March 2020

Analysing the Implied volatility term structure

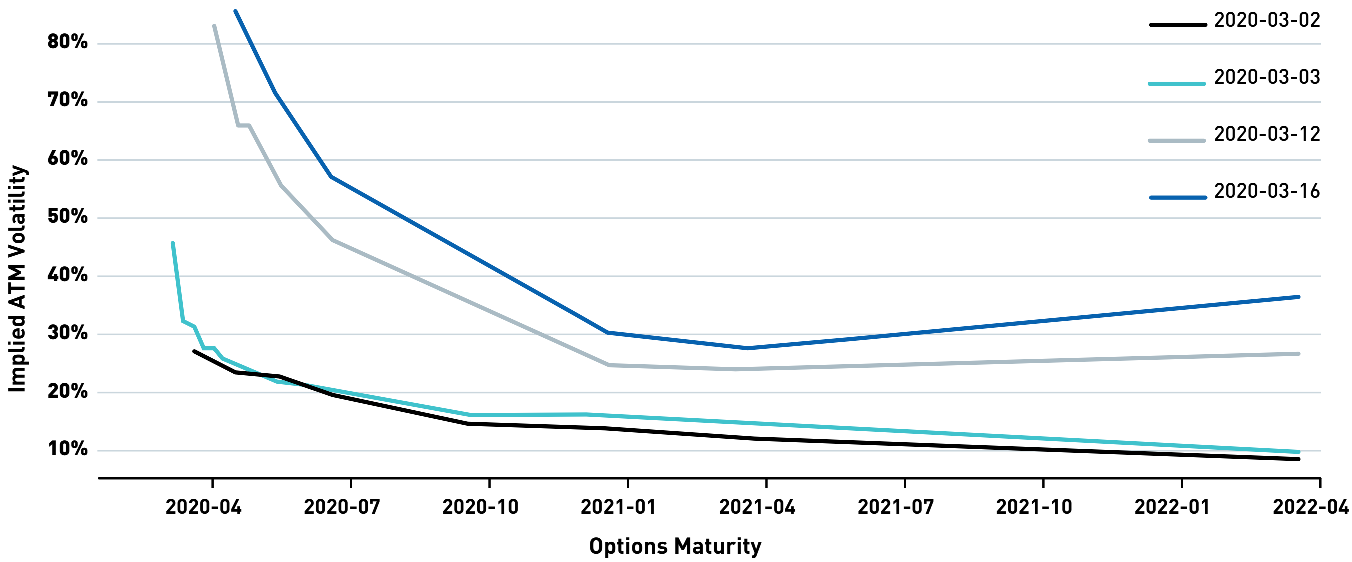
In times of uncertainty, the ability to interpret cogently the information available within the derivatives markets is indispensable to any investor. Options prices are rich in information, so understanding the dynamic of the implied volatility term structure ("IV term structure") of an underlying asset can provide valuable insight into the market.

Options on index ETFs are particularly suited for this exercise given that they capture the information for a whole sector or market. Rather than relying on observed options prices that are too sensitive to market levels[1], it is preferable to analyse the data in terms of moneyness and implied volatility ("IV"). The At-the-money ("ATM") options term structure of the iShares S&P/TSX 60 Index ETF (XIU) captures the market shocks observed, providing information that can help investors better understand the market's risk expectation.

Figure 1 illustrates the term structure for XIU during 4 days in March 2020. The first two days (2nd and 3rd of March) present a term structure shape inferring a higher probability of assignment in the short-end of the curve. Interestingly, at the beginning of March the IV term structure was already richly priced in comparison to the historical volatility ("HV') of the S&P/TSX60 index (HV of 8% vs an average IV of 30%) indicating a steep increase in the cost of protection and the probability of large market move. A rare occurrence in the horizontal shift took place from March 3rd to March 12th, as in a relatively short period of time, the whole term structure jumped almost 100% (from an average IV of 30% to more than 60% on the short end). Moreover, the steepness of the curve inverted at the long end of the expirations indicating a sharp contrast with the previous term structure dynamic. To give the reader some perspective, normal distribution assumptions, a 60% volatility implies a 95% expectation that the S&P/TSX60 will be anywhere in a range from -120% to 120% in price terms.

FIGURE 1

XIU options term structure for selected days in March 2020



1. An option trading at a 1$ premium whose underlying asset trades at 10$ has a completely different behavior of an option trading at 1$ premium with an underlying trading at 30$

There are 2 main takeaways from the IV term structure examples cited above:
First, the base risk level has seen a drastic structural change. Given the amplitude of the shift and the duration of the curve (up to 2022), it indicates that option players are expecting a long period of uncertainty.
Second and of utmost significance, the inversion in the steepness of the long-end of the term structure indicates that option's implied volatility suggests an increase in the market's volatility 1 year from now.

Investors should bear in mind that the option markets change everyday and that the IV term structure can change as well. However, assimilating and correctly interpreting all available information is critical for investors during the decision process of selecting a hedging strategy and its potential maturity. For more information about the Canadian option market, please check the Montreal Exchange option's website: https://www.m-x.ca/produits_options_actions_en.php

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