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2023 EQUITY VOLATILITY OUTLOOK

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SUMMARY

- Most of the equity volatility seen in 2022 has been a result of increasing interest-rate volatility. We expect uncertainty around rates to continue to drive equity volatility until the US and euro area economies enter a recession in the early part of 2023.
- Hedging activity using out-of-the-money (OTM) options has declined significantly in 2022. Instead, investors have turned to futures and put spreads to hedge portfolios, forsaking outright puts that volatility has made costly. As a result, implied skew has fallen to a multi-year low and the gap in implied volatility between the VIX index and at-the-money options has narrowed significantly.
- Index options' aggregate gamma has been hovering around zero this year, suggesting it has had a marginal impact on volatility.
- Implied skew may steepen again in 2023, either at the onset of recession or in the wake of a market rebound. Option gamma positioning will most likely have little impact on volatility in 2023 unless markets suffer a significant shock.
- We expect the VIX index to average an elevated 25% in 2023, with a potential peak at around 40% during the mild recession we expect in the US and Europe in the early part of next year.

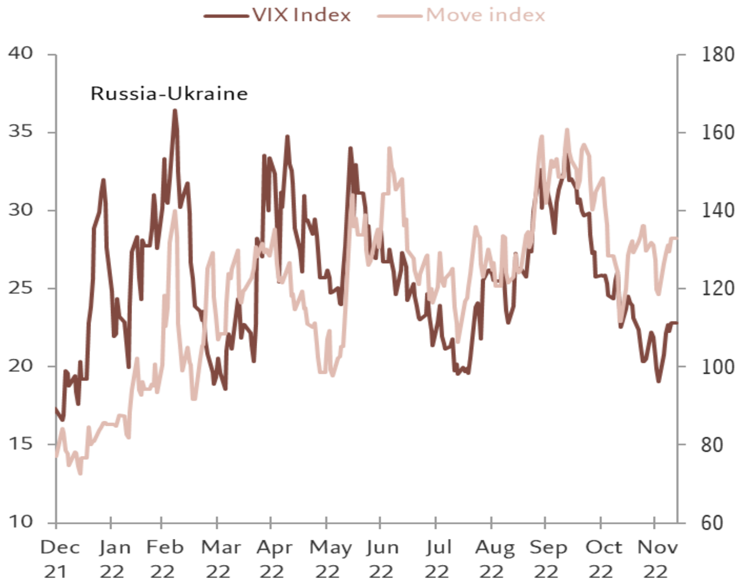
EQUITY VOLATILITY IN 2022 HAS BEEN MAINLY MACRO DRIVEN

2022 has been marked by significant macroeconomic uncertainties around inflation, interest rates, geopolitics and energy. The impact of the Russian invasion of Ukraine last February was particularly strong on the European market, with the Euro STOXX 50 Volatility index reaching 50% compared to a peak for the CBOE Volatility (VIX) index of around 37% on 7 March 2022. Since then, volatility on both indexes has been fluctuating between 20% and 35%, primarily driven by interest-rate volatility *(see chart 1)*. In turn, the big rise in rates volatility, reflected in the MOVE index, has stemmed from increasing concerns around monetary tightening as central banks have moved aggressively to curb persistent inflation. We expect interest-rate uncertainty to continue to be the key driver of equity volatility in 2023, at least until the economy enters recession.

A DRAMATIC FALL IN IMPLIED SKEW TO MULTI-YEAR LOWS

The rebound in equity markets from their covid lows in early 2020 led investors to protect their gains by hedging massively their positions through put options as economic conditions remained fragile despite the support of central banks. The failure of bonds to provide portfolio protection also led investors to turn to derivatives to hedge downside equity risk. As a result, in 2021 implied skew increased sharply, reaching a level not seen in decades and keeping implied volatility elevated despite a strong equity market rally. Consequently, the gap between implied volatility on the VIX index and that seen in the at-the-money (ATM) S&P 500 options index widened significantly *(see chart 2)*. The same divergence was to be seen between the VIX index and S&P 500 index 30-day realised volatility (which is close to the ATM implied volatility).

Chart 1: VIX and MOVE indexes have been strongly correlated in 2022



Source: Pictet WM CIO Office & Macro Research, FactSet, 30 November 2022

The macroeconomic backdrop has been different in 2022, with a dramatic decline in the implied skew to levels observed in 2001 following the bursting of the dotcom bubble. The gap between the VIX index and ATM implied volatility (as well as realised volatility) has almost closed *(see chart 2)*. This sharp decrease in implied skew is a result of the low demand for put options to protect downside risk. Investors have shied away from outright put options and turned to futures and put spreads strategies instead to hedge their portfolios as volatility has remained relatively elevated by historical standards, making outright OTM options relatively expensive. However, underweight investors have used OTM calls to hedge right tail risk. However, the flow to OTM call options has not been strong enough to prevent the call skew from moving significantly downwards, just like the put skew *(see chart 3)*.

