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So many risks and so little real information! After a very dull spring and early summer when the Chicago Board Options Exchange Volatility Index (VIX), often referred to as the Market's Fear Gauge, stayed below 16% except for a handful of days, we saw a spike to over 40% for a day in late August. Since then, however, it has been falling steadily, receding to 14%–16% as of early November. The market plainly seems not too fearful these days.

Objectively, considering the size and variety of uncertainties that we currently face, we should probably be terrified. Once again, this situation illustrates the difference between volatility as it is estimated from returns data and volatility that leads to a major change in the level of stock prices over the relatively short lifetime of an option. If an asset's price follows a logarithmic random walk with constant instantaneous volatility, the two manifestations of "volatility" amount to the same thing: Over a period of any length T, the standard deviation of the return is volatility per period multiplied by the square root of T.

But even with constant volatility along a random walk path, the realized final asset price and option payoff can end up anywhere within a broad range. Thus, it is not inconsistent to expect low volatility over the immediate short run, because new information becomes available slowly, while anticipating that the total price change over a longer holding period may be very large. This distinction plays out in terms of a potentially vast difference between how an investor might think of volatility over an option's life in terms of the effect on its payoff at maturity, versus how day-to-day volatility affects the hedging cost for a market maker who takes the opposite side of the investor's trade. The investor wants a big price move and does not care which path the stock takes to get there, whereas the market maker wants smooth price paths without large changes of direction that would whipsaw his or her hedge. It does not matter much to the market maker where the stock price ultimately goes. Sharp price jumps are fine for the investor (in the right direction), but they are terrible (in either direction) for the market maker's delta hedge.

So, briefly, what are market makers worrying about right now? Corporate earnings announcements, daily twitches in the oil market,

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comments by Fed Chairman Janet Yellen parsed extremely finely, weekly announcements of employment and other economic data, and anything new out of China. All of these things are volatile, but they have shown many reversals, and so the jiggles over hours and days have not added up to large changes over weeks and months.

What are longer term investors worrying about? Whether Congress will raise the debt ceiling and pass a budget without shutting down the government (both resolved, remarkably, as of the time of this letter); when (not whether) the Fed will begin raising interest rates; how the current strength in the U.S. economy, weakness in much of the Eurozone, distress in emerging market countries from collapsing commodity prices, and slowing economic growth plus stock market disruption in China will play out.

Then, of course, there are concerns such as global warming, desperate refugees heading toward Europe by the thousands, a presidential election coming up in the United States, a possible Brexit (Britain leaving the European Union), and more. And let's not even think about any part of the Middle East.

But what is the scariest thing of all? We are seeing sharp declines in the number of students who want to go to business school, the number of business students taking finance courses, and the fraction of finance students taking courses on derivatives. Forget about drowning polar bears and massive default by Puerto Rico, this is getting serious!

Turning to this issue of *The Journal of Derivatives*, the first three articles are all related to credit risk. Leading off, Gatarek and Jabłecki introduce a new way of modeling default correlation. The now-standard Gaussian copula model runs into a number of problems with real world risky assets, including, in particular, great difficulty in generating correlated defaults. Their new approach models the common risk as a set of Poisson shocks of increasing size, such that if a type n shock occurs, it wipes out firm n and all less creditworthy firms at the same time. The general model is applied to the problem of evaluating counterparty risk exposure, which involves a double credit event.

The next article, by Černý and Witzany, develops a semi-closed form model of correlation in credit risk to calculate the appropriate credit value adjustment on an over-the-counter derivative, depending on whether it involves wrong-way or right-way risk. Gupta and Sundaram then describe and discuss the current auction system for settling credit default swaps after a credit event. They show that prices for the defaulted bonds in the auction appear to be worse than their prices in the open market both before and after an auction. Yet when the various risks are properly considered, including the winner's curse (i.e., winning an auction with the most over-optimistic bid), the auction is actually found to produce substantial information and justifiable pricing.

Correlation is clearly important for any derivative tied to the behavior of more than one risk factor. A common example is a quanto option, which pays off in a currency different from the currency in which the underlying asset is denominated. Superficially, this is not a hard problem, but it is when considered practically. Finding a quanto formula that is consistent with the observed volatility smiles in both the foreign underlying market and the exchange rate is a challenge. Without assuming a specific pricing model, Tsuzuki is able to derive model-independent upper and lower bounds for quanto values.

The next article, by Jarnecic, Liu, and Issa, looks at a market microstructure topic that many of us would think was already settled, but they find some surprises. Specifically, they analyze the returns earned by options market makers, large institutions, and retail traders to determine what part of each group's return comes from providing liquidity and what part from position taking. The common belief, that market makers provide liquidity and are paid by outsiders who hope to profit from their positions, turns out not to be true, at least not in Australia: market makers absorb liquidity that public traders provide, and they profit over the short run on their positions. Finally, in the last article, Yang, Fabozzi, and Bianchi address a very practical question: Does using an explicitly stochastic volatility model, the stochastic

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alpha-beta-rho (SABR) model in this case, produce better hedge performance in practice for foreign exchange options than the simpler, potentially more robust but theoretically inferior Black–Scholes model? The answer, which is a little bothersome for theorists but not so bad for practitioners, is that although the SABR model fits observed option prices pretty well, it does not perform better in hedging.

By the time you read this, the holidays will be upon us. Assuming you survive the probable December increase in the Fed's target interest rate, as well as the shopping crush on Black Friday, let me offer:

My Best Wishes for the Season and for the New Year 2016.

Stephen Figlewski
Editor