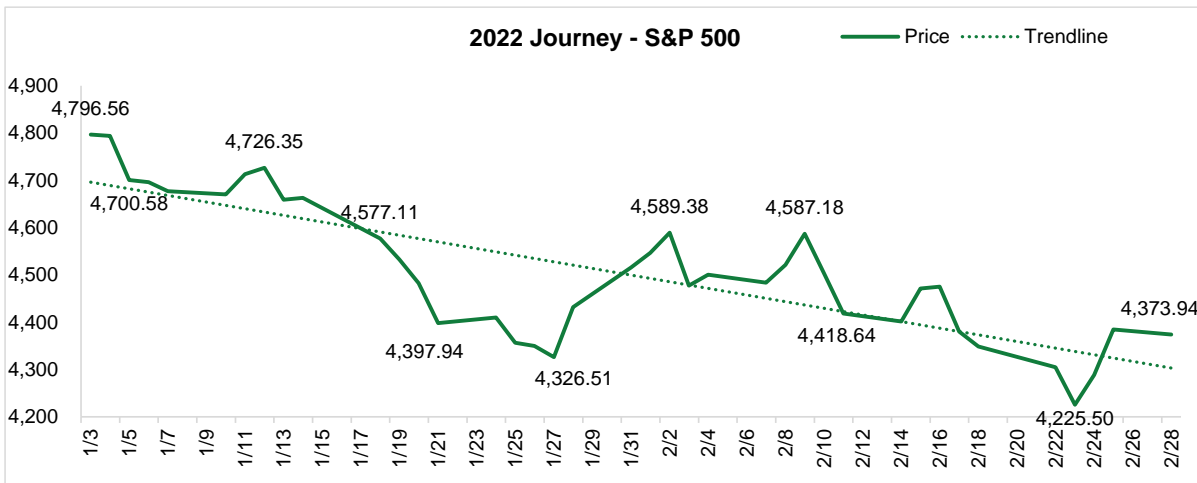
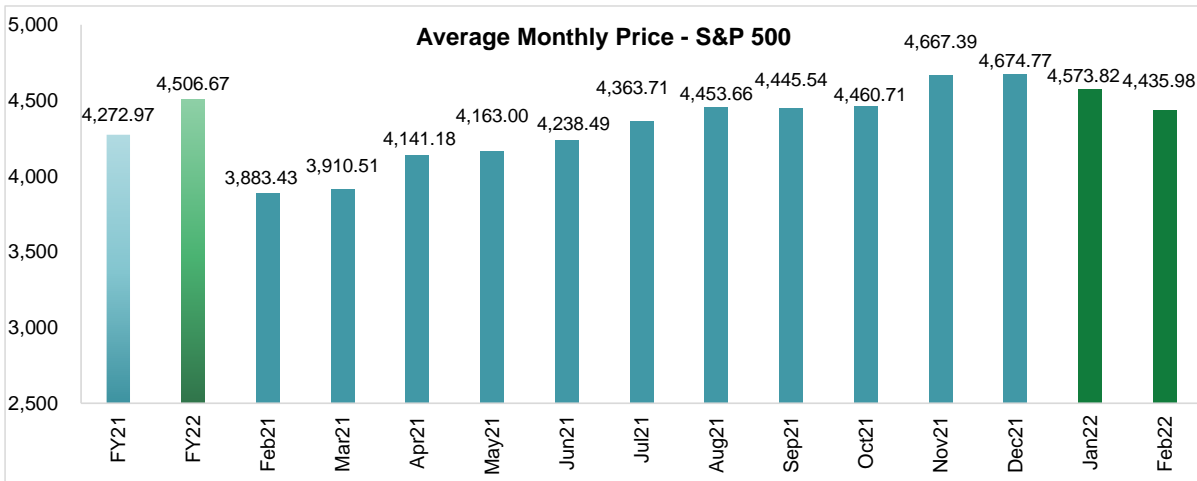
- Monthly average 25.75
 - +11.1% M/M
 - +11.3% Y/Y
 - +55.1% from the start of the year
- Monthly peak on the 23rd at 31.02, troughed on the 9th at 19.96