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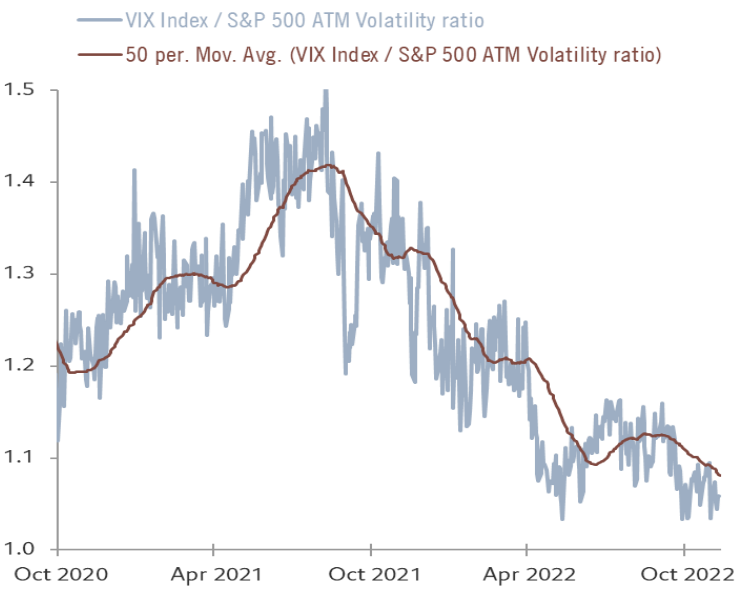
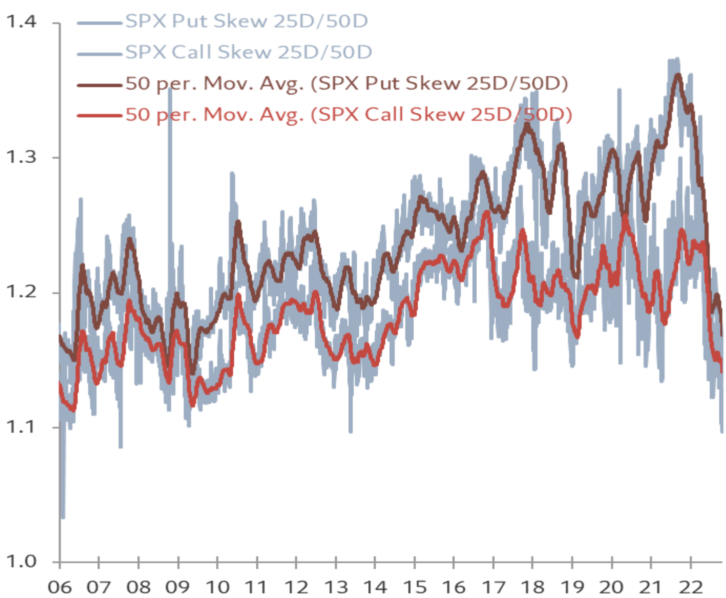
Chart 2: VIX/S&P 500 ATM volatility ratio 2020-2022



Source: Pictet WM CIO Office & Macro Research, FactSet, Société Générale, 30 November 2022

Chart 3: S&P 500 put and call options' implied skew, 1999-2022



Source: Pictet WM CIO Office & Macro Research, Société Générale, 30 November 2022

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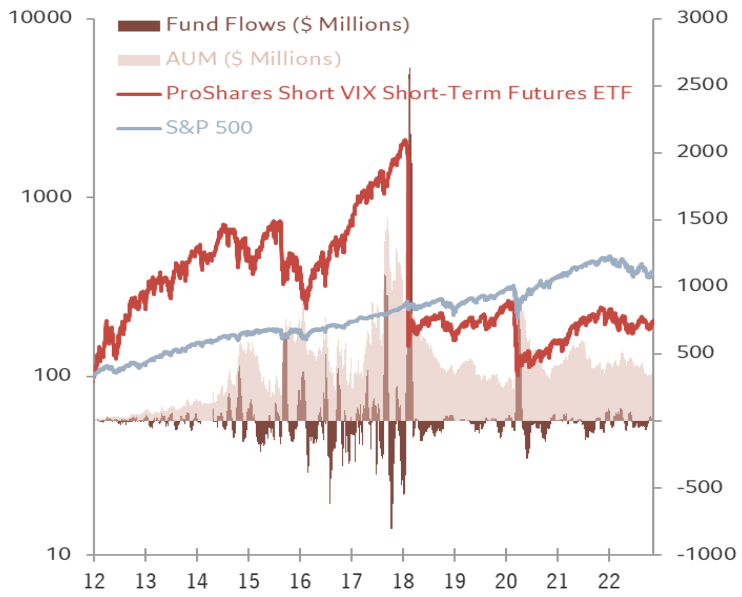
DEALERS' GAMMA IN INDEX OPTIONS WILL MOST LIKELY HAVE A MARGINAL IMPACT ON EQUITY VOLATILITY IN 2023

