A Corridor Fix for High-Frequency VIX: Developing Coherent Implied Volatility Measures[*]

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Abstract

The VIX index is computed as a weighted average of SPX option prices over a range of strikes according to specific rules regarding market liquidity. It is explicitly designed to provide a model-free option-implied volatility measure. Using tick-by-tick observations on the underlying options, we document a substantial time variation in the coverage which the stipulated strike range affords for the distribution of future S&P 500 index prices. This produces idiosyncratic biases in the measure, distorting the time series properties of VIX. In contrast, the "Corridor Implied Volatility" index (CX) is computed from a strike range covering an "economically invariant" proportion of the future S&P 500 index values. We find the CX measure superior in filtering out noise and eliminating artificial jumps, thus providing a markedly different characterization of the high-frequency volatility dynamics.

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