Source: Bloomberg, SIFMA estimates

Index Price (S&P 500)

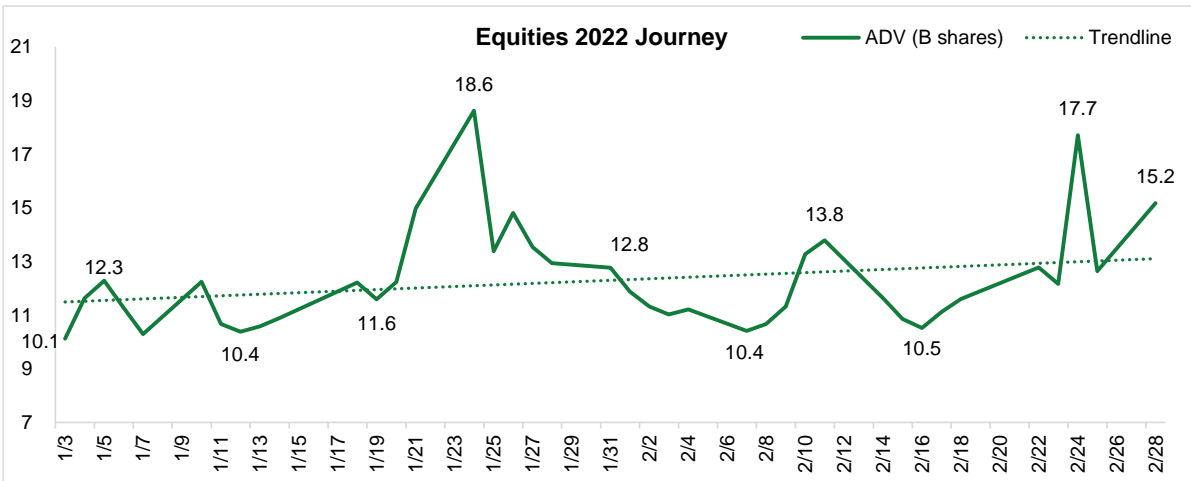
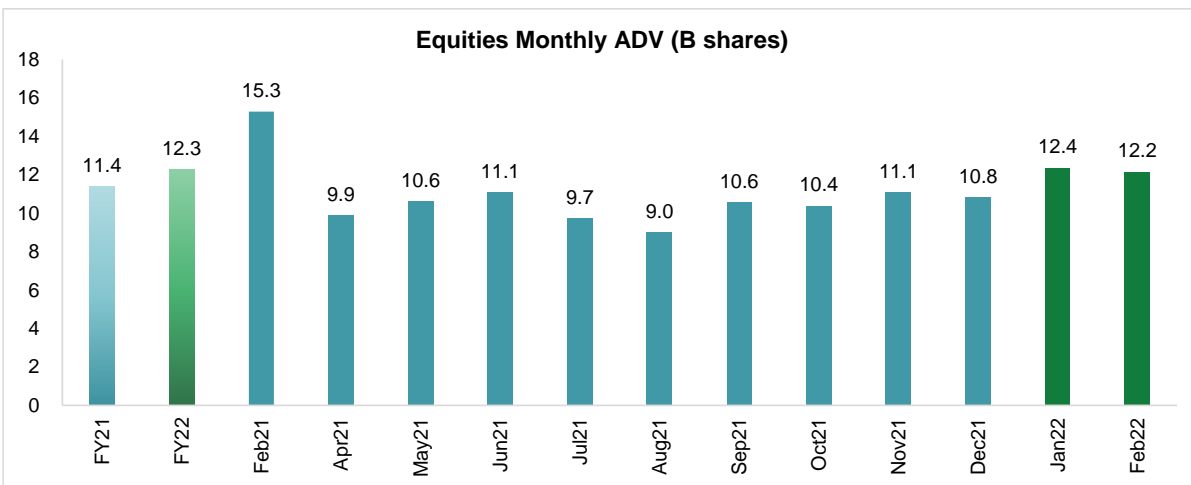
- Monthly average 4,435.98
 - -3.0% M/M
 - +14.2% Y/Y
 - -7.5% from the start of the year
- Monthly peak on the 2nd at 4,589.38, troughed on the 23rd at 4,225.50