Traders' gamma positioning is another microstructural factor that can have an important impact on equity volatility. Strong negative aggregate gamma tends to boost market volatility as traders hedge their positions by buying stocks when the market goes up and selling stocks when it goes down. Conversely, strong positive aggregate gamma tends to dampen market volatility as dealers take long positions on the underlying stock when the market goes down and short positions when the market goes up.

Traders' gamma hedging, aimed at covering short-volatility trades, was the main driver of the short volatility squeeze we saw in February 2018 that led to a 10% loss on the S&P 500 index and a rise of the VIX index to 37% within the space of a few trading sessions. Short volatility strategies were popular up to then as investors sought decent yield in a low interest-rate environment. Since 2018, however, flows to these strategies have declined sharply *(see chart 4)* as short-volatility funds' dramatic losses in 2018 are still in investors' minds. In addition, the risk-reward trade-off of such strategies is no longer attractive as interest rates have moved higher.

Aggregate gamma this year has been oscillating around the neutral zone, suggesting a low impact on equity volatility *(see chart 5)*. We expect index-option gamma to remain low next year as we do not foresee a sufficient volume of options being traded for gamma hedging to have a material impact on equity volatility unless we have a violent market shock.

Chart 4: ProShares Short VIX Short-Term Futures ETF vs. S&P500, 2012-2021



Source: Pictet WM CIO Office & Macro Research, FactSet, 30 November 2022

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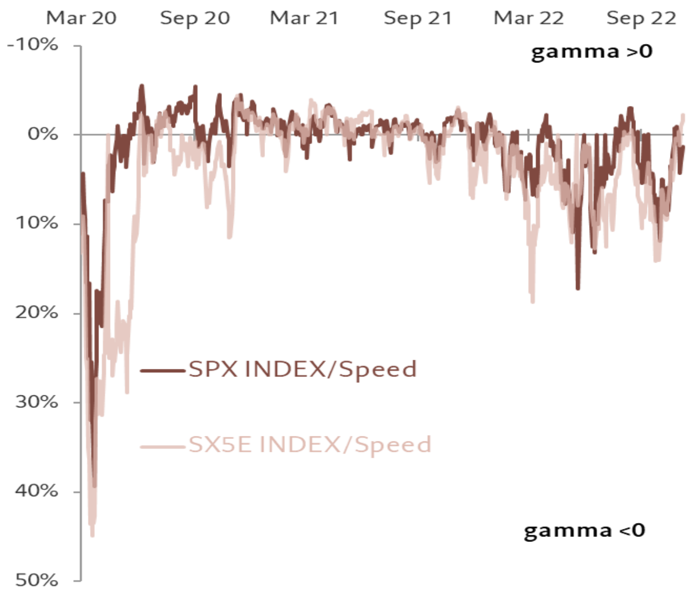
Chart 5: Change in gamma sign due to price changes on the S&P 500 and Euro Stoxx 50, 2020-2022



Source: Pictet WM CIO Office & Macro Research, Société Générale, 30 November 2022

VOLATILITY EXPECTED TO REMAIN IN HIGH REGIME IN 2023

In almost all recessions since 1929, markets have hit bottom during actual recessions and rarely in the year before. Volatility similarly tends to peak during recessions from the year before *(see chart 6)*.

According to our macroeconomic scenario, the US and euro area economies should enter a mild recession in 2023. As a result, we expect volatility to be elevated next year—but closer to the level seen in the 1990 and 2001 recessions than those of the global financial crisis in 2008. In other words, we expect the VIX index to average 25% over next year, with a potential peak of 40%. In the event of a recession, demand for OTM options should also increase, either to hedge against further market declines or to take advantage of market stress to take profits. As a result, implied skew could steepen again.

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Chart 6: VIX index during actual recessions versus the year before recession, 1986-2020

Source: Pictet WM CIO Office & Macro Research, FactSet, 30 November 2022

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