Source: Bloomberg, SIFMA estimates

Equity Volumes (ADV)

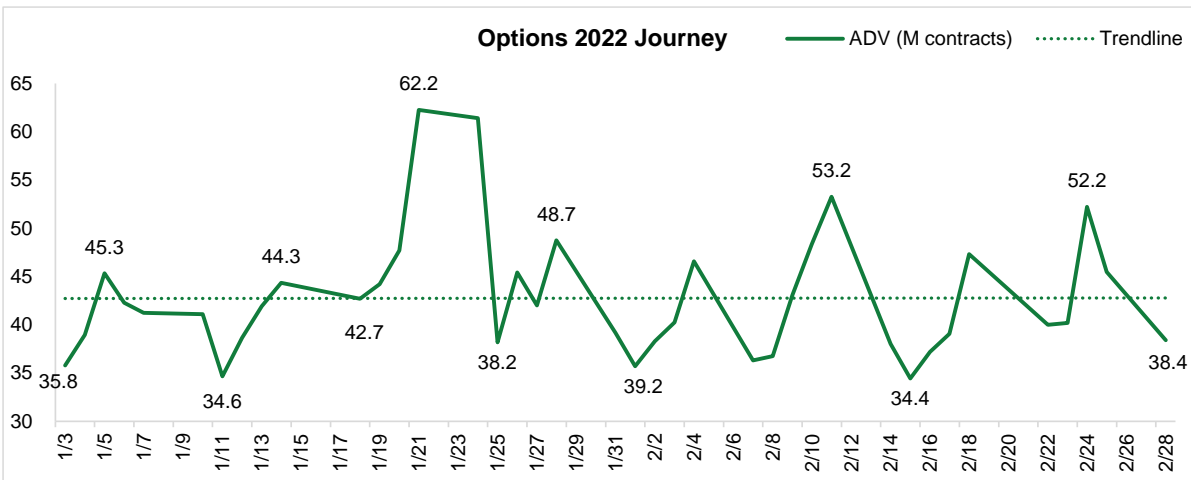
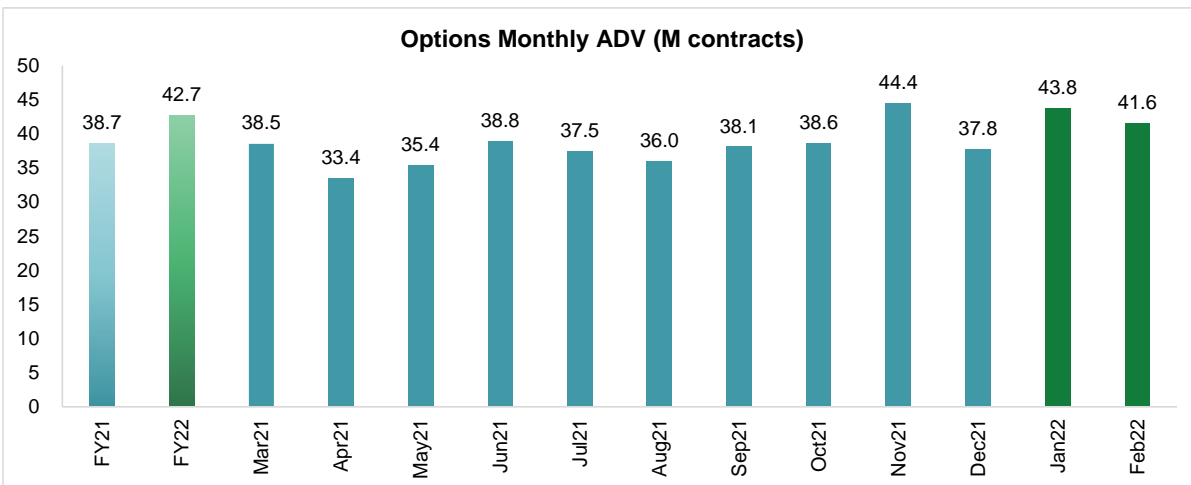
- Monthly average 12.2 billion shares
 - -1.7% M/M
 - -20.5% Y/Y
 - +20.1% from the start of the year
- Monthly peak on the 24th at 17.7 billion shares, troughed on the 7th at 10.4 billion shares
- Monthly average off exchange trading 39.7%; -0.2 pps M/M, -6.9 pps Y/Y



Source: Cboe Global Markets, SIFMA estimates

Multi-Listed Options Volumes (ADV)

- Monthly average 41.6 million contracts
 - -5.0% M/M
 - -2.7% Y/Y
 - +16.3% from the start of the year
- Monthly peak on the 11th at 53.2 million contracts, troughed on the 15th at 34.4 million contracts
- Monthly equity options 39.2 million contracts (-4.9% M/M, -3.9% Y/Y), index options 2.4 million contracts (-6.2% M/M, +23.0% Y/Y)



Source: Cboe Global Markets, SIFMA estimates

Monthly Highlight

In this section we drill down into an interesting trend that market participants are following.

An Options Expiration Refresher

An equity option is a financial contract which gives the holder the right but not the obligation to buy/sell a stock at a specified price, the strike price. The types of options are:

- **Call** – The holder has the right to buy the underlying security, on or before expiration at the strike price
- **Put** – The holder has the right to sell the underlying security, on or before expiration at the strike price
- One option contract equals 100 shares of the underlying stock

And the different rights afforded holders and sellers, and how the two parties interact, include:

- **Holder** (buyer)
 - Call = right to buy
 - Put = right to sell
- **Writer** (seller)
 - Call = obligation to sell
 - Put = obligation to buy

Additionally, we point out that some options must be exercised at specific times, depending upon style. Most options (depending upon contract type) technically expire at 11:59 a.m. on the date of expiration, the Saturday that follows the third Friday of the month for equity options traded on U.S. exchanges. However, the latest that public holders can exercise their options contracts is 5:30 p.m. on the day before the expiry date, the Friday. Options styles include:

- **American** – can be exercised any time between purchase and expiry
- **European** – can only be exercised at expiry
- **Bermuda** – can be exercised on specific dates as well as expiry

Options have time value, or extrinsic value, which is equal to any premium in excess of intrinsic value (the money-ness) before expiration. This reflects an estimate that the option's value will increase prior to expiration given a favorable change in the underlying stock price. As expiration approaches, options decrease in value and the contract holder must decide whether to sell, exercise, or let it expire. The difference between an option's strike price and the market price of the underlying stock determines the option's value:

- **In-the-Money** – For a call option, if the stock price is greater than the strike price; reversed for puts
- **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 puts

When the option is in the money and approaches expiration, the holder can either sell the option to lock in the value or exercise the option to buy the underlying shares. If the option is out of the money, the option holder would be better off selling it before it expires worthless, as a better price for the stock is available in the open market (for call options).

A popular options strategy is writing a covered call, i.e. the call is covered by an equivalent long stock position. The covered call writer (seller) expects a steady or slightly rising stock price in the near to medium term (the length of the contract); they do not expect a significant increase/decrease in the stock price. A covered call provides a small hedge on the stock (downside protection) while earning a premium income and thereby increasing overall returns on a stock holding, albeit the investor temporarily forfeits much of the stock's upside potential. At contract expiration, sellers of call options, who are short the stock, purchase the underlying stocks to cover their positions resulting from the sale of the options contract.

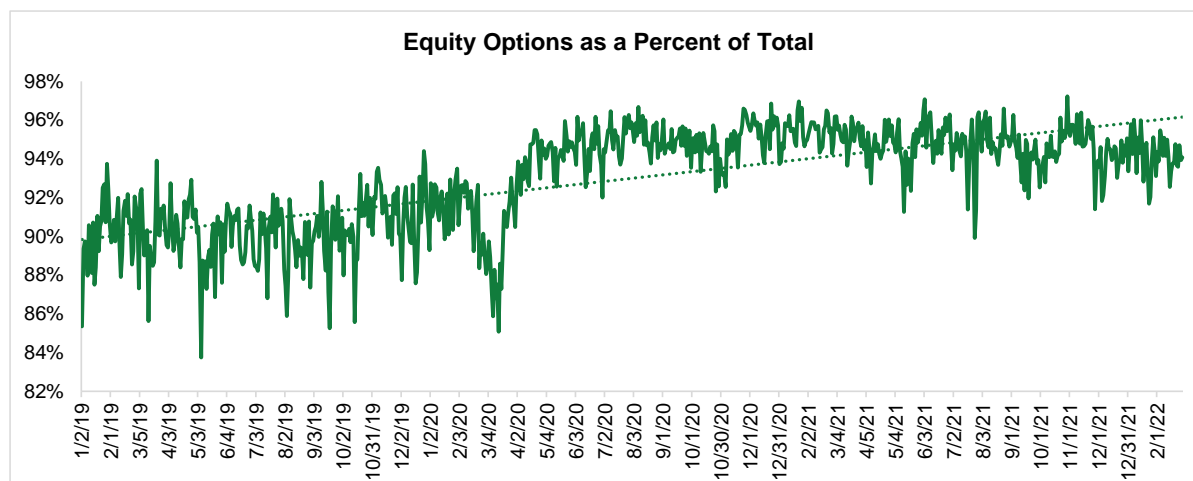
Growth in Equity Options

Before looking at equity options volumes during expiration, we look at the growth in equity options as a percent of total options volumes (versus index options). We have seen significant growth in total options volumes since the COVID driven boom starting in 2020: 19.1 million contracts in 2019; 29.0 million contracts in 2020; 38.7 million contracts in 2021; and 42.7 million contracts YTD. This is a volume increase of +124.3% since 2019.

During the same time period, the percentage of equity options grew +4.0 pps. Since 2019, the trendline is upward sloping, growing to 94.2% on average YTD from an average of 90.2% in 2019. These increases provide for a greater chance of exercising options contracts, translating to higher equity volumes.

Percent of equity option volumes as a percent of total options volumes:

- 2019 = 90.2%
- 2020 = 93.8%; +3.6 pps Y/Y
- 2021 = 94.8%; +1.0 pps Y/Y, +4.6 pps to 2019
- YTD = 94.2%; -0.6 pps Y/Y, +4.0 pps to 2019



Source: Cboe Global Markets, SIFMA estimates

Equity Options Volumes at Expiration

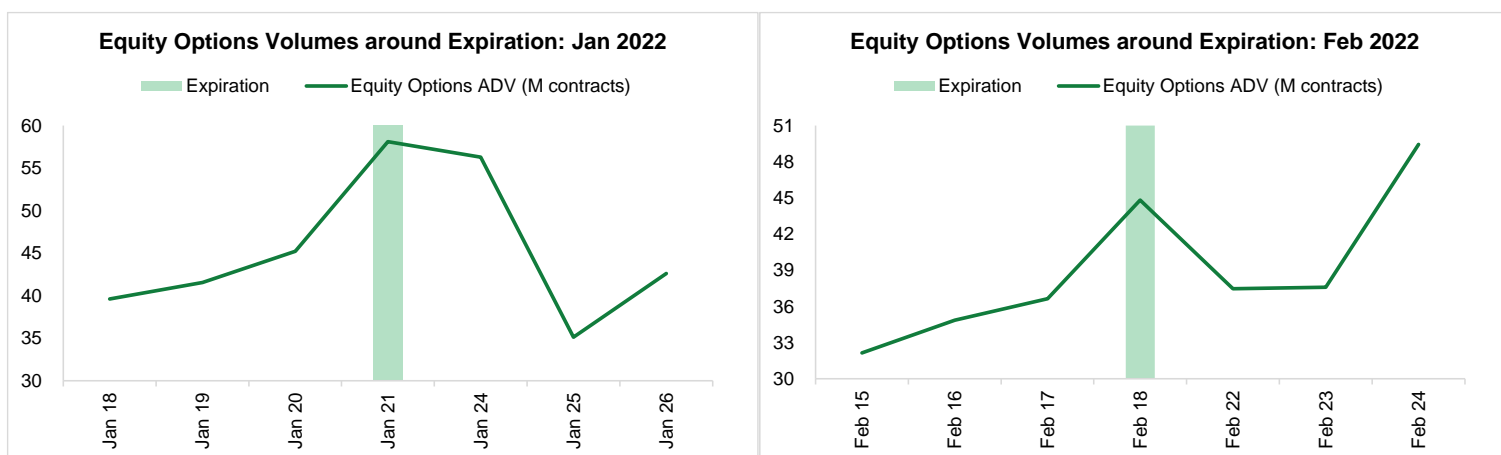
As shown in the charts below, equity option volumes increase a few days ahead of expiration Friday. At expiration, sellers of call options purchase stocks to cover their positions resulting from the sale of the options contract. As any in the money option is automatically exercised, institutions have a good idea of what they need to cover going into the Friday. An interesting pattern appears when analyzing the percent increase in volumes as measured from expiration Friday to three days prior. The volume pop decreased in 2020 and 2021 to +29%, versus an over 50% increase during the pre-COVID lower volume times in 2019 (or what used to be normal). The three-day volume pops have increased again in 2022:

- February 2022 = +39.4%
- January 2022 = +46.7%
- November 2021 = +29.0%
- December 2020 = +29.2%
- January 2019 = +52.0%

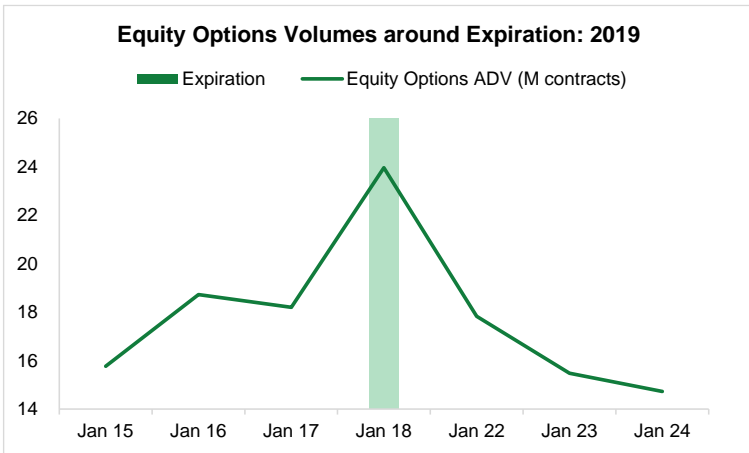
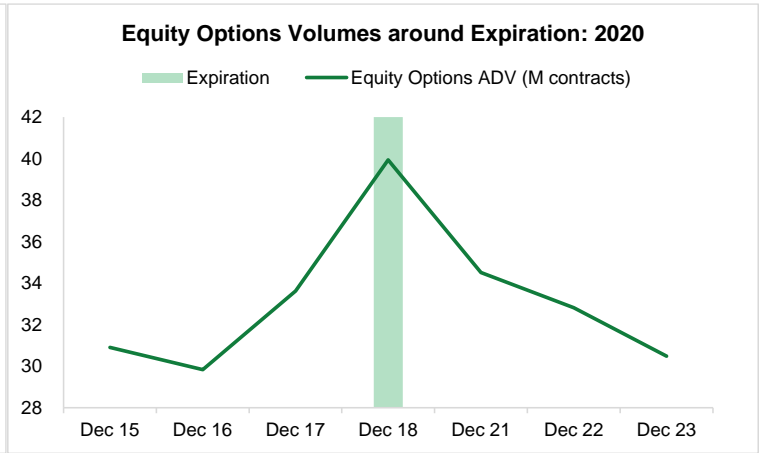
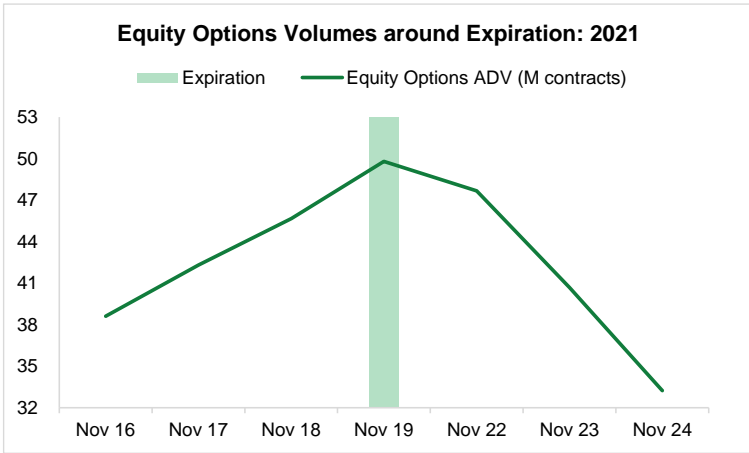
To assess what is going on here, we first look at historical changes in aggregate annual equity option volumes:

- 2021 versus 2019 was +113.0%
- 2020 versus 2019 was +58.2%
- 2021 Y/Y (versus 2020) was +34.6%
- January 2022 versus 2021 was +12.5%
- February 2022 versus 2021 was +7.0%

We relate the changes in the three-day volume pop around expiration Fridays to these aggregate volumes moves. In general, the equity options market was at significantly elevated levels in 2021 and 2022 versus historical data (and Y/Y for 2021). As such, the expiration volume moves were muted compared to historical trends. Then in 2022, overall equity options volumes growth rates have come down substantially since 2020/2021, given tougher comps. Therefore, you see a bigger growth rate differential around contract expiration.



Source: Cboe Global Markets, SIFMA estimates



Source: Cboe Global Markets, SIFMA estimates

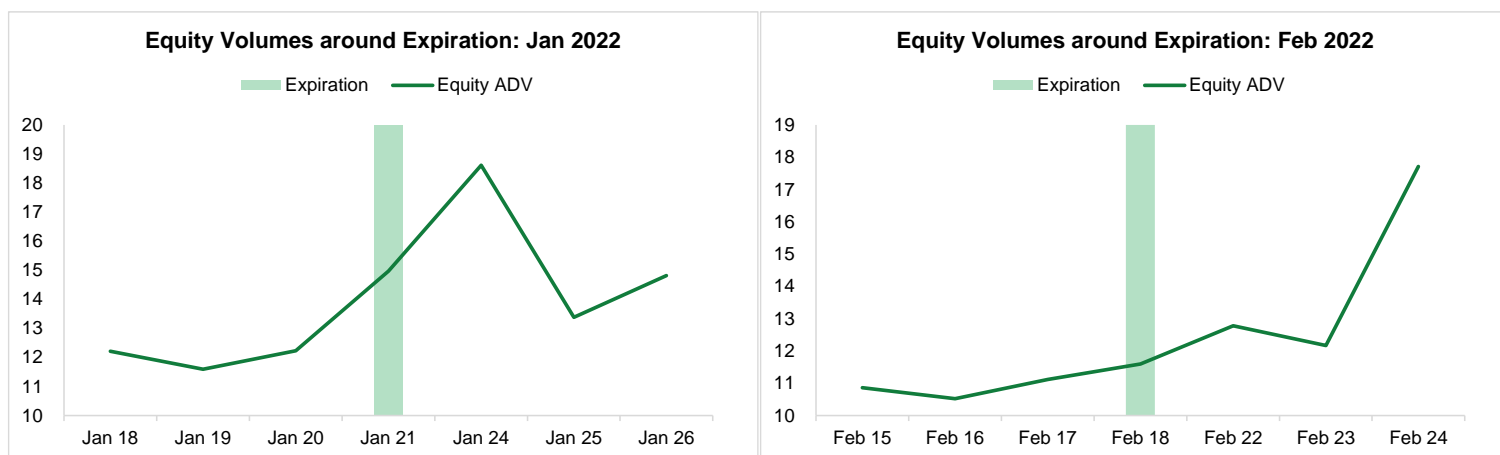
Equity Volumes at Equity Option Expiration

When the equity call option contract is in the money, the seller of the contract must buy the underlying stocks to cover their obligation to the contract holder. As such, on expiration Fridays, the contract seller purchases 100 shares of the underlying stock for each options contract.

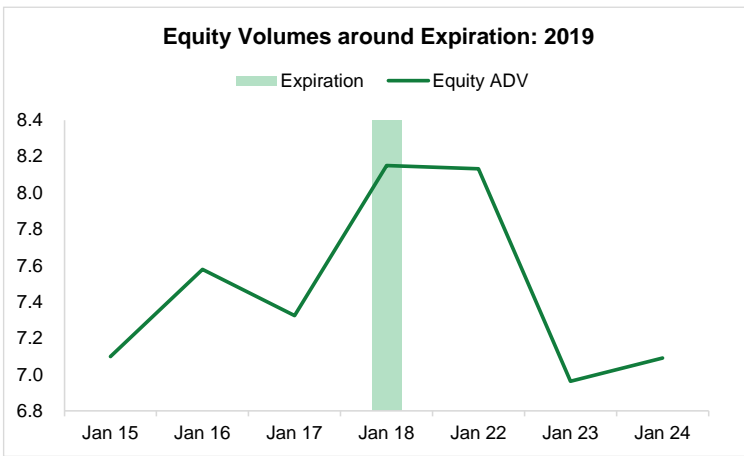
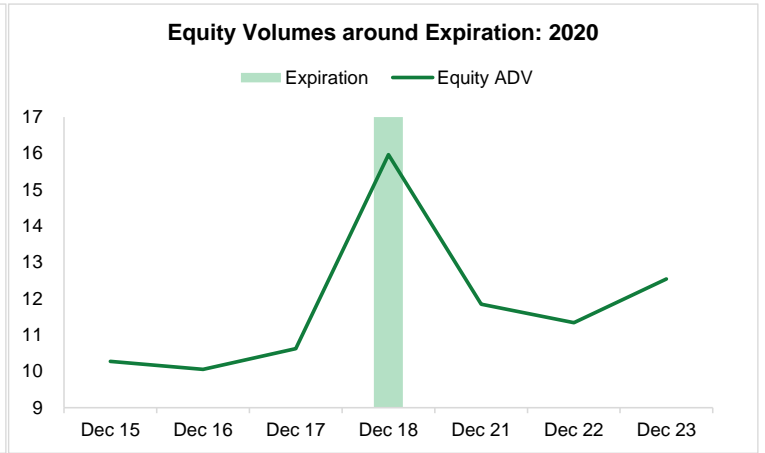
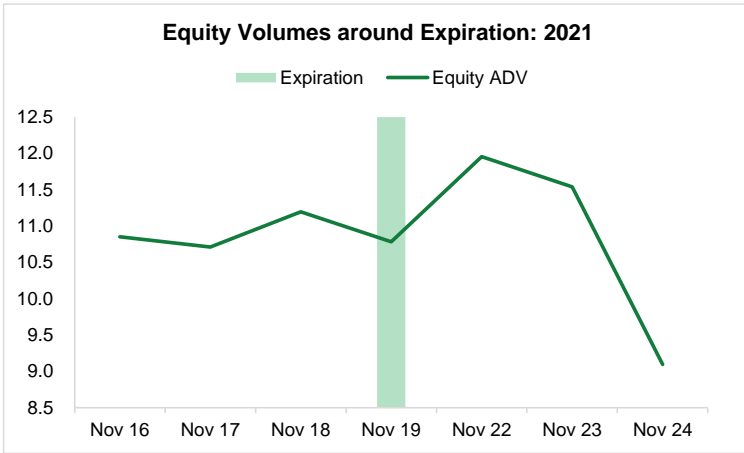
However, equity volumes around options expiration Fridays do not appear to have as solid of a pattern or be as pronounced as the increase in equity options volumes. The three-day volume pops (from expiration Friday to three days prior) for equity volumes include:

- February 2022 = +6.8%
- January 2022 = +22.6%
- November 2021 = -0.6% (saw a 3.3% increase the day before)
- December 2020 = +55.4%
- January 2019 = +14.8%

In other words, it is not a 100% correlation in volume growth rates across equity options and equities, as the options contract does not have to be converted into the underlying shares. (It is the right to buy, not the requirement to buy, the underlying stock.) That said, market participants do attribute in part the significant growth in options trading to the growth in equity volumes.



Source: Cboe Global Markets, SIFMA estimates



Source: Cboe Global Markets, SIFMA estimates